'RIPT FROM THE WOMB'

The medical, social and political history of caesarean section

Mac Duff was from his mother's womb
Untimely ript
Shakespeare: MacBeth, Act V

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Glossary of medical terms and abbreviations used in text

ACOG – the American College of Obstetricians and Gynecologists

AJOG – American Journal of Obstetrics and Gynecology

Amniotic fluid – the fluid surrounding and protecting the fetus in the womb

Amniocentesis – medical procedure in which some amniotic fluid is withdrawn from around the fetus in utero, in order to examine fetal cells present in this fluid to make certain diagnoses about the health of the baby

Anaemia – a low blood count due to lack of iron, folic acid and/or vitamin B12 in the diet, or to chronic disease or blood loss

Antacids- drugs which lower the acidity of the stomach contents

Anti-emetics – drugs which help prevent vomiting

Antepartum haemorrhage (APH)- vaginal bleeding before the birth of the baby

BJOG – British Journal of Obstetrics and Gynaecology (formerly Journal of Obstetrics and Gynaecology of the British Empire)

BMJ – British Medical Journal

Breech presentation – way in which a baby may lie in the womb with bottom and legs, rather than head, in the lower part

Caesarean on maternal request – surgery done because the woman has requested a caesarean birth, there being no apparent medical indication for the surgery

Cardiotocography – the continuous recording of the baby's heart rate in the womb

Cephalic presentation – the most common way in which a baby lies in the womb, that is, head down so that the head is the first part to be born in a vaginal birth

Cervix – the 'neck' or lower part of the uterus; dilates to open the uterus during normal labour, allowing the baby to be pushed out into the world

Cochrane Collaboration – organisation overseeing the provision of up-to-date scientific evidence for medical practitioners

Colostomy- an opening, temporary or permanent, into the bowel to which a bag is attached to collect bowel contents – this procedure is used for some bowel cancers and other damage or disease of the bowel

CTG - cardiotocography

Diabetes – a common condition in which inadequate amounts of insulin are produced by the pancreas, a large gland close to the stomach. Insulin controls the level of sugar in the blood; a normal level is required for optimal bodily functioning both in pregnant and non-pregnant women

DVT – deep venous thrombosis -see thrombo-embolism

Eclampsia – complication of pregnancy in which raised blood pressure leads to fits in the mother

EDC – expected date of confinement

EDD – expected date of delivery (EDC and EDD have the same meaning)

EFM – electronic fetal monitoring – recording of the baby's heart rate in the womb (see CTG)

Elective caesarean section – operation done for a valid medical indication, and for which arrangements have been made sometime before the surgery takes place

Emergency caesarean section – operation done because of the development of an abnormality during either pregnancy or labour, in a woman for whom spontaneous vaginal birth had previously been expected

Epidural anaesthesia – local anaesthetic injected into the area around the lower spinal cord and producing pain relief for either labour or caesarean section

Episiotomy – cut made by a doctor or midwife in the perineum (skin between the vagina and anus) to assist a vaginal birth

Fetus – the developing child while in the uterus

Forceps- instruments used to deliver a baby vaginally

GA – general anaesthesia

Gestation – length of pregnancy in weeks

GDM – gestational diabetes mellitus – diabetes developing during pregnancy

GP – general practitioner

Gravid - pregnant

Gynaecology/gynecology – the branch of medicine dealing with the reproductive organs of non-pregnant women, and the diagnosis and treatment of disorders and diseases of those organs (abbreviated as Gyn, Gynaecol, Gynecol in names of journals)

Haemorrhage – heavy bleeding (in this work refers to bleeding from the uterus or vagina)

Herpes – a viral infection that may be sexually transmitted

HIV – human immunodeficiency virus – the cause of AIDS

Hypertension – raised blood pressure

Hysterectomy – surgical operation to remove the uterus

Int, Inter – International (in journal articles cited)

Intrapartum – during birth

IVF – in vitro fertilisation – assisting conception by stimulating egg production by the woman, collecting eggs, fertilising eggs in the laboratory with the male partner's sperm and placing the fertilised egg(s) in the woman's uterus

J – Journal (in references)

JAMA – Journal of the American Medical Association

Malpresentation – any way in which the fetus lies in the uterus apart from head first

Maternal mortality rate/ratio – number of pregnancy-related deaths of women per 10,000 births (until mid 20th century) and per 100,000 births (since mid 20th century to present)

Membranes- the coverings of the baby and placenta in the uterus, containing the amniotic fluid which surrounds the baby

Midwifery – the branch of nursing concerned with the care of women in pregnancy and during birth, and of the mother and baby following birth

MJA –Medical Journal of Australia

MRCS – caesarean section done for maternal request (with no evident medical reason)

Multipara – a woman who has given birth to one or more babies

NEJM – New England Journal of Medicine

NICE – National Institute of Clinical Excellence – UK organisation overseeing the provision of guidelines for high quality medical practice

Neo-natal – the six week period following birth

Obstetrics – the branch of medicine concerned with the care of women during pregnancy and birth, includes both normal and abnormal pregnancies and births (abbreviated as Obstet in names of journals)

Obstetrician – medical specialist or GP with appropriate training who practises obstetrics

Oestrogen – hormone produced by the ovary and responsible for feminine characteristics

Operative vaginal delivery – birth assisted with forceps or the vacuum extractor

Ovary – organ in the female pelvis which produces both eggs (ova) and female hormones

Oxytocin – hormone produced by the pituitary gland which brings about the contractions of labour

Partogram - a record of progress in labour using a graph that is designed to show clearly when the cervix is not dilating and labour is slowing down

PE – pulmonary embolism – see thrombo-embolism

Perinatal –from the start of the birth process until the end of the first six weeks of life

Perineum - the area of skin and muscle between the vagina and the anus

Peritoneum – the clear layer of tissue covering all abdominal organs

Placenta – the plate-shaped organ that directs oxygen and other nutrients from the mother's blood into the bloodstream of the fetus in the umbilical cord; the placenta also transfers all waste products from the baby back into the mother.

PND – post-natal depression

Postpartum haemorrhage (PPH) – excessive vaginal bleeding following the birth of the baby

Pre-eclampsia – condition of raised blood pressure, swelling of hands and feet and sometimes face, and presence of protein in the urine, that occurs in pregnancy, with potential risks to the woman and her baby and possibly requiring delivery by caesarean section

Pre-term – before 37 completed weeks of pregnancy –has replaced the term 'premature' in medical practice though 'premature' is still widely used in non-medical literature

Primigravida- a woman pregnant for the first time

Progesterone – hormone produced during pregnancy that is essential for normal development of the fetus and placenta

PTSD – post-traumatic stress disorder

Rachitic – caused by rickets

RANZCOG – Royal Australian and New Zealand College of Obstetricians and Gynaecologists

RCOG – Royal College of Obstetricians and Gynaecologists

RCT – randomised controlled trial

Regional anaesthesia – epidural or spinal anaesthesia, used for caesarean section, enabling woman to be awake during birth

Repeat caesarean section- caesarean done in a pregnancy subsequent to one which also ended with caesarean birth

Rickets – disease of bone in childhood, due to deficiency of vitamin D

Stages of labour – dilatation of cervix (first stage), expulsion of the child (second stage), expulsion of the placenta and membranes (third stage)

SMH – the Sydney Morning Herald

Spinal anaesthesia – introduction of local anaesthetic into fluid surrounding the lower part of the spinal cord, causing numbness below the waist and allowing caesarean section to be performed

Syntocinon – synthetic form of oxytocin, the hormone that brings about contractions of the uterus in labour

Thrombo-embolism – formation of clots in the legs (DVT) which may then migrate to the lungs causing death or serious disability (PE)– a recognised complication of both pregnancy and surgery

Trace – the printed record of fetal electronic monitoring

Transverse lie – position a baby may take up in the uterus, lying crosswise across the mother's abdomen

UK – United Kingdom

US,USA - United States of America

Uterus – the womb, the organ in which the fetus (baby) grows

Vacuum extractor – instrument used to assist a vaginal birth; the vacuum 'cup' is applied by suction to the top of the baby's head and pulled down during the mother's contractions

VBAC – vaginal birth in a pregnancy following one in which birth was by caesarean section

1. Introduction

What is a caesarean section? In 1790 Jean-Louis Baudelocque, regarded as the most eminent French obstetrician of his time, wrote: "That operation is called Caesarean by which any way is opened for the child than that destined for it by nature. For that purpose we … cut through the common and proper coverings of the abdomen, we are … obliged to open the uterus also."[1] In the era in which Baudelocque practised, the "Caesarean operation" was rarely performed, usually only after protracted labour had failed to deliver the infant, and usually resulting in the deaths of both mother and child. It was a medical curiosity, little known among medical practitioners and even less so among the lay public.

In 1993, in *Birth's labour's lost*, an article in the *Guardian Weekly* that addressed the general public, writer Heather Welford gave a succinct description of the contemporary practice of the surgery. "Caesarean section is done under general anaesthetic or epidural anaesthetic, which leaves one fully conscious but numb from the waist down. The surgeon makes a six-inch cut in the abdomen, almost always horizontal, across the top of the pubic hairline ('a bikini cut'). A similar cut is then made in the uterus and the baby is delivered through the opening. The placenta and membranes follow. That takes about ten minutes; the stitching up takes about 30."[2] While most obstetricians would agree with the basic description of the surgery, they would be quick to point out that the operation is often complicated, that it may be technically difficult, and that there are always at least some risks for the patient. Techniques and management of various aspects of caesarean surgery form a large part of the current obstetric literature.[3] By the end of the twentieth century when Welford was writing, the caesarean section had become a generally known and frequently applied medical procedure.

Though references to abdominal birth are found from ancient times onwards, the caesarean operation has changed dramatically in the past 150 years. Up until the last decades of the nineteenth century caesarean section was an operation with a fearsome reputation and a mortality rate approaching 100% for both mothers and infants. From 1787 until 1875, of around twenty documented caesarean cases in the huge Maternité

Hospital in Paris, all had proved fatal.[4] In Britain in 1875, obstetrician Robert Barnes stated that the maternal mortality rate from the procedure was 75%, and gave his opinion that "the caesarean section occupies a doubtful place between conservative and sacrificial obstetrics."[5] So not only was the procedure extremely rare, it was hardly ever successful.

By the last years of the twentieth century the situation had changed radically. In an editorial in 1997 *The Lancet* of London reported that within Britain's National Health Service caesarean section rates varied between 11% and 18% of all births.[6] *The Lancet* informed readers that: "Obstetricians report that the desire of a woman to deliver by caesarean section influences the final decision taken … and caution that this practice could push caesarean section rates still higher." In the United States some years later an editorial in a major obstetric journal declared: "It is currently believed that the caesarean delivery rate in the United States is too high and that approximately 25% of gravid women undergo this procedure each year."[7] The writer further stated that between 1970 and 1988 the caesarean delivery rate in the United States had risen from 5.5% to 24.4% of all births. So from being a rare and almost invariably lethal procedure, caesarean section had become safe, and so common that doctors, patients and commentators all expressed alarm that it was being conducted far too frequently.

The period from 1876 – the year in which Professor Eduardo Porro of Padua performed what is regarded as the first successful modern caesarean operation -- to the present has witnessed an extraordinary change in the frequency with which caesarean section is performed, its indications and its safety. The much more frequent use of caesarean section has been accompanied by vast increases in other services for women during pregnancy and birth (including the widespread provision of antenatal care), by research with enormous advances in the investigation of fetal wellbeing and in the care of very small newborns, and by developments in anaesthetics, resuscitation, antisepsis and antibiotics that have revolutionised the practice of safe surgery. In 2009 in the developed countries of the world, caesarean section is regarded, both by the medical profession and by much of the public, as an extremely safe medical procedure likely to produce a healthy mother and a healthy child. Nevertheless caesarean section is also the surgical operation that is probably the most widely discussed and written about in the popular press throughout the world.[6,7,8,9]

Much of this discussion centres on the perception that rates of caesarean surgery in developed countries are too high, asserts that 'natural' births should be more strongly encouraged, and questions the reasons for the surgery.[8,9,10,11] Arguments generally are both heated and polarised. There are ongoing moves to reduce the rates of caesarean section in many developed countries, moves which have been instigated by medical practitioners, other health practitioners especially midwives, and consumer groups.[10,11,12,13] There has been a widespread belief amongst some consumer groups that sometimes the decision for surgery has been affected by financial considerations on the part of doctors: some studies have shown an increased incidence of caesareans amongst private patients compared to public.[14,15,16] In this view, caesareans are performed in order to increase reimbursements from private insurance companies. On the other hand clinical concerns have been used to justify these differences and health administrators have been accused of advocating lowering of caesarean rates on the basis of short-term cost-cutting alone.[6,16,17] In the *Sydney Morning Herald (SMH)* in January 2008, journalist Ruth Pollard wrote several articles warning of the potential dangers of increasing Australian caesarean rates. "The number of caesarean births in Australia," she said, "is reaching unmanageable levels, placing lives at risk and tying up thousands of hospital beds, operating theatres and health workers with a costly elective procedure. If the caesarean rate rises to 39% - which many experts fear will happen soon – it will mean thousands more surgical births each year. In a public system that is hundreds of beds and thousands of staff short, and in the midst of a mini-baby boom, that extra strain would be unbearable."[18] In a society where choices have to be made about the way funds for health care will be allocated, increased caesarean section rates can appear as a luxury item.

Much of the blame for rising caesarean rates is laid at the feet of obstetricians. Writing in *The Australian* in May 2007, Dr Sarah Buckley, "Brisbane general practitioner and mother of four", had this to say: "Many in our culture including many doctors are convinced that surgical birth is at least as safe as normal vaginal birth. This gives us a low threshold for caesareans and few reasons for women and their carers to put in the effort required for normal birth. Add in the extra convenience for obstetricians, who don't need to wait around for caesarean mothers at difficult times of the day and night, and who are much less likely to be sued, and you have a recipe for full operating theatres and empty labour wards."[19] Despite such views, it is

apparent that obstetricians *are* indeed concerned, both individually and in groups. They frequently express alarm at escalating caesarean rates and devote whole conferences to efforts to decrease these rates. The editors of *The Lancet*, quoted above, also referred to "a leading UK obstetrician" who declared, in 1997, that the projected rise in the number of women having caesarean sections is "the most urgent crisis facing obstetrics."[6] The Royal College of Obstetricians and Gynaecologists, based in London, has issued clear guidelines for the practice of caesarean section, strongly recommending that the operation be avoided if possible and that "when considering a caesarean section there should be discussion on the benefits and risks of (the operation) compared with vaginal birth specific to the woman and her pregnancy."[3] Australian obstetricians have continued to sound warnings about the situation in this country, most recently in the series of articles in the *Sydney Morning Herald*, mentioned above, that appeared early in 2008, in which Ruth Pollard reported that "many specialists have told the *Herald* that there is an increasing desire to reduce the number of elective surgical births and increase vaginal deliveries, not just to reduce dangerous complications but also to ease pressure on public hospitals and improve recovery time for women and babies." Sydney obstetrician William Walters told Pollard that "it is vital the number of elective caesareans is reduced. There is ongoing discussion looking at how normal birth can be encouraged with the view to reducing the rate of caesarean sections."[18] The concern about rising caesarean rates appears to be shared by physicians and the public alike. However this apparent consensus has not so far resulted in a decrease in the rates of caesarean sections. Moreover, there is no agreement amongst doctors, in Australia as overseas, as to what constitutes the 'correct' caesarean section rate, nor as to which operations might be the 'unnecessary' ones, although there is certainly a consensus that caesarean rates should be 'lower.'[3]

At the same time that this debate continues it does appear that the surgery itself is regarded by large numbers of women and doctors as both safe and effective.[20,21] In fact, certain commentators in medical journals have argued that planned caesarean section in healthy women may be no more dangerous, and possibly less so, than planned 'natural' birth.[22,23] For many consumer groups, and much of the general public, this situation seems ironic – how can an 'artificial' medical procedure be declared safer than a 'normal', 'natural' one? The medical commentators would point

to the fact that however 'planned' a birth may be prior to the event, 'normal' labour does not always commence in a timely fashion, nor proceed happily to the spontaneous vaginal birth of a healthy infant, and that it is quite 'natural' for women to be injured, even to die, in childbirth - 'normal' birth is only normal retrospectively.[6,20,21] Most doctors practising obstetrics would argue that most caesarean operations are performed expressly to prevent or correct adverse 'natural' outcomes. Their critics, however, would refer to the apparently increasing numbers of women who are requesting caesarean birth for no evident medical reason, and to others whose reasons, although medical, are relatively minor indications for the surgery.[8,9,18] At the same time, both sides in this argument accept the need for women to have choice in the matter of childbirth as in other aspects of reproductive health – while also agreeing that all choices offered to women should be based on sound medical evidence. These debates warrant further exploration.

In the caesarean operation are conjoined the mystery and joy of birth and motherhood, and the gravity and technology of major surgery. Increasing medical involvement in pregnancy and childbirth has been criticised by some as unnatural, yet defended by others as enhancing the quality of women's lives and health. It is unsurprising, then, that caesarean section has become the pivotal medical intervention in discussions of the medicalisation of childbirth, and indeed central to the whole debate in Western societies about the increasing role of technology in health care. I believe that a critical examination of the historical, social and political aspects of the practice of caesarean section, and of the debate that has surrounded this practice, will carry implications for the understanding of the place of technology in health care as a whole, and I will explore some of these implications in the following chapters.

Overview of the thesis

While several histories exist of the development of caesarean section up to the middle of the twentieth century there is no single history of recent developments and advances in the surgery, nor of the social and political debates around the increasing rates of caesarean section that date back at least to the early 1970s. This thesis aims to provide such a history.

In the first part of the thesis, I intend to summarise the early history of caesarean section from Greek, Roman and early Hindu times. What is known of the history of caesarean section during the early Christian era, the Middle Ages and the 17th and 18th centuries is also outlined. Most of this material has been well-documented elsewhere but I believe a synopsis of the earlier history of the surgery is needed for the reader to comprehend subsequent developments and the current situation.[24,25,26] I will provide a more detailed overview of practice by the mid-19th century, in Europe and the United States, and will examine the obstacles existing to the safe performance of caesarean section at that time — the absence of safe anaesthesia, the lack of knowledge of infection and antisepsis, the primitive surgical techniques then available, and the widespread belief resulting from Christian doctrine that women should be resigned to pain and danger in childbirth. I will also outline the methods devised to overcome these obstacles, analysing the results for the progress of caesarean surgery. Whilst this has been done to some extent elsewhere it has not been gathered in a single work and is I believe relevant to the current practice of caesarean section.

I will then provide an account of the development of the operation from 1876, the year of Porro's landmark operation, to 1950 –the mid-20th century being the point at which the phenomenon known as the 'medicalisation of childbirth' can be said to have begun. This account will include technical details (including the development of sulphonamides and antibiotics, the use of blood transfusion and improvements in anaesthesia) but will also focus on early indications for the surgery, arguments about its effectiveness and safety, the views of women themselves insofar as these are known, and cautions from medical practitioners and others about too frequent recourse to caesarean in cases of obstetric difficulty. Although the technical aspects of surgical development and the increasing safety of the procedure are individually well documented in texts and journals of obstetrics and general medicine, the social and political implications and influences have not been sufficiently investigated. There was from the early part of the 20th century a movement towards antenatal preparation for childbirth, both physical antenatal care and the provision of information for women, and this gathered strength from the 1930s onwards. I will examine the attitudes of society in general and women in particular to care in childbirth, and document specific views on caesarean section. I will end this section with a description of the situation circa 1950, a time when a number of medical innovations

that had been developed during the Second World War were integrated into general medical and surgical practice, and hence into the practice of caesarean section. There are also many primary sources dealing with the views and opinions of women towards childbirth. All this earlier history – from ancient times until 1950 - is contained in Chapter 2, which has been arranged chronologically, and is largely description drawn from primary and secondary sources, the main purpose being to provide an historical base on which the major part of the thesis is built. Wherever possible in this chapter I refer to developments in Australia as well as overseas.

In Chapter 3 I turn to the increasing medicalisation of childbirth which occurred during the years 1950-1980 approximately. The development of medical ultrasound and of biochemical methods of assessing the fetus in utero, the practices of induction and augmentation of labour, and the development of methods of monitoring the fetus in labour (electronically and by biochemical measurements) have all contributed to a widening of the indications for caesarean section and an increase in the incidence of the procedure, in Australia as elsewhere. Improved methods of treatment of certain medical conditions such as hypertension, diabetes and valvular heart disease, which meant the possibility of successful pregnancy in women who could not previously have safely contemplated reproduction, are examined. There are a number of well-researched sociological texts on the medicalisation of childbirth, especially by feminist writers, but some of these display, I believe, a limited understanding of some medical procedures.[27,28,29,30,31] While making full and appropriate references to these writings I also use primary sources such as medical journals and texts to explore further the nature and impact of various medical developments upon the performance of caesarean section.

Concurrent with the medicalisation of childbirth there were changing attitudes to pregnancy and labour on the part of doctors and midwives as well as of women themselves. Primary sources, from Australia, the United States and Europe, have been used in the examination of this topic. Views are frequently polarised, whether originating from the medical profession, the nursing or midwifery professions, or consumer advocates representing women, and this is acknowledged. I will explore the large body of feminist literature on this topic, including both non-fiction and fiction. I will also examine examples of the literature supplied to women to inform them of

childbirth practices during this period, literature which reveals the attitudes of the medical and nursing professions towards women as 'patients.' The early emergence of the movement against intervention in childbirth in the 1970s is described. There is, however, evidence to show that quite a vigorous movement existed throughout the earlier 20th century to inform women about events in pregnancy and childbirth and to promote the idea at least of informed consent, if not of 'choice' in childbirth.

In Chapter 4, I will move on to more recent developments in technology and in consumer opinion, during the period from 1980 to the present. I will discuss further specific medical developments that have affected the performance and rates of caesarean section – these are mostly refinements of earlier techniques such as fetal monitoring, and the performance of randomised controlled trials (RCTs) such as the Term Breech Trial published in *The Lancet* in 2000, which led to recommendations for caesarean section for the delivery of all breech babies.[32] The same period saw the further growth of the movement against intervention in childbirth and against caesarean section in particular. This movement and its various strands of opinion and action – by midwives, consumers and physicians – I intend to examine in great detail. In particular I will look at the concept of 'choice' for women in pregnancy and childbirth and the apparent conflict between a woman's right to choose certain procedures affecting her reproductive health, and the responsibilities of health professionals to provide evidence-based care. The role of evidence-base medicine and that of the RCT in increasing the incidence of caesarean surgery will be explored in Chapter 5.

In Chapter 6 I will turn to the role of medical litigation in contributing to rising caesarean rates. The increasing frequency of medical litigation and the associated costs in much of the developed world, and the effects of litigation upon medical practitioners themselves, are widely believed to have influenced rates of caesarean section. This phenomenon will be examined including changing attitudes on the part of consumers and the general public that have contributed to an increase in litigation. Among these is an increasingly widespread belief in parents' 'right' to a 'perfect' child, a belief linked to growing control of women over their reproductive capacities with the introduction of more reliable methods of contraception, better treatments for infertility and more involvement of women in the paid workforce. The desire of

obstetricians themselves to have a more normal lifestyle, without the constant demand to be available for both routine and emergency work at all hours, has also modified the practice of obstetrics including the practice of caesarean section and this I will also explore in Chapter 6.

A brief overview of current practice of caesarean surgery, and the reasons given for this surgery throughout the developed world, is included in Chapter 7. I will discuss the concept of the 'correct' caesarean section rate, a concept which has been much referred to by both medical and non-medical protagonists in the caesarean debate, but one which to date has not been adequately defined. This will include an examination of the phenomenon of caesarean section on maternal request, with no medical indication, a practice which has caused much debate in both the medical and the lay press, in Australia in particular. Among some 'consumers' there has been strong support for a woman's 'right to choose' caesarean birth, and central to the debate on caesarean section rates is the question: should the operation be provided to women simply on request, or should medical indications always be present? Partly in answer to this question, I will, in Chapters 7 and 8, look at what the risks of caesarean section are for women at the beginning of the 21st century.

In this part of the thesis I will also refer briefly to caesarean section rates in many less developed countries and the fact that these generally reflect a lack of adequate obstetric care for most women in these countries. At the same time, in urban areas of countries undergoing rapid industrialisation, such as China and India, there has been a dramatic increase in caesarean rates in the past decade, and I will discuss the implications for these populations.

Vaginal birth after previous caesarean section -VBAC - I will deal with at length in Chapter 9, since the debate about the merits and disadvantages of VBAC is an intrinsic part of the current caesarean debate as a whole, and repeat caesarean section (that is, a subsequent caesarean section in a woman who has previously given birth this way) is a major contributor to the present Australian caesarean rates. There is currently in Australia, as elsewhere, a very active movement on the part of consumers, doctors and midwives to promote VBAC to women who have previously had a caesarean section.[18,33,34] More recently, this practice and its safety have come to be

questioned, particularly in the United States. I will include a detailed history of the development of the practice of VBAC since the 1890s. This is a subject which to date has not been dealt with in any publication in the medical literature in English, nor in histories of obstetrics. I undertook a large amount of original research using primary sources in order to study the physical consequences of caesarean section and the development of VBAC. Reporting on this research and discussing its implications for the current practice of caesarean surgery takes up much of this chapter. I will then examine the continuing polarisation of the present caesarean debate in terms of attitudes to VBAC.

The thesis will conclude in Chapter 10 with a summary of the various strands of argument, an overview of the current situation and some expectations for future directions of the surgery.

In the history of caesarean section, medical developments and social changes have always been intertwined. I expect that the history of the development of the operation during the nineteenth century can be viewed with some reliability by simply examining a chronological record of events. It was essential that the problems of pain relief during surgery, antisepsis, poor surgical technique, and social and religious opposition to intervention in childbirth, be overcome before caesarean section achieved sufficient safety to be offered even to a small number of women. The medical practitioners and scientists involved in all these developments may have been guilty of a certain degree of paternalism or authoritarianism in their approach to their experiments with patients; professional kudos and financial gain may have also been part of their motivation, but recorded history also supports a strong desire on the part of these men to improve outcomes for women experiencing complications of childbirth.[25,26] This was a pattern of behaviour and practice that continued until the mid-twentieth century. Significant improvements in medical and surgical techniques occurred in this time that influenced the practice of caesarean surgery; in the same period the care of women in childbirth came to be dominated by (mostly male) doctors who more and more were specialists in obstetrics. There were also gradual improvements in women's social position that to some extent allowed them to participate in decisions about their health care including that in childbirth.

From the 1950s onwards there was rapid growth in the application of technology to health care in general. This process of medicalisation was accelerated in all aspects of pregnancy and birth care, but equally importantly, in the realm of women's reproductive health as a whole. Within twenty-five years women gained reliable contraceptive options in the form of the oral contraceptive pill, safe intra-uterine devices, and sterilisation; in many countries they also gained the right to safe legal abortion. More recently these trends have continued, with the added possibilities of effective and highly technological treatments for infertility, in particular in-vitro fertilisation, and the development of more and more successful techniques for the medical support of very premature newborn babies. All these developments have encouraged women, and their partners, to rely on medical technology in the management of their lives and those of the families they rear. At the same time the broader feminist movement has led to women's gaining greater control of their lives with improved access to tertiary and professional education, careers and employment opportunities, and the possibilities of divorce and/or single motherhood without the social opprobrium previously applying to these situations. This paradigm shift in how women perceive their lives, and how they are in turn perceived by men, has contributed to a greater assumption by women of their right to make their own decisions about how many children they will bear, and when and how they will do this. A further impetus to this process has been the growth and strength of the movement against medical intervention in childbirth and the push towards 'natural' childbirth that began in the 1980s. However the demand for 'choice in childbirth', while it led some women to reject caesarean section, led others towards a conscious decision to choose the operation. The growth of medical litigation has also been in part a response to women's beliefs in their right to a 'perfect' child, and the threat of litigation, when a pregnancy outcome is less than 'perfect', has then taken on its own role in the process of increasing caesarean section rates. My conclusion is that these multiple developments and trends have resulted in a body of information and social pressures that now cause women in general, at least in developed nations and in the more urbanised and industrialised areas of many less-developed countries, to be more informed, concerned and assertive than in previous years, and more involved in decisions about childbirth. Some of these women are more likely either to acquiesce with their carers in the decision to give birth by caesarean section, or actually to request the surgery.

Methodology

In carrying out the research for the thesis I have firstly conducted a systematic reading of a number of medical journals and textbooks from 1850 to the present and read through books and articles directed at pregnant women ('consumers') from the 1870s onwards. Substantial collections of these exist in the Wellcome Library of Medical History, London, the Library of the Royal College of Obstetricians and Gynaecologists, London, the Library of McMaster University, Hamilton, Canada, and the archives of the Royal Australian and New Zealand College of Obstetricians and Gynaecologists, Melbourne. All of these collections have been accessed personally during the collection of material 2003-2007.The mainstream media of Australia, the United States and the United Kingdom have been studied through systematic reading of newspaper and popular magazines and journals in the collections of the libraries of Sydney, Melbourne, Macquarie and James Cook Universities. Much reliable material is now also available on the Internet. Referencing throughout the thesis uses the Vancouver system. The references for each chapter follow that chapter. All journal and magazine articles have page numbers. Where books have been used there are page numbers given where facts are referred to or quotes used in the text; where a general concept or opinion is expressed by the author throughout or in many parts of the book, only the title and publications details of the work are supplied.

In addition I have used my own research interviewing specialist obstetricians on their views of caesarean surgery, and their experience of the threat of litigation or of actual litigation by patients, in the event of a less than perfect outcome. Further recent and relevant research has been carried out on the practice of caesarean on maternal request by Associate Professor Steve Robson of the Australian National University, and on women's views of their own caesarean experience by Ms Lynne Staff, Queensland midwifery educator and researcher.

Two further points about the text should be made. In recent years it has become customary in medicine to drop the capital 'C'in the spelling of caesarean – quotes from older texts will still speak of 'Caesarean section', but more recent ones use 'caesarean.' 'Caesar' with a 'C' in the thesis refers only to Julius Caesar and his

family, 'caesar' is the abbreviation, used both by medical personnel and by the general public, for the operation. The American spelling of 'cesarean' is used in direct quotes from American material.

Furthermore, the difference between an *elective*, and an *emergency*, caesarean section, requires explanation. An *elective* caesarean is one that is planned to take place, for a medical reason, some time before it actually occurs. Examples are caesareans done when the baby is known to be in the breech position, or where the woman has previously had two or more children by caesarean. An *emergency* caesarean is one done either in pregnancy or in labour because a serious medical problem has arisen, urgently or semi-urgently: examples include a sudden rise in the mother's blood pressure in late pregnancy, or the baby becoming distressed during labour. What was planned as a normal vaginal birth instead becomes a caesarean within a relatively short space of time. 'Elective' caesarean does not imply that the operation is being done simply because the woman has asked for this for no strong medical indication – a procedure of this type is described as '*caesarean on request.*'

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2. The history of caesarean section - from Antiquity to the mid- twentieth century

This chapter looks at the history of caesarean section from ancient times up until the middle of the 20th century, and is divided into three parts – pre-history, early development of the modern operation in the period 1876-1920, and improvements in techniques and safety occurring in the years 1920-1950. 'Pre-history' looks at myths and stories of abdominal births that date from Classical times, or are present in the early writings on which are based many of the world's great religions. Although some medical accounts of early caesarean births exist, such births were rare until the last decades of the 19th century, and were almost invariably fatal for mother and child. Yet the idea of abdominal birth clearly fascinated the imagination of earlier peoples, who would often have witnessed tragic outcomes to failed natural birth. From the middle of the 19th century onwards, experimentation with anaesthesia, the development of better surgical techniques, the introduction of germ theory and the subsequent knowledge of the need for antisepsis in surgery all contributed to radical changes to surgical practice that were soon applied to caesarean birth. The first successful 'modern' caesarean section is widely regarded as being performed by Eduardo Porro in Padua in 1876. Between that date and the conclusion of the First World War, there were major improvements in the techniques of caesarean section that rendered the operation safer, and therefore more frequently performed. Further advances including the use of transfused blood, intravenous therapy and the development of antibiotics meant that by the middle of the 20th century the operation was being performed in developed countries, with good results, for about 7% of all births.

Pre-history of caesarean section

The name 'caesarean' does not derive, as is commonly believed, from that of Julius Caesar, nor was the man born by caesarean section. His mother, Aurelia, was alive and well at the time he was campaigning in the Gallic Wars, since he addressed many letters to her.[1] Had she been delivered by caesarean section, in 100 BC, in a pre-anaesthetic and pre-antiseptic era, she would certainly not have survived.

Caesarean section was evidently performed for many centuries in Rome before the Caesars assumed power. Around 715 BC the second King of Rome, Numa Pompilius, instigated the Lex Regia by which it was forbidden to bury a pregnant woman until her infant had been delivered, in order that the child might be buried separately.[2] This law persisted until the time of the Caesars when it became the Lex Caesarea, a possible reason for the use of the name 'caesarean.' A further quite plausible explanation derives from the Latin verb 'caedere' – to cut. Infants delivered from dead mothers were known as 'caesones' – cut from the mother. Most of these children would have been stillborn as such deliveries were only performed after the death of the mother.[3] However occasionally, if the caesarean were performed very soon after death, the infant might survive. It is known that Julius was not the first of the Julian family to have been called Caesar and it has been surmised by early obstetricians that an ancestor was born in this way and named Caesar.[3] In other words, the man was named for the operation, and not the operation for the man, although the name continued to be passed on through the family.[4,5,6]

It is probable that the caesarean operation was performed occasionally, on dead women rather than living, in most early civilisations. The idea of abdominal delivery is present in several ancient myths and legends. In Greek mythology, Aesculapius, the god of medicine, was said to have been delivered in this way. The operator was his father, the god Apollo, who drew Aesculapius from the belly of his mother, a nymph named Coronis.[7] Coronis had just been slain by Apollo for alleged infidelity. Zeus is said to have torn the infant Dionysus from the womb of his dead mistress Semele.[7] According to Hindu traditions, the god Brahma was born in a lotus flower from the umbilicus of Vishnu, and among the ancient Hindus caesarean section was performed post-mortem if movements of the fetus could be detected.[3,8,9] Buddhists believe the Buddha to have been delivered from the right flank of his mother Maya.[8]

Two early Jewish collections of writings mention the operation of cutting the child from the mother. The Mischnejoth, thought to have been published around 140 BC, states that: "In the case of twins, neither the first child which shall be brought into the world by the cut on the abdomen, nor the second, can receive the right of primogeniture."[6] The Talmud, dating from the same period, mentions the operation of

"kariyath habbeten," or opening of the abdomen, to deliver the child. In both cases it is assumed that the reference is to post-mortem caesarean section.[2,6,10]

That the concept of caesarean delivery was appreciated by the lay public, at least in Elizabethan times, is shown in its use by Shakespeare as a key feature of the plot of *MacBeth*.[11] In Act I the witches predict that MacBeth himself can only be undone by an enemy 'not of woman born.' MacBeth scoffs at this. Confronting MacDuff, in Act V, he declares:

I bear a charmed life, which must not yield, to one of woman born.

To which MacDuff scornfully replies:

Despair thy charm
And let the angel who thou still hast served
Tell thee, MacDuff was from his mother's womb
Untimely ript

With some poetic licence, Shakespeare sees MacDuff as an early example of successful post-mortem caesarean section. In Shakespeare's time, caesareans were rarely performed, but the operation spoke to the public imagination.

Early medical accounts of caesarean sections 1500-1876

The first medical account of the operation on a living woman is given in Rousset's Hysterotomotokie of 1588, the operation itself being said to have taken place in 1500.[2,12] Jacob Nufer, a Swiss swine-gelder, operated on his own wife after she had been in labour many days with the couple's first child. Nufer's desperate action followed several attempts by midwives and barbers to deliver the woman. He is credited with successfully delivering the child, using his swine-gelding instruments, but as his wife went on to have several more spontaneous vaginal deliveries modern obstetric knowledge suggests that in fact the case was one of advanced ectopic pregnancy, the child developing within the abdominal cavity rather than in the uterus.[12,13]

Rousset nevertheless understood the potential advantages of being able to perform delivery by the abdominal route in cases where vaginal delivery was impossible, including the then theoretical possibility of saving both mother and child. His book is

a clear and concise text on the subject and mentions seven cases of reported successful caesarean section in living women during the 16th century although details of these are scarce and none of these accounts could be reliably confirmed from other sources.[12,13,14] There was much opposition to Rousset's ideas from his colleagues.[12,13] The great French surgeon Ambroise Paré wrote that "I cannot sufficiently marvel at the insolency of those that affirm that they have seen women whose bellies have been cut and the infant taken out, when it could not otherwise be gotten forth, which thing no man can persuade me can be done without the death of the mother."[15]

The first authentic case of caesarean section intentionally performed upon a living woman was carried out in 1610 by Dr Trautmann in Wittenberg, Germany. Details of the surgery were recorded by Professor Sennert of the University of Wittenberg, who was present.[2] The woman had a large hernia of the abdominal wall, through which the pregnant uterus protruded; this made normal vaginal delivery impossible but it greatly assisted the caesarean operation, since the amount of tissue that needed to be cut through to deliver the child was both thin and bloodless. Professor Sennert described the operation thus: "The gracious help of God was first of all implored. In addition to the surgeon, there were present the Archdeacon, two midwives and several other honourable women." The incision of the uterine wall was "not very painful" and both mother and child initially survived the operation although the mother died 25 days later from sepsis.[2]

Throughout the seventeenth and eighteenth centuries there are sporadic reports of successful caesarean sections on living women but it is clear from contemporary writers that there were many more unrecorded cases in which both mother and child died after prolonged anguish. One authenticated case concerns an Irish woman, Alice O'Neale, who after labouring in vain for twelve days was delivered by a neighbour, Mary Donnelly, "an illiterate woman but eminent among the common people for extracting dead births."[2] Mary made a cut on Alice's abdomen, extracted the dead infant, sewed up the incision in the abdominal wall with tailor's silk, and dressed the wound with egg white. Alice made a good recovery. But the eminent Dublin obstetrician Fielding Ould, in his *Treatise of Midwifery*, published in 1742, roundly condemned the caesarean operation: "I have taken upon me absolutely to explode the Caesarean operation as repugnant not only to all rules of Theory and Practice but even

of humanity."[16] However the even more eminent William Smellie, described by his publisher as a "Master of British Midwifery" took a more measured view: "When a woman cannot be delivered by any of the methods hitherto prescribed and recommended in laborious and preternatural labours, if the woman is strong and of good habit of body, the Caesarean operation is certainly advisable and ought to be performed, because the mother and child have no other chance to be saved, and it is better to have recourse to an operation which has sometimes succeeded than leave them both to an inevitable death."[17] Smellie's personal experience of caesarean birth, in a lifetime of obstetric practice, was limited to three cases in 1747-48, in which he performed the operation post-mortem in cases of severe haemorrhage; none of the infants survived.

In the first half of the nineteenth century, in accordance with other attempts to put surgical practice on a more scientific basis, attempts at caesarean section became more frequent, more commonly on the Continent than in Britain and the United States. There are isolated reports of successful outcomes as far as mothers were concerned but the operation was always fatal for the child, because the surgery was always performed after hours or days of obstructed labour. Because of the low survival rates, caesarean delivery was regarded with great disfavour by the medical profession generally. It was believed that operations to destroy, dismember and remove the child by the vaginal route were preferable although these also frequently resulted in the death of the mother. In the words of one writer of the time: "We have repeatedly condemned the unjustifiable disregard of maternal life in various countries on the Continent as exhibited in the readiness with which the medical men perform the frightful operation of Caesarean section."[18] So caesarean sections were very risky not only for mother and child, but also for the reputation of the physician who performed them.

Medical barriers to successful caesarean delivery

There were four main barriers to the successful performance of caesarean delivery facing practitioners in the first decades of the nineteenth century. Firstly, there was no safe and effective form of anaesthesia. Although experimentation with both ether and nitrous oxide date back to the late eighteenth century, no real understanding of the

possibilities of anaesthesia yet existed. Practitioners performed operations as quickly as possible using laudanum or other opiates, with or without alcohol, as analgesia, and depended on assistants or the patient's relatives to hold him or her down during surgery.[19]

The existence of bacteria as the cause of intra-operative and post-operative infection was unknown, and hence the need for antiseptic and aseptic precautions during surgery were not understood. There were some practitioners who intuitively and from experience comprehended the need for cleanliness and hygiene during medical procedures but no systematic principles for the cleansing of hands, skin and instruments were in existence.[20] There was thus a high death rate from the post-operative infective complications of all types of surgery. This applied particularly to recently-pregnant women following both operative vaginal delivery and caesarean section, since the post-partum uterus was easily invaded by pathogens from the bowel and vagina and from the hands of attending midwives and doctors.[21,22]

In addition, the techniques needed for the safe performance of caesarean delivery were not understood. While those attempting caesareans prior to the mid-19th century understood the need to suture the abdominal wall, and attempted to do so, all believed also that the uterus, by contracting down naturally following the delivery of the child and the placenta, would thereby prevent excessive blood loss from the incision made into it to perform the surgery.[2,13,14] This is not in fact the case – in current practice the uterine incision is closed and all bleeding controlled before closing the abdomen. As a result of this misconception many women undergoing attempts at the caesarean operation perished post-partum from severe haemorrhage.

Finally, in all societies with a Judeo-Christian tradition, there was a widespread general belief, also quite prevalent amongst the medical profession, in a literal interpretation of the Bible. The Book of Genesis, it was believed, made clear that it was women's lot to suffer during childbirth, when it stated that God had said to Eve as she left, weeping, from the Garden of Eden: "I will greatly multiply thy sorrow and thy conception; in sorrow thou shall bring forth children."[23] It was concluded that any attempt to relieve pain or improve outcomes for mothers and babies by 'artificial' methods would contravene the will of God; there was strong opposition to the idea of

drugs for pain relief in labour and by extension opposition to the concept of abdominal delivery.[24]

All these factors played a part, in the first decades of the nineteenth century, in limiting attempts at caesarean section to a small number of practitioners, and in maintaining a maternal mortality rate from the surgery of around 60%.[2,3,10,12] It was well understood by those who attempted the operation that the earlier in labour it was done the more likely it was that the mother would survive, but the reason for this, the development of infection during labour, was poorly appreciated. By the middle of the century there were several series of cases on both sides of the Atlantic but the operation still had a poor reputation. Fortunately for the lives and health of women everywhere, great changes were imminent.

The development of caesarean section 1876-1920

The first development impacting on the safety of caesarean section was the introduction of anaesthesia for surgery generally. As already mentioned, various individuals had experimented with the use of ether and of nitrous oxide for inducing unconsciousness from which the subject could be awakened in good health. However dentist William Morton of Boston, who was responsible for the first successful public demonstration of ether as an inhaled anaesthetic, is usually considered to be the inventor or at least the 'revealer' of anaesthesia. In September 1846, Morton performed a painless tooth extraction after administering ether to a patient. This procedure led to the demonstration of 'pain-free surgery' in October 1846, in the amphitheatre of the Massachusetts General Hospital.[19] At this demonstration Dr. John Warren painlessly removed a tumour from the neck of a 54 year old printer, after Morton had administered ether from an apparatus of his own design. News of Morton's success spread rapidly throughout America and Europe. In London Dr John Snow began to experiment with ether, firstly on himself and then on dental patients. He soon had the largest 'ether practice' in London.[25,26] Snow was one of the first physicians to study and calculate dosages for the use of ether as a surgical anaesthetic, and in 1847 he published an article on ether entitled *On the Inhalation of the Vapor of Ether*. He quickly appreciated the possible advantages of the drug to women suffering the pain of childbirth and this led him to study the effects of chloroform as well.[27,28]

Another important pioneer of obstetric anaesthesia was James Young Simpson. Like Snow, he tried ether for women in childbirth, in 1847. He was soon however experimenting with chloroform and this quickly became the drug of choice, because it was much more rapid in its effects and had a less disagreeable odour than ether.[28] The use of anaesthesia in childbirth was given great support when Queen Victoria tried it for the birth of her son Prince Leopold in 1853. The anaesthetic was administered by John Snow and the Queen pronounced its effects as 'wonderful!' Subsequently, chloroform for childbirth became known as 'anaesthesia *à la reine*.' A long work by Snow was published posthumously in 1858 entitled On *Chloroform and Other Anaesthetics, and Their Action and Administration.*[25] By the mid 19th century the use of chloroform was widespread. A fashionable London obstetrician, Henry Pye Chavasse, who wrote one of the first books about pregnancy expressly intended for reading by pregnant women, waxed lyrical about the attributes of chloroform: "Oh, the delightful and magical effects of it!" exclaimed Chavasse. "The patient has seldom, if ever, been known to die from (chloroform), and the child, when it is born, is both lively and strong."[24]

James Young Simpson also took on the proponents of Biblical literalism who, accusing Simpson of attempting "to contravene the devices of an all-wise Creator" opposed the introduction of chloroform in childbirth. "All pain is per se and especially in excess, destructive and ultimately fatal in its nature and effects," wrote Simpson, and to counter the arguments of his opponents he himself also turned, shrewdly, to Genesis.[23,24] God, argued Simpson, in creating Eve from Adam's rib, had put Adam into a deep sleep, thereby condoning anaesthesia. Thus, wrote Dr Chavasse, did Simpson "triumph over ignoble and ignorant prejudice." With the introduction of chloroform and other anaesthetics for vaginal births, the possibility of using these agents for anaesthesia during caesarean section also became a realistic one.

From the 1840s onwards there was also the dawning of understanding of the transmission of infectious agents and the emergence of the concept of 'germ theory.' Oliver Wendell Holmes in Boston and Ignaz Semmelweis in Vienna independently realised that human vectors, in the form of doctors and midwives, were in some way responsible for the transmission of puerperal sepsis – 'childbed fever' – which occurred in epidemics in all maternity hospitals in Europe and the United States, and

was responsible for a high maternal mortality rate.[21,22,29] Holmes published his work in 1843, Semmelweis in 1846, but at the time neither was aware of the other's insights. Both physicians strongly counselled that all attendants of labouring women wash their hands and take other hygienic precautions; as a result the incidence of puerperal sepsis amongst patients under their care dropped dramatically. However, both found their colleagues reluctant to adopt their principles and frequently downright hostile. A prominent American obstetrician, Charles Meigs, poured scorn on Wendell Holmes' theories: "Doctors" said Meigs, "are gentlemen, and gentlemen's hands are clean!" Semmelweis was dismissed from his post in Vienna, and though he received some recognition in his lifetime, died in an indigent state in an asylum in 1865.[21,29]

Somewhat later, in Scotland, Joseph Lister experimented with antiseptic surgery after he became acquainted with the work and germ theory of Louis Pasteur, who had made the connection between bacteria and infection.[30] In 1865 Lister began to use carbolic acid to sterilise instruments, suture material and the hands of surgeons and their assistants. The mortality from surgery in his wards in Edinburgh fell from 45% to 15% as a result. But again, not all his colleagues were immediately convinced. For at least thirty years, 'Listerism' was considered a doctrine that some believed in and some did not, a kind of religious conviction rather than an important piece of scientific evidence. Lister lectured at King's College Medical School, London, in 1877, but his lecture was poorly attended since the students knew they would fail their exams if they advocated Listerism.[31]

While it took until the 1890s for Listerism to be completely accepted in general surgical practice, it was however adopted relatively early by most practitioners experimenting with caesarean surgery, who were quick to appreciate the promise of Lister's assertions.[31] At a meeting of the Obstetrical Section of the Royal Academy of Medicine in Ireland held on November 27 1891, the President, Dr Horne, gave a short resumé of the history of caesarean section, and "paid a tribute of respect to Lister, as having restored the caesarean section from the limbo to which it was consigned to its proper place in the surgical art by means of antiseptics."[32] With these new developments, which made safe surgery possible, caesarean section also became a real possibility.

The first modern caesareans

With anaesthesia and antisepsis becoming established parts of the medical repertoire, the way was open for surgeons to seek to develop their techniques in caesarean as in other forms of abdominal surgery. There were several attempts at the procedure during the 1850s and 1860s. However credit for the first successful operation on a living woman, resulting in a live and healthy baby, generally goes to an Italian professor of obstetrics, Eduardo Porro, who practiced in Padua and first performed what became known as Porro's procedure in that city in 1876. In his substantial obituary in *The Lancet* of August 2 1902, Porro was praised as "a necessary link in the chain of obstetrical progress."[33]

Porro's procedure differed from both the classical and lower segment caesarean sections practiced today. An 1878 account, in English, describes Porro's initial preparations: "In 1874, Professor Edward Porro of Padua, having succeeded in preserving the lives of animals from which he had removed the gravid uterus, decided that, as soon as a chance offered, he would add to the Caesarean section as a completive measure the ablation of the uterus and its appendages. The sought-for opportunity presented itself on the 21st May 1876."[34] The patient was a 25-year-old woman in her first pregnancy, dwarfed due to childhood rickets; she was only 57 inches tall and the diameter of her pelvic brim, through which her full-term infant would have to pass in the process of vaginal birth, was less than 3 cm – the normal average today is 11-12 cm. Porro, using carbolic acid under strict Listerian principles and chloroform anaesthesia, incised first the abdominal wall and then the uterus, extracting the living child followed by the placenta. He then performed a sub-total hysterectomy, an astute plan since removing the uterus removed the source of postpartum bleeding and infection, the two main causes of maternal death.[35] The stump of the cervix was exteriorised in the lower end of the abdominal incision, and eventually sloughed off – this enabled all potentially infected material to be drained from the abdominal cavity thereby contributing greatly to the success of the operation.[36]

Porro's operation also effectively sterilised the woman, and so prior to performing the surgery he sought, and obtained, a dispensation from the Bishop of Padua. Porro's procedure was soon being performed throughout Europe and the United States; by 1884 the English obstetrician Clement Godson had compiled a series of 134 cases, and the maternal mortality rate for the procedure in 1883 was reported as 35%, a remarkable improvement on the death rate from caesarean surgery just twenty years previously. Porro's procedure continued to be used, particularly in infected or potentially infected cases, up until the 1930s.[36]

Meanwhile in Germany two other obstetricians, Max Sanger and Ferdinand Kehrer, were trying a different approach. Like Porro, they still made their initial cut through the skin up and down, from navel to pubic bone, and the cut in the uterus was also vertical. But once the baby and placenta were delivered, they each independently developed techniques to close the cut in the uterus– the first with sutures of silk, the second with wire. They then closed the abdomen, again with wire or silk, which was removed when skin healing was complete. These operations were much more like the caesarean section that is done today than was Porro's procedure. Both Sanger and Kehrer were successful with this surgery – in Sanger's original series of 16 women, which he published in 1882, 15 mothers and all the babies survived, a remarkable result.[2,3,6,10,37]

Once this work was published, the use of the caesarean section, like that of Porro's operation, spread rapidly. From the mid-1880s there are reports of the operations being performed all over the British Isles and the Continent, in North America and in Australia.[38,39,40,41] Refinements in technique, types of suture material, choice of anaesthesia and other details were soon being vigorously discussed in *The Lancet* and the *Journal of the American Medical Association*. Among other developments, in Baltimore in 1890 surgeon William Halsted introduced the use of rubber gloves which could be sterilised prior to surgery.[42] In the *British Medical Journal* in January 1889, Dr Murdoch Cameron reported the first successful caesarean section in Scotland, in the Glasgow Maternity Hospital; the child, a boy, was christened Caesar Cameron.[43] One particularly poignant report comes from 1901 – Professor Sinclair of Manchester described ten caesarean operations he had performed with no maternal deaths.[44] Nearly all were on women with childhood rickets or other causes of a greatly

narrowed pelvis – one woman had suffered her five previous pregnancies ending in destructive operations on the fetuses, since she was completely unable to have a vaginal birth. The baby born by caesarean section was her first living child.

Not all caesareans were performed in hospitals. In December 1882, in *The Lancet*, Dr Clement Godson reported successfully performing a caesarean delivery in a lodging house in Islington, London – the mother's height was just over four feet as a result of her having been run over by a horse and cart in her childhood, but she was safely delivered of an 8½ pound female infant in good condition.[45]

The first planned caesarean section in Australia was performed by Dr John Cooke, at the Alfred Hospital in Melbourne, in 1885; it was done for cancer of the vagina potentially obstructing labour.[46] Carbolised silk was used to close the midline uterine incision; the mother survived and left hospital quite well. Prior to this, several unplanned operations had been performed on women thought to have large ovarian cysts, the pregnancy being discovered only when the abdomen was opened. The first caesarean section at the Women's Hospital in Melbourne, performed by Walter Balls-Headley in 1886, was a Porro's procedure on a "rachitic dwarf" – it was a complete success.[46,47]

By the end of the 19th century, throughout much of the industrialised world, caesarean section was now an option for a small number of women. During the last two decades of that century, the caesarean operation was exclusively confined to women whose pelvises were so contracted, by rickets or other disease or accident, that vaginal birth was impossible. This meant that in the large hospitals of Europe and the United States caesarean rates were around 1% or less. But by performing the surgery within a few hours of labour commencing spontaneously, surgeons were able to reduce the maternal mortality rate to around 5% by 1900, and the fetal mortality to less than 1%, which should be considered to be remarkable results.[48,49] Writing in 1913, the author of a highly regarded textbook said: "The earlier writers in the last half of the nineteenth century spoke very disparagingly of Caesarean section and looked upon it as a last resort in desperate cases. When antisepsis came in, and when cases began to be properly selected, the proportion of successes began to rise, until at present it has

reached a comparatively encouraging figure."[3] So caesarean section had become an accepted practice in a small number of cases, which could be safely performed.

Patient perspectives

What did the women who underwent this surgery think of it? In *Sex and Suffering*, her history of the Royal Women's Hospital in Melbourne, Janet McCalman describes the "rachitic dwarf" operated on by Dr Balls-Headley - referred to in his account of the procedure as "C.C." – as "too angry and frightened to speak."[47] However, once the operation was over and she was recovering, she and her child "thrived, the infant gaining a pound in weight during her first six weeks." The mother named her daughter Porrina Balls-Headley C., suggesting that she was happy with the outcome of her surgery, though no more is known of her subsequent life. It seems safe to assume also that those many women who had undergone destructive operations and the births of dead infants in previous pregnancies were happy with the results of caesarean operations that resulted in live and healthy offspring. Certainly the views of many women who suffered long labours ending in stillbirth or neo-natal death for their infants, and subsequent chronic ill-health for themselves, have been well-documented in many accounts. In *Maternity-Letters from Working Women*, a collection compiled by Margaret Llewellyn Davies, Secretary of the British Women's Co-operative Guild from 1889-1921, 160 women related their experiences of childbirth over that period.[50] Letter number 137 is entitled 'Five stillbirths':

"Through being left without a mother when a baby, I, at the age of sixteen, lifted weights that deformed the pelvic bones, therefore making confinement a very difficult case. I have five fine healthy girls but the boys all had to have the skull-bones taken away to get them past the pelvis. Always a case for two or three doctors, so you will know I have suffered something. I wish more could be done to train young girls to be more careful. Over my first baby I was eleven months before I could walk again. I suffered most with sickness and swollen legs, terrible bad carryings." And the writer of letter number 95 states that "The (first) birth was a forced one…that night is too terrible to go through even now after twenty-eight years. Suffice it to say that next morning there was born a poor little baby boy with a very large swollen head

dreadfully cut, and a young mother dreadfully cut also."[50] Clearly both these women and their children would have benefited from the availability of caesarean section.

Twentieth century developments in caesarean surgery

In the last years of the nineteenth century, as caesarean surgery became safer, the operation began to be considered for reasons beyond reduced maternal pelvic diameter, and indeed the first three decades of the 20th century saw a rapid widening of the indications for caesarean section.[2,51,52,53] The first of these was placenta praevia, a condition in which the placenta develops low in the uterus, obstructing the passage of the child into the outside world by natural means, and leading inexorably to the death of the mother from haemorrhage if labour continues. Until the 1890s various complicated obstetric manoeuvres were used by the vaginal route to try to stem the haemorrhage and deliver the baby although fetal mortality was close to 100% and maternal mortality not much better.[2,51,54,55] In 1890, Dr Lawson Tait of Birmingham, well-known as a gynaecological surgeon but less interested in midwifery, published a paper in which he recommended caesarean section for major degrees of placenta praevia. "I should thereby save the child with certainty. I should relieve the mother with perfect safety from death by haemorrhage," wrote Tait.[54]

His suggestion was regarded by his colleagues as so ridiculous as to be barely worth comment. Every contemporary obstetrician believed that women with placenta praevia should be delivered vaginally and every practitioner regarded his personal performance in this area as evidence of his considerable obstetric skills. However, in 1898, Tait was called to see a woman suffering severe haemorrhage from placenta praevia, in whom attempts at vaginal dilatation had failed. He proceeded to carry out a "Tait-Porro" operation, delivering the child through a midline incision in the uterus then performing a hysterectomy which "removed all the tissues in which large sinuses were present." Both mother and baby did well post-operatively but unfortunately the child died at one month from bronchitis.[55]

Despite this success, Tait's British and European colleagues were unconvinced of the need for caesarean delivery in all but a few cases of placenta praevia, and remained sceptical for the ensuing twenty years. There was furious debate. In 1902 the

influential British obstetrician Munro Kerr stated that those who advocated caesarean section in placenta praevia "were ignorant of proper obstetric methods" and Murdoch Cameron from Glasgow described them as "surgeons with little or no experience in obstetric practice."[56] A review article of 1904 still regarded conservative management and vaginal delivery as the mainstay of treatment, except in cases where a central placenta completely covered a rigid and undilated cervix.[57] Maternal mortality with such conservative practice was 18% and fetal mortality 60-75%. As late as 1908 Robert Jardine, Professor of Midwifery at Glasgow, after performing a caesarean for a complicated case of twins and placenta praevia, emphatically stated that "caesarean section has been recommended in all cases of placenta praevia, but I would never feel justified in doing it in an ordinary case."[58]

In the United States similar sentiments were expressed. At a meeting of the Association of American Gynecologists and Obstetricians in 1901, Dr E.G Zinke spoke strongly in favour of the procedure, citing the low fetal mortality (25%), although he cautioned that "to advocate caesarean section in all cases of placenta praevia would be a grievous error."[59] Zinke's views were strongly opposed by most of his audience and by many American obstetricians, including Edwin Cragin, still remembered today for his dictum "once a caesarean always a caesarean." Dr Cragin believed that the only legitimate indication for a section was a pelvis greatly contracted by the childhood disease of rickets.[60]

Gradually, however, opinion changed. By now saline solution could be instilled rectally or into the cellular tissues of the armpit to treat shock in cases of placenta praevia with heavy bleeding; this measure to improve the general well-being of women with placenta praevia meant that caesarean section could be better tolerated as well.[57] Describing a case of "Central Placenta Praevia Successfully Treated by Caesarean Section" in 1912, William Macfarlane of Glasgow made a plea for more liberal use of caesarean in the condition.[61] By 1916 Munro Kerr was reconsidering his position, writing up three successful cases where he had saved the lives of both mothers and infants, and by 1921 he declared that "it appears to me that this complication is particularly suitable for caesarean section and it may come to be the general method of treatment."[62] That same year British obstetrician Eardley Holland described a series of 139 cases with a maternal mortality of 11% and a fetal mortality

of 7% - remarkable figures and in Holland's words "very flattering" to caesarean section.[63] Caesarean delivery was also being more liberally used for women with slowly progressing labour and for malpresentations, such as breech or transverse lie, in which the fetus presented other than by the head.

In the first decade of the 20th century, two Germans, Fritz Frank and Hugo Sellheim, independently introduced the concept of extra-peritoneal caesarean section.[2,6,10] Frank made a low transverse incision into the abdomen down to the surface of the uterus. He used the peritoneum, the clear tissue that covers the uterus as well as lining all the organs of the abdomen, to make a barrier to keep blood from the operation spreading into the abdomen. He then incised the uterus and delivered the baby. The aim was to decrease the chances of post-operative infection. Frank's main contribution, however, turned out to be not the avoidance of the peritoneal (abdominal) cavity but the introduction of the lower-segment approach to caesarean section, and the realisation that healing of this part of the uterus, less subject to contractions in the days following the surgery, was more efficient than healing after the classical incision higher in the main body of the uterus. The popularisation of the lower-segment operation owes much to the efforts of Munro Kerr, who very quickly realised its advantages and promoted it. Kerr wrote in 1949, "It has been difficult to persuade obstetricians of Great Britain to adopt the operation," but even he himself did not rapidly adopt it. In the period 1931-1935 Kerr performed 123 transverse lower segment operations and 133 classical caesarean sections.[64]

The caesarean section as a safe procedure: 1920 onwards

By the 1920s caesarean section was widely regarded as a safe procedure when undertaken electively. Writing in 1929, the obstetrician Carlton Oldfield stated that "the risks are little more than those of normal labour, and certainly less than those of allowing obstructed labour to proceed … with eventual craniotomy (destruction of the child)."[65] Indeed the future Queen Elizabeth II was delivered – "feet first" – by caesarean section, in April 1926.[66] Indications for the operation were being widened to include consideration of the fetus although the main indications were still maternal, for example the 'elderly primigravida' – the woman having her first child at the age of

35 or more, who was considered at high risk of difficult labour.[67] The operation was not at this stage performed in the interests of the child alone.

At a time when general maternal mortality was 0.4% (or 400 deaths of women per 100,000 births using today's descriptors), Holland, in the United Kingdom in 1921, found a maternal mortality rate for the operation of 1.4% for women not in labour, although this rose to 26% for women in prolonged labour, especially after many vaginal examinations or failed forceps delivery.[63] Strict surgical asepsis was recommended by all authors of the time, who also perceived the need for skilled anaesthesia. The concept of obstetric anaesthesia as a discipline in its own right was one that made an early appearance. Chloroform continued to be used, as well as ether, spinal anaesthesia using cocaine, and extensive infiltration of local anaesthetic into the abdominal wall.[68,69]

Although most caesareans were performed in hospitals the operation was not uncommonly performed in the homes of patients. A 1937 text outlines the basic necessities and techniques to be applied to home caesarean delivery, including anaesthesia, antisepsis and the modification of the kitchen table as the operating table. "The use of electric torches is to be preferred to candles at night, as the latter cannot be used with ether," the authors state, and they also note that "wet sawdust should be sprinkled on carpets to reduce infection risks, and all instruments and surfaces scrubbed with Monkey brand soap."[70] Slowly but surely, the operation was gaining in acceptance and was no longer associated with extreme risk.

Informed consent for caesarean section

The first decades of the 20th century are often viewed by historians of medicine as a period in which the largely male medical profession was all-powerful, their opinions and decisions were not challenged by their patients and decision making was at best paternalistic. It is surprising then in the medical literature of the time to find how often texts emphasise the need to involve the woman and her family in the decision for or against caesarean section, and the importance of that decision being well-informed.[71] "A woman's body is her own," wrote the authors of *Herman's Difficult Labour* in 1929, talking of the right of a woman to give or withhold permission for

surgery, and pre-dating by forty years the use of this phrase in feminist discussion.[65] Elsewhere the same writers recommend that when considering caesarean surgery, physicians "having weighed all the points in the individual case (should) put the alternatives to the patient and act on her decision." And in 1933 an American obstetrician stated unequivocally that "it is essential to consult the patient as to her wishes."[6] However other practitioners were concerned about the 'morality' of performing a Porro's, or a sterilisation procedure, such as ligating the fallopian tubes, at the time of caesarean section. These critics, recognising that the woman could now have sexual intercourse without the possibility of procreation, claimed that "the practice could be conducive to immorality."[2,6,12]

Further developments in the early part of the 20th century

By the 1920s, then, it was accepted practice, in several difficult obstetric situations, to proceed with a caesarean section. There was however growing concern that the operation might become the universal answer for obstetric problems, and that skills associated with difficult vaginal deliveries might be lost as caesarean rates rose. This concern was largely on the part of obstetricians themselves, although by way of contrast some practitioners believed the surgery was not being performed often enough. In 1925, the author of a popular English textbook wrote that "the safety of Caesarean section in non-infected cases has led to a great abuse of the operation: this abuse consists in its performance in unnecessary and unsuitable cases and in its non-performance in cases for which it is suitable."[72] In the United States, as early as 1916, a thoughtful obstetric surgeon named Whitridge Williams, addressing the Clinical Congress of North American Surgeons for that year, charged that the operation was being overutilised. He called on the "conscientious obstetrician" to be particularly careful in the recognition of indications for the surgery.[73] A little late, on the other side of the Atlantic, Munro Kerr, although now convinced of the safety of the surgery in certain specific situations, also cautioned against undue enthusiasm for caesarean as the panacea for all obstetric difficulties.[62] It is worth noting again that the caesarean rate at the time was around 1% of all births, in Australia as in Europe and North America.

In 1927, a German practitioner named Hirsch predicted that one day caesarean delivery might become the alternative to any kind of difficult labour or operative vaginal delivery such as forceps, but such a bizarre suggestion was not taken seriously by his peers.[2] One of his critics wrote that "surgical intervention is not intended to shorten a physiological process nor merely to alleviate it. It is permissible only after a thorough consideration of the pros and cons."[2]

The early years of the 20th century also saw the introduction of a number of new discoveries that had a dramatic impact on medicine generally and the safety of obstetrics in particular. The first attempts at intravenous (IV) fluid therapy involved the doctor personally concocting his own fluids by adding a couple of teaspoons of common salt to a pint of boiled water. This was a rather arbitrary, unphysiological recipe; nevertheless, run through rubber tubing into the veins of a woman bleeding and dehydrated from a complicated childbirth, the effects of the mixture were described as "magical."[57] Both World Wars contributed greatly to advances in intravenous therapy techniques. By 1950 standard bottled solutions were being produced and the techniques of intravenous infusion had become a science in itself.

The availability of safe blood transfusion was another development that increased the safety of caesarean operations. Antepartum or postpartum bleeding in conjunction with the effects of major surgery could cause the woman to die despite the successful delivery of her infant. Haemorrhage before and after the operation could now be counteracted by transfusing blood. Karl Landsteiner, working in Vienna in the first decade of the twentieth century, had discovered the ABO blood groups, and his later work on other blood groups and the Rhesus factor in New York in the 1930s contributed enormously to the safety of blood transfusion in obstetrics.[74,75,76]

Blood transfusion was initially a labour-intensive process requiring donors to present themselves close to the operation site, and the doctor had to take and crossmatch the blood personally. Only in the 1930s was the collection of blood in sterilised re-usable flasks, with rubber tubing, instituted[69] Today, with the spectre of AIDS and other blood-borne infections, and the availability of sophisticated synthetic intravenous solutions, fresh whole blood is used less commonly in obstetric bleeding, but it still

has an important place, and has most certainly saved the lives of countless numbers of women throughout the 20th century.

The use of ergot, a plant derivative that can contract down a uterus following birth, and thus help prevent calamitous bleeding, became increasingly common in the early part of the 20th century and its principal chemical component ergometrine (known as ergonovine in the United States) was isolated in 1935.[77,78] Measured doses of ergometrine came to be given routinely both to prevent and treat bleeding after a birth; this practice also contributed to a drop in the death rate amongst women giving birth by caesarean. Today synthetic forms of oxytocin, a hormone normally produced by the human pituitary gland, are more commonly used as first-choice treatment of bleeding after birth, since the potential side-effects are less than those of ergot drugs, but ergometrine is still widely used throughout the world both to prevent and treat postpartum haemorrhage.[79]

More and more women were moving to hospitals to give birth, a move that was regarded by most doctors as safer for both women and babies.[65,67,71] This transformation has been well described by feminist scholars, who have seen in it the causation of a fundamental change in how women perceive motherhood (a topic to be discussed further in Chapter 3). Nevertheless, home births continued to be common and caesarean section too was not infrequently performed in the woman's home in the first half of the 20th century, especially in rural areas of the United Kingdom, United States, and Australia.[71] By the end of the Second World War however, all caesarean surgery had moved into hospitals, although normal births continued to take place at home.

One continuing cause of death in childbirth, in normal births as in caesarean sections, was infection. While deaths from other causes declined in numbers in the first decades of the twentieth century, puerperal sepsis- 'childbed fever'- continued to carry off previously fit and healthy women. So even more dramatic than ergometrine in its impact on the safety of childbirth was the discovery, in 1936, that the sulphonamides, and later penicillin, were extremely effective against the bacteria causing puerperal sepsis.[80] In 1935 a German chemist, Gerhard Domagk, had prevented septicaemia in mice by using a newly discovered drug, prontosil – this was the first of the

sulphonamides. Prontosil was trialled the following year in women in London who had developed fever after giving birth, curing several cases that would previously have been fatal. In 1939 Domagk was awarded the Nobel Prize in Medicine for his work.

The liberal use of antibiotics in caesarean section has undoubtedly made the operation very much safer. However it is only by the routine use of antibiotics that it is possible to maintain current levels of caesarean section with very low rates of death and infection amongst the women operated upon.[81] It is evident from practice in the pre-antibiotic era that meticulous use of antiseptic techniques is effective in preventing the infections associated with childbirth, but only partly so. There is inevitably the entry into the birth canal of bacteria from the vagina, bowel, skin and hands of both the woman herself and her carers. Though it is not widely acknowledged, without antibiotics - now given during the operation to every woman undergoing a caesarean, and often after the operation as well - the death rate from the procedure would be unacceptably high. Continuing high caesarean rates will depend on the future availability of powerful antibiotics – and there will be an ongoing need to produce new antibiotics as bacteria develop resistance to the old ones.[81]

The patient's perspective

What was known of the caesarean operation amongst the general public, and how was it viewed? In 1929 Ernest Hemingway published his classic war novel, *A Farewell to Arms*, based in part on his experiences as an ambulance driver in Italy in the First World War.[82] The most poignant of the deaths in the book is not on the battlefield but in the labour ward, where Catherine, an English nurse and wife of the hero, Henry, dies following a caesarean section done for prolonged labour. Prior to the surgery Henry speaks with the doctor:

The doctor came into the room.
"How does it go, doctor?"
"It doesn't go," he said. "I made an examination. Since then I've waited to see. But it doesn't go."
"What do you advise?"

"There are two things. Either a high forceps delivery which can tear and be quite dangerous besides being possibly bad for the child, and a Caesarean."
"What do you think?"
"I would advise a Caesarean operation. If it were my wife I would do a Caesarean."
"What are the after effects?"
"There are none. There is only the scar."
"What about infection?"
"The danger is not so great as in a high forceps delivery."
"What if you just went on and did nothing?"
"You would have to do something eventually. Mrs Henry is already losing much of her strength. The sooner we operate now the safer."
"Operate as soon as you can," I said.

Henry watches part of the operation from the gallery of the theatre.
Down below, under the light, the doctor was sewing up the great long forcep-spread, thick-edged wound. Another doctor in a mask gave an anaesthetic. Two nurses in masks handed things. It looked like the Inquisition.

The baby is delivered, but stillborn, and Catherine herself succumbs soon after the surgery to a haemorrhage.

It seems she had one haemorrhage after another. They couldn't stop it. I went into the room and stayed with Catherine until she died. She was unconscious all the time, and it did not take her very long to die.

Henry does not question the need for the operation or the doctor's expertise: Caesarean section has become part of the accepted possibilities of childbirth. Catherine, under the influence of narcotic analgesia, gives reasonably well-informed consent. There is a clear belief on the part of the characters in the narrative, and of Hemingway himself, in the safety of the surgery, although it is not successful in this case.

Conclusion

From Antiquity, the idea of abdominal birth has captured the imagination of lay people and physicians alike. Myths and stories of caesarean births are found in many ancient cultures and there are isolated medical accounts of the operation being performed, usually with fatal results for mother and child, up until the last decades of the 19th century. The introduction of anaesthesia and of antiseptic surgical techniques enabled physicians from 1876 onwards to develop modern caesarean surgery. In the period 1920-1950 refinements in the use of such treatments as blood transfusion and intravenous therapy, and the discovery and development of antibiotics, combined to reduce considerably the possibility of a woman's dying from caesarean section. By the middle of the 20th century the chances of this happening were around one in 1000 operations. The operation became more common and the indications widened. Certain social and public health improvements – including smaller family size, better nutrition and less rickets and tuberculosis – led to better health of the population in general and of women in particular, and this might have been expected to increase the likelihood of successful vaginal births and reduce the incidence of caesarean delivery. However the operation began to be practised for a variety of new reasons - in cases of diabetes, for example, and for pre-eclampsia (a very common condition of raised blood pressure peculiar to pregnancy). By 1950 a caesarean section rate of about 7% of all births was typical of obstetric practice in the United Kingdom, Australia and most other Western countries. [83] This rate was viewed with concern by many doctors, who imagined that it could not rise much more, and that it might even fall as women became healthier and had smaller families.

In the early 1950s, Ian Donald, Professor of Midwifery in Glasgow, wrote that "Caesarean section is now performed with increasing impunity, thanks largely to antibiotics, improved anaesthesia and the availability of blood transfusion. It is natural, therefore, that that the indications for this operation are being continually extended; nevertheless there is no excuse for resorting to it because one lacks the obstetric skill of a previous generation, and it would be a great mistake to regard it as a means of finding a happy issue out of all our obstetrical afflictions."[83] Donald

further commented presciently that: "In these days of small families the baby's right to survival is increasingly recognised, and consequently many of the indications for the operation are now solely concerned with the interests of the infant." In fact the rise in caesarean section rates in Western countries was only just beginning, and much of that rise has had to do with improving the rates and quality of the survival of infants.

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3. The medicalisation of childbirth 1950-1980 and the increasing role of ultrasound scanning in obstetric practice

Up until the beginning of the 19th century, women in labour were mostly cared for by midwives, either at home, or in one of the large maternity hospitals established in Europe from the seventeenth century onward and copied, on a smaller scale, in North America and Australia.[1,2] Midwives often had little training, learning on the job in an apprentice-type position. Indeed many women who gave birth at home might not even have had a midwife in attendance, relying on friends or relatives for support in their confinements.[3] Doctors (or "man-midwives" as they were often called) were only summoned when things went wrong – and their ability to make things right, and deliver a live baby to a healthy woman, was quite limited.[4] However during the 19th century, as I have shown in the previous chapter, doctors came to play a major role in the care of women in childbirth even when the birth was completely normal. Midwives were required to undergo more rigorous training and by the beginning of the 20th century national registration of midwives was being introduced in many Western countries, although the professional status of midwives was not high. The first half of the 20th century saw the development of obstetrics as a medical specialty and the foundation of schools of midwifery. More and more, women were encouraged to attend doctors for antenatal care and to undergo an increasing number of tests intended to detect problems that might be treated prior to birth, thereby improving outcomes for both mother and baby. Women were also encouraged to give birth in hospital rather than at home.

By the middle of the 20th century, birth was seen as a medical event rather than a family or social one. Up until that time, most doctors, both specialist and generalist, were male; their patients obviously were female, and a culture of paternalism and 'doctor knows best' prevailed in the care of pregnant and labouring women, in Australia as elsewhere. This culture was reinforced by the subservient social role of women in the years immediately following World War II – the ideal role for a woman at the time was considered to be that of home-maker. In obstetric practice as in medicine generally, a hierarchy was established with specialist obstetricians at its

peak, general practitionerson the lower slopes, junior hospital doctors and midwives even further down, and patients at the bottom.[1,2,3,4,5]

From the 1950s onwards, the introduction of new medical technologies and disciplines accelerated the medicalisation of both pregnancy and childbirth. This rapid medicalisation took place at the same time as the appearance of safe and effective contraceptive methods including the oral contraceptive pill and new intra-uterine devices, and legal abortion, all of which gave women greater control of their reproductive health. However in some cases widespread introduction of technology for pregnancy was not preceded by rigorous scientific testing of that technology. There was increasing pressure on physicians to invest in technology that seemed to come with the promise of a healthy baby– pressure from their peers, from the media, from hospital and health administrators, and from women and their families. The result was an increased rate of interventions during pregnancy and birth, some of which were unnecessary and some of which led to further unnecessary procedures including caesarean sections. This was particularly true of the introduction of electronic monitoring of the fetus (EFM).[5,6,7,8,9]

The most important application of technology to the detection and treatment of complications of pregnancy was that of ultrasound scanning, and this has had complex effects on the practice of obstetrics in general and of caesarean section in particular. Ultrasound has the ability not only to assist in diagnosis of obstetric abnormalities but also to provide pregnant women with recognisable images of their babies in utero. Hence it can act to strengthen maternal emotional attachment to the developing fetus. While ultrasound was initially introduced to assist physicians, there has since developed an enormous demand from women themselves, and their partners and families, for ultrasound scans which provide very realistic images of the baby-to-be. Bonding and identifying with the fetus in this way has reinforced the belief of the woman that she has control over her pregnancy and the birth, and therefore has the expectation, even the right, of a healthy baby.[10] These changing attitudes have meant that ultrasound scanning has had an enormous impact on rates of caesarean section over the past thirty years.[11,12,13] All these developments in technology and their effects and implications for the practice of caesarean section form the subject matter of this chapter.

Improvements in medical care for pregnant women

Throughout history, although women and their families hoped and prayed for a live mother and a healthy infant, mortality and morbidity figures for both mothers and babies were high until well into the 20th century. As childbirth historian Irving Loudon has written "In the 19th century, a woman would most likely have known of at least one death in childbirth among her friends or neighbours, if not in her own family."[14] Before 1880, in Australia as in other Western nations, maternal mortality rates of 200 women dying for every 10,000 births (1:50) were common, falling to around 40 deaths per 10,000 women by 1930. As a result, an attitude of fatalism prevailed toward the processes and outcomes of childbirth.

In *Brought to Bed*, a study of childbirth in the 18th, 19th and 20th centuries and how it is described in fiction, Madeleine Riley concludes that: "The eighteenth century regarded childbirth, it seems, as a natural, frequent event involving all the community in which the mother lived. They recognised that it was an event which was likely to include death, which would require humour, endurance and good luck."[15] Daniel Defoe, the author of *Robinson Crusoe,* for example, says Riley, "has a pithy, evocative phrase, 'She dropp'd her burthen.'" Henry Fielding says of a woman about to give birth, "She was almost ready to cry out," and Walter Scott writes in 1816, "She took the pangs of travail." All three authors quite naturally included deaths in childbirth in their novels. In the later nineteenth century, Riley finds, childbirth was treated quite differently. Fiction is filled with "unhappy, bleak confinements; deaths abound, and are treated less casually than formerly." In *Oliver Twist* (1837), Charles Dickens has Oliver's mother die within minutes of his birth; in *Wuthering Heights*, in 1847, Emily Brontë records that, "At about twelve o'clock that night was born the Catherine you saw at Wuthering Heights: a puny seven months child, and two hours after the mother died having never recovered sufficient consciousness to miss Heathcliff or know Edgar."[16] Brontë also depicts the grief the mother's death caused: "The latter's distraction at his bereavement is a subject too painful to be dwelt on." [16] Benjamin Disraeli, interested like Dickens in improving social conditions in Victorian England, used a description of 'the beautiful experience of childbirth' to demonstrate how appalling the suffering of parturient women could be. "With the water streaming down the walls, no hearth even in winter, the virtuous mother in the sacred pangs of

childbirth gives forth another victim to our thoughtless civilisation; surrounded by three generations whose inevitable presence is more painful than her sufferings. The father of her child, in another corner of the sordid chamber, lies stricken with typhus which his contaminated dwelling has breathed into his veins."[15] Such stories are quite consistent with maternal mortality figures of one mother in fifty births and perinatal death rates of 200 per 1,000 infants even for the later years of the 19th century, when the need for hygiene on the part of those attending women in childbirth was becoming more widely understood.[14] But death in childbirth was also not uncommon amongst the upper classes and even royalty. In 1817, Princess Charlotte, third in line to the throne of England, died from haemorrhage after a labour lasting nearly fifty hours; her death cause deep dynastic difficulty and the rapid marriage of the Duke of Kent in order to produce another heir to the throne in the person of Queen Victoria. [17] Leon Tolstoy also had much to say in his novels on the pain and the risks of childbirth, even though his characters were from the Russian aristocracy. One of his most moving pieces of writing, in *Anna Karenin* (1873-77), describes the 22 hour labour of the Princess Kitty Shcherbatsky, as witnessed by her husband, Levin: "Leaning his head against the doorpost, he stood in the next room and heard someone shrieking and moaning in a way he had never heard before, and he knew that these sounds had come from what had once been Kitty." [18]

During the latter part of the nineteenth century, and in the early part of the twentieth, the medical profession, aiming to place medical practice generally on a more scientific footing, also took an increasing role in the care of women during pregnancy and childbirth. One of the results of this was the introduction, in the early 1900s, of formalised antenatal care.[19] Until that time, even well-off and upper-class women generally did not consult a doctor until close to the time the birth was expected. The notion that the outcome of pregnancy, for mothers and babies, might be influenced and even improved by certain actions during pregnancy began to be accepted slowly both by women themselves and by those who cared for them. Writing in 1915, a prominent American obstetrician reviewing antenatal care to that date felt that "our first and chief duty is in the adoption of measures tending to promote normal function throughout the processes of reproduction" as well as to watch "for early evidence of disordered function and to make the effort to restore the normal before more serious and permanent trouble arose." [19] The examination of pregnant women towards the end

of pregnancy, to detect breech presentation or twins, was the first step. This was followed by measurement of the woman's blood pressure to diagnose pre-eclampsia and therefore the possibility of the fits of eclampsia in labour, and measurement of the haemoglobin level to detect anaemia.[19,20] Rudimentary advice about nutrition, hygiene and the care of the newborn baby was also provided by nurses or midwives.[8] By the 1920s antenatal clinics were established in all major lying-in hospitals in Britain, Australia, and elsewhere in industrialised nations. However it was immediately observed, by people such as the Medical Officer of Health for Huddersfield, that "those women who attend clinics and classes in pregnancy are those who have sufficient energy to safeguard their own and their infants' health anyhow. It is among the slothful, the ignorant, the indifferent and the vicious that heavy infant mortality occurs." It was the latter group, the Officer declared, who should be vigorously pursued by the providers of the new antenatal care.[21]

Many women might have disagreed with the Officer. In 1915 Margaret Llewellyn Davies published *Maternity – Letters from Working Women* – a work of social commentary that included 160 letters addressed to her in her role as General Secretary of the British Women's Co-operative Guild from 1889 until 1921.[21] Llewellyn Davies observed home births among poor women in Britain for many years in the course of her practice as a social worker. The letters describe the lives of these women, not slothful or vicious but simply poor – and the enormous toll that the combination of poverty and too frequent pregnancies and births placed upon them, especially when they could not afford skilled nursing and medical help. "Skilled medical attention was particularly vital in the case of many of these women because of an almost universal lack of prenatal care … overwhelmingly, poverty was the cause … almost every letter reiterates the lack of food, overwork before confinement, and excessively quick return to household chores after birth as the prime causes of stillbirth and miscarriage, and often lifelong disablement for the mother," writes Davies. The Guild was one of a number of welfare advocacy groups who helped bring about the introduction, in 1913, of the Maternity Benefit, a one-off payment to mothers of thirty shillings on the birth of a child. The Guild also involved itself in campaigning for the establishment of a national Ministry of Health, local government midwifery and nursing services, maternity and infant centres, and increased numbers of maternity beds in both large

and small public and private hospitals and nursing homes – all of which were gradually established over the first half of the 20th century.

The benefits of antenatal care (then known as prenatal care) were always abundantly clear to social activists such as Davies, who commented that: "The results which can already be shown of care in the prenatal period bear out the contention that the suffering and loss of life which exists is unnecessary. The Women's Municipal League in Boston, USA, has had 1512 women in five years (1910-1914) under its care … there were 60 cases of threatened eclampsia in the first year and only 2 in the last year, and the total number of infant deaths under one month was 2 per cent, while Boston's (overall) rate was 4.3 per cent. The Johns Hopkins Hospital obtained similar results and in the Glasgow Maternity Hospital more exact methods have reduced the infant mortality and morbidity."[21] The need for antenatal care was publicised to women through contemporary magazines and journals. *The Ladies Handbook of Home Treatment*, which ran to five editions between 1915 and 1945, told its readers in the first decade of the 20th century that "the most distressing and dangerous complications usually arise in those patients who have not availed themselves of the 'new-fangled' antenatal care." [22]

National registration for midwives was first introduced in the United Kingdom in 1902, and schools of midwifery gradually became established throughout the country, as they did in Australia and New Zealand. Midwifery became a diploma course to be undertaken after completing general nursing training in all three countries. This system continues today although schools of nursing and midwifery have moved from being hospital-based to university-based, and proposals for direct-entry midwifery training are under consideration. [23] Training in obstetrics for medical students and junior doctors was also gradually formalised, becoming a recognised part of the final medical examinations for undergraduates. The British College of Obstetricians and Gynaecologists, later the Royal College (RCOG), was founded in September 1929 by Professor William Blair-Bell and Sir William Fletcher Shaw, and concerned itself both with the teaching of doctors and with the care and safety of women in childbirth.[24]

The role of hospitals

As noted in Chapter 2, in the early decades of the 20th century, women were increasingly being encouraged to move to hospitals to give birth, a move that was regarded by most doctors as safer for both women and their infants. In 1914, American physician Whitridge Williams, addressing a session of the American Association for the Study and Prevention of Infant Mortality, stated unequivocally that "if abnormalities are found (during prenatal examinations), the woman should enter a hospital for delivery, and the public should be taught to realize that safety is to be found only in ideally organized obstetric hospitals." In Britain, Margaret Llewellyn Davies was forthright about the benefits to poor women of hospital birth. Davies believed that birth at home, with good nursing care, was beneficial for upper- and middle-class women. However for the poor, the majority of the population, it was often associated with chronic illness resulting from birth complications inadequately treated. Davies also noted an infant mortality rate in England, in the first decade of the 20th century, of 150 deaths in the first year of life out of every 1,000 children born.[21]

The move from home to hospital continued up to and during the Second World War, and by the middle of the twentieth century, doctors had become the dominant players in pregnancy care and childbirth. In 1962, anthropologist and childbirth educator Sheila Kitzinger, who has written many books addressed to pregnant women, still regarded home birth as the norm in low-risk pregnancies.[25] By 1980 she was stating that "hospital becomes more and more the standard way to have a baby" and providing women readers embarking on pregnancy with a chapter entitled 'Talking to Doctors.' [26] "Most women who decide to have their babies in hospital," wrote Kitzinger in 1980, "do so primarily because they are convinced it is the safest place." Midwives were present in antenatal clinics, in the labour ward, and in the 'lying-in' wards for women following birth, and so for the majority of pregnant women, it was midwives who performed most of the work. However their role was regarded as subservient to that of doctors – by the doctors, by the public, and by the midwives themselves.[23] Up until the 1980s, in Australia as in the United States and Britain, most doctors -- with notable exceptions -- were male and all midwives female (only in the last decade has there been the emergence of the trained male midwife). A woman

obstetrician, a former president of the Royal Women's Hospital in Melbourne and a pioneer of family planning in Australia, recently described to a Melbourne newspaper reporter how, when she was admitted to study medicine at the University of Queensland in 1947, women made up less than 10% of the class. "The women's hospital in Brisbane didn't even have a bathroom for women (doctors)," this now-retired doctor recalled. Having finished her basic training, and wanting to specialise in women's health, she moved south, finding Melbourne's hospitals more receptive to female medical practitioners– who nevertheless still made up only a tiny proportion of the profession in that city.[5,27]

Janet McCalman, in *Sex and Suffering*, her history of Melbourne's Royal Women's Hospital, succinctly describes how "the big teaching hospitals were all dominated by cliques of senior staff who came from restricted circles of Melbourne society. The same small group of boys' private schools had educated most of the doctors. Many were sons of doctors … unselfconsciously, the old boys cherished those bonds and caused far more offence than they ever realised when they enquired of each new resident, medical student and even pupil midwife 'And where did you go to school?'"[5]

The effect of these professional gender differences was to make care in pregnancy and birth quite paternalistic in nature.[5,25,26,27] Kitzinger describes "a system where time is at a premium and where (the expectant mother and her doctor) find it difficult to break out from a formal doctor-patient relationship with all that this implies of authority and subordination." [28] Initially in Australia many of the doctors practising obstetrics were family general practitioners with extra training and experience but in the years from 1950 to 1985 the number of specialist obstetricians in Australia increased dramatically, as it did overseas. Although arrangements in Australia varied somewhat from one state to another, in most places specialists assumed overall responsibility for the care of women admitted to their units in public hospitals, even though much of this care was directly provided by junior doctors and midwives.[5,6,29] Up until the early 1980s specialists mostly attended the public hospitals in an honorary capacity, that is, they were either not paid at all for caring for women who were public patients, or were paid only a token amount. They derived their income from their private practices, taking on women as private patients for whom they were

directly responsible throughout the whole pregnancy and for six weeks following the birth. To ensure a sufficient workload and an adequate income, and because of the geography of Australia, specialists were mainly concentrated in the cities and larger rural towns. Elsewhere obstetric care continued to be the realm of general practitioners. With the advent of Medibank under the Fraser government, and then Medicare under the Hawke Labor government in 1983, there was a gradual change to specialists being paid for public work from government funds. Initially this was mostly in the form of sessional payments – fees paid to doctors who maintained their own private practices but worked one or two days (doing 'sessions') each week as VMOs (Visiting Medical Officers) caring for patients in public hospitals. Gradually over the past twenty years, although the VMO system continues, there has been an increase in the number of staff specialists. These are specialists employed full-time by the state health departments to work exclusively within the public system.[29]

In the large city hospitals where most births now took place, there was a rigidly hierarchical structure in place: specialists at the top, then junior hospital doctors at various stages of training, midwives, and finally patients at the bottom. Up until the late 1980s this hierarchy was strikingly evident in the antenatal clinics available to public patients. All patients were instructed to arrive at 9 am or 2 pm, and to await their turn – there was no appointment system.[5,6,28,29] "I had to sit in a little cubicle for ages feeling cut off from the world," wrote one woman of her antenatal clinic experience.[28] Many women were accompanied by their other small children who were also expected to wait patiently. "On one occasion I waited 3 hours before being seen," wrote another pregnant woman. "I felt sorry for mums with toddlers. No provision was made for them except a broken rocking horse."[28] Having waited a suitable time, the patient reached first base with a visit to a midwife who weighed her, took her blood pressure, checked a urine sample and calculated the gestation (the number of weeks of pregnancy the woman had completed). After a further wait, the woman was ushered into a cubicle where she removed all her clothing, donned a hospital gown and lay waiting on the examination couch for the entrance of the doctor.

Antenatal consultations such as these have been well described by Kitzinger: "Many (women) say they find the clinics dreadful, communication inadequate and doctors'

assumptions that patients should have a passive role leave them feeling frustrated and helpless."[28] She describes 'Carole', who lived in an industrial town where every woman had to attend the same hospital for pregnancy and birth care. In the consultants' clinic "women sit or stand in long queues and never see the same person twice. There are boxes where you wait until you are called (the hospital was built only five years previously) like confessionals with a door at each end and a seat inside. The walls are bare. You cannot see another soul and it is very hot. You can sit in these boxes for up to an hour. The doctor puts in an appearance, says 'good afternoon, is everything all right, I'll just listen to your tummy, see you next week.' She never managed to obtain any information from the obstetrician but nevertheless continued to attend the clinic to undergo this ritual." A similar lack of communication in antenatal clinics in Australia at the same time produced the same degree of frustration amongst Australian women. The 1989 Report into the Maternity Services in New South Wales (the Shearman Report) identified "major issues in the provision of antenatal care" to be "problems of access, overcrowding, waiting times and lack of continuity of care for patients using hospital clinics," and recommended that "antenatal services should reflect the needs of and be accessible to the community they serve."[6]

In the labour ward the woman was similarly isolated – partners and families were not permitted beyond the labour ward door. And although midwives and doctors might individually be sympathetic, information was only imparted, briefly and sporadically, through this door. Women underwent birth and all its attendant rituals – enemas, shaves, episiotomies -- in the company of strangers. The writer Marilyn French, in her 1977 novel *The Women's Room*, gives a cogent description of the reception awaiting her character Mira in a typical American labour ward of the early 1960s:

"The nurses were cold and brusque. They gave her a hospital gown and told her to get undressed in a cold damp room that looked and smelled like the locker room of a gym. They ordered her to get up on a table, and they shaved her pubic hair. The water was warm but it got cold as soon as they put it on her body, which was already shivering. Then they gave her an enema: it drove her insane, she couldn't believe they were doing this to her. Her belly and abdomen were aching worse and worse, as if part of her insides were pulling away from the rest and wrenching the organs with it and pounding down on her pelvic bones like a steady hammer. At the same time they

were pumping warm water into her backside. It pulsed upward in a different rhythm, then bent her double with a different cramp. When it was over, they told her to get up on the table again, and they wheeled her into a different room. It was bare and functional: white walls and four beds, two against each wall, foot to head. They put her feet up in stirrups and laid a cloth over her knees. Every so often a nurse or an orderly would come into the room, lift the cloth, and peer in. Out in the hall, beds on wheels were lined up waiting to enter the delivery room. The women on them were moaning, some crying, some silent".[7]

This scene that could as easily have been played out in an Australian hospital. A woman social worker married to a medical student described to Janet McCalman her experience of giving birth to twins in Melbourne's Royal Women's Hospital: "I was taken to the labour ward. They had those awful stirrups, and they shaved me and I had an enema. I was in labour from 5 am to 11 am when the first one was born – he was a breech. The doctor said, 'You've done your duty.' I was shocked – a little girl would have been just as welcome."[5]

After birth babies were transferred to the nursery, where their fathers and grandparents could gaze at them fondly only through glass. In the fifth edition of Dr Grantly Dick-Read's classic book *Childbirth Without Fear*, which appeared in 1968 and was widely read in Australia, the editors comment "It would really be very difficult indeed if every husband wanted to stay with his wife throughout her labour and delivery, but fortunately most husbands stick to the traditional role of the father, that of comforting his wife in the earlier stages, and then going away, either to seek solace in a beer around the corner, or into the usually limited visitors' accommodation in the hospital, there to bite his nails and smoke too many cigarettes until the nurse announces the new arrival."[30]

To a great extent the differences in male/female roles in the management of childbirth in the years following World War II simply reflected many of the social changes occurring in those years, and the alienation women felt while giving birth in hospital paralleled the alienation they often felt when consigned to completely domestic roles at home. During the War, women had been accepted into the workforce, in Australia as elsewhere, to replace men who had joined up. After the war, as men returned and

took back jobs, women were expected to marry and stay in the home. The 1950s was supposedly the time of the happy nuclear family, living in the cottage behind the white picket fence, and holding conservative social and moral values. The following advice was offered to young Australian wives in an article entitled "Making marriage a success" in *The Ladies' Handbook of Home Treatment* of 1945: "Home is the kingdom over which the wife should seek to reign as queen. So wholesome and attractive may the home be made by a contented, cheerful woman, that the husband will leave it with reluctance, and will return to it at night, after the day's toil is ended, with naught but thoughts of quietness and peace."[22]

Diet and living conditions were certainly better in post-war Australia than they had been before the war, women were healthier, and so it might have been expected that, as a result, there would be less of a need for caesarean birth. But the period also saw the rapid growth of technology in medicine, and obstetrics was no exception.[31] With increasingly sophisticated technology came the ability to investigate and intervene in pregnancy, to see and act upon the fetus, and if delivery seemed indicated and labour difficult to induce, then a caesarean section could be performed. As obstetrician Peter Huntingford wrote in 1972: "From the point of view of safety, there are now only two routes for birth – easy vaginal birth or caesarean section."[32] Thus caesarean rates, rather than decreasing, in fact began to rise.

New medical technologies

The new technology was intended both to assist diagnosis and to provide treatments that would result in a live and healthier mother and baby. Undoubtedly many of the physicians involved in introducing new technologies would have seen themselves as motivated at least in part by a genuine desire to help their women patients have the best possible outcome to pregnancy, as well as by scientific curiosity.[32,33,34] The chances of a healthy woman dying in pregnancy or childbirth in the 1950s had already been reduced from the 1:50 of her mother's time to about 1:3,000.[14] There was also an increasing possibility that women with medical conditions such as diabetes and hypertension could have successful pregnancies.[34] Previously such women had a high risk of miscarriage or stillbirth if they became pregnant. There was also the realisation amongst doctors interested in obstetrics that it was becoming possible to assess the fetus directly, and to intervene in the pregnancy if that fetus seemed compromised.

Doctors were excited by the prospect of making birth as safe for the baby as it had become for the mother. As Richard Beard, an eminent London professor of obstetrics, commented, tersely though not unkindly: "The important thing is to define who is at risk. The problem of maternal mortality has been largely overcome – pregnancy and labour are no longer (such) a risk to the mother. It is the problem of the fetus that concerns us at the moment, because the quality of the fetus is our investment for the future, in the family and for the country."[8]

Undoubtedly some doctors were also attracted by the money that could be earned practising obstetrics, others by the power they could exert over their female patients, and many by a combination of several factors.[5,6,7,8,9] Some saw pregnancy as a fertile field for personal research and advancement of academic careers. And certainly, as it became accepted by the medical profession that a large number of tests could and should be done on the pregnant woman, both for her own health and for that of her baby, it became accepted also that a surgical operation, with its attendant risks for the woman, could and should be done on that woman solely in the interests of her child. Also relevant is the obvious fact that technology – in communications, transport, domestic tasks, travel - has influenced every aspect of the lives of the inhabitants of developed nations in the past fifty years in significant ways. Women now expect to travel in cars and on planes, to operate a variety of electrical appliances in their kitchens, to wash their dishes in dishwashers and their clothes in washing machines, to carry mobile phones, and to be entertained by television, films and DVDs. Given that daily life has become so 'unnatural', women are not surprised to find technology already in place when it comes to having babies. Since the mid twentieth century, a large number of blood and urine tests, and various forms of assessment of the fetus, have come to be performed routinely on pregnant women, and have in general been accepted by those women.[8,33,34] Much of the remainder of this chapter is an overview of the various antenatal tests and investigations now in current use in developed countries including Australia. It must be emphasised that these tests are essentially screening tests applied to whole populations with the aim of finding the minority of women who do have abnormalities and treating them. In the majority of women, the results of these tests and investigations are entirely normal. Of course a normal result can have the effect of positively reinforcing a woman's view of her health and pregnancy.

A basic full blood count establishes whether a woman is anaemic and if so enables iron and vitamins to be prescribed for her.[34,35,36] Anaemia remains a killer of pregnant women in developing countries and increases the risk of death from haemorrhage at the time of birth; preventing or treating anaemia is a basic health measure, the value of which in antenatal care is often overlooked in developed nations with well-nourished populations. The woman's ABO blood group is ascertained and with it her Rhesus status – positive or negative. In the past thirty years remarkable advances have been made in treating the condition of Rhesus iso-immunisation, which was previously often fatal for the Rhesus positive babies of Rhesus negative mothers. Further blood tests establish whether the woman is immune to rubella (German measles) and hepatitis B, and whether she has or has had syphilis, or is hepatitis C or HIV positive – these conditions, if present in a pregnant woman, have major implications for the baby as well as the mother and are amenable to treatments which may improve the outcomes for both. There are also urine tests for infection, which if present should be adequately treated with antibiotics since it can lead to more severe infection of the kidneys and other organs with possible premature labour or stillbirth. The introduction of these relatively simple and now automated pathology tests has allowed the early detection of a number of potentially devastating conditions and thus of early treatment, with a resulting drop in the death rate amongst newborn babies and their mothers. More recently, a combination of a blood test for proteins produced by the fetus and an ultrasound examination (the fetal nuchal translucency scan) has been used to predict a woman's risk of carrying a fetus with Down syndrome or certain other abnormalities; if the risk is high the woman can be offered more accurate invasive diagnostic tests such as amniocentesis. These tests, including the possibility of Down syndrome screening, are now expected by most pregnant women in Australia, who want to be reassured about the results. Even women choosing and arranging a home birth are likely to have this panel of tests. For the majority of women then, the concept of medical involvement in their pregnancy starts very early on in that pregnancy.[34,35,36]

Together with the introduction of these more or less routine investigations of the woman's overall health has come the use of technology either to gain more information about pregnancy and labour or to directly alter the course of these. The

first technique to become widely available was the use of the drug Syntocinon to induce or accelerate labour. Syntocinon is a synthetic form of the hormone oxytocin, which is produced naturally by a woman's pituitary gland when she is in labour. Prior to the introduction of Syntocinon the only medical method available to attempt to bring on labour was the combination of castor oil, hot bath and enema, which was not always successful. Rupturing the membranes that surround the fetus during pregnancy – referred to colloquially as 'breaking the waters' – and putting up an intravenous drip containing Syntocinon is much more likely to lead to labour and birth. More recently, other drugs – synthetic forms of the naturally-occurring substances known as prostaglandins -- have been developed, usually in gel form, which have increased the effectiveness of labour induction.[34,35,36]

Syntocinon can also be given to women whose labour progresses slowly – especially women having their first baby, who are referred to technically as primigravidae. Labour in primigravidae is in general longer than labour in multiparae – women who have given birth vaginally to one or more babies -- and it can take many hours or even days for the baby's head to descend into the mother's pelvis and make the turning movements necessary for spontaneous vaginal birth. Initiated in the late 1960s by Irish obstetricians under Dr Kieran O'Driscoll of the National Maternity Hospital in Dublin, the concept of *management* or *augmentation of labour* has spread rapidly in obstetric practice.[37] Women in labour were expected to follow prescribed patterns – cervical dilatation of at least one centimetre per hour was recommended, and women in whom this did not occur were managed by being attached to Syntocinon drips. The *managers* were the doctors and midwives working in the labour ward. O'Driscoll and associates demonstrated in large scientific studies that the use of Syntocinon to augment labour lowered the incidence of caesarean section in his hospital and reduced the rate of death and damage to babies during birth. O'Driscoll's influence is still present in Australian birth suite practice although his principles are not as vigorously embraced as they were in the 1970s. It is considered unacceptable for the first stage of labour to linger on for days, as was often the case up until that time, with the mother becoming exhausted and the baby distressed, or for the active pushing part of the second stage to last more than 2-3 hours, with potential damage to the woman's pelvic floor muscles. O'Driscoll and others used the 'partogram' – a graphic record of a woman's progress in labour first developed by Philpott for the management of labour

in poorly resourced health facilities in East Africa. On this graph are marked 'warning' and 'action' lines: if the rates of the dilatation of the cervix and the descent of the baby's head within the mother's pelvis reach or cross either of these lines then some form of obstetric intervention is indicated – rupture of the membranes, the use of Syntocinon or other measures, depending on the particular situation of the woman. Partograms are now used universally in Australian maternity units including in birth centres [35,36,37,38]

Under the direction of O'Driscoll, the National Maternity Hospital also provided one-on-one midwife care throughout labour for all women.[37,38] O'Driscoll was one of the first obstetricians to understand a woman's need for a support person in labour but he did not believe that person should be the woman's partner or anyone other than a medical professional. Nevertheless he was responsible for the changes, to be discussed more fully in later chapters, that led to our current appreciation of how much benefit to herself and her family derives from a woman having one or more support people, whom she knows well, with her in labour and during birth. This is now universal practice in Australian hospitals and birth centres.[35]

Continuous electronic monitoring of the fetal heart rate was introduced in Europe and the United States the mid 1970s, and is now widely used in all Australian hospitals. This technique is referred to both as EFM (electronic fetal monitoring) and CTG – cardiotocography, the recording of heart rate measurements. The heart of an infant in the uterus beats much faster than the heart of an adult – normally between 120 and 160 beats per minute. In addition, a healthy fetus has a degree of variability in the heart rate, meaning that, for example, one moment the rate is 130 per minute, and the next 140 per minute. If the fetus moves, or there is a contraction of the uterus (either the contractions of labour itself, or the mild painless 'practice' Braxton-Hicks contractions of late pregnancy) the rate should rise – there should be an observable acceleration. And there should be no decelerations – meaning dropping of the rate below 110-120 per minute.[9,35,36] Having a CTG performed can be an uncomfortable experience for a pregnant woman. During the heartbeat recording the woman must be immobile, on a bed or in a reclining chair. Two wide elastic belts encircle her pregnant abdomen, one holding in place the probe for the heartbeat itself, the other the probe picking up contractions of the uterus.

CTGs are done in *pregnancy* to assure a woman's medical attendants of the baby's wellbeing – the monitor is run for about twenty minutes and a printed paper 'trace' obtained. When a woman is in *labour* a similar short trace may be done, or the monitor may be run continuously, providing a long record of the baby's health in this time. It has become clear in the years since EFM was introduced that this was done without sufficient scientific validation, in the anticipation that it would enable doctors to identify and 'rescue' babies in distress, thereby (hopefully) preventing further damage. Once EFM was available, all maternity units were under political and consumer pressure to have it accessible for women in their care, and it rapidly became too late to conduct rigorous prospective trials of its scientific usefulness. In fact good retrospective studies have since shown that monitoring *all* women continuously in labour does *not* lower rates of death or damage amongst babies overall, and it often leads to intervention in the labour, intervention that may subsequently prove to be unnecessary.[9,39,40]

Babies who are perfectly healthy in the uterus will mostly have a normal-looking CTG trace – this is referred to as '*reassuring*'. However although babies who are compromised or sick will almost always show changes on their traces, a '*non-reassuring*' trace', *so will some babies who are perfectly healthy.* [35]There can be slowing of the heart rate, loss of the variability in the rate and the appearance of decelerations yet if the baby is delivered immediately -often via caesarean section – by concerned doctors, he or she cries immediately and shows no sign of oxygen deprivation on testing blood sampled from the umbilical cord. EFM results in a large number of false positive results as far as the diagnosis of 'fetal distress' is concerned. Other more sensitive tests are required to determine which babies are really at risk and which are not – and although there are other tests many are still in the research stage. Certainly there is good scientific evidence to show that there is no reason to use continuous monitoring on healthy women and their babies during labour. Continuous CTG in labour should be confined to women who have had demonstrable problems in pregnancy or who develop such problems in labour. [35,36]

A further concern with CTG is that, sometimes, traces are open to interpretation – what seems reassuring to one doctor may worry another.[41] The trace is printed out on

graph paper and provides a permanent paper record of the labour – and so it can be used in court as evidence for or against negligence in a legal case. Awareness of this possibility has on occasion caused doctors to err on the side of caution when interpreting a trace. As a number of writers have pointed out, it is better to be seen to be *doing something* rather than waiting and watching, and that *something* may be a caesarean section.[42] Thus there are now strong medico-legal reasons for continuing the use of EFM even when no valid medical reason exists – this will be discussed further in Chapter 6.

There are other tests that have been tried, or are currently used, during labour, to help distinguish the truly distressed babies from those who are not, including measuring the acid levels of blood samples taken from the baby's scalp, and measurements of oxygen levels using a somewhat similar technique.[43] Some of these tests are used routinely in some hospitals, others are more experimental. What can be said is that at the moment, although research is proceeding rapidly, there is no single 100% accurate test that can be used continuously throughout labour and that will tell doctors and midwives which babies are distressed, deprived of oxygen and at risk of damage or death, and therefore genuinely in need of urgent delivery, possibly by caesarean section, and which are not.[35]

Other methods of investigating pregnancy have come and gone. Many attempts have been made to measure various pregnancy-related hormones in blood and/or urine samples; these assessments have now been shown not to be useful. There have also been extensive experiments with the recording of fetal movements by the mother. It is now clear that while the woman who reports that her baby is not moving or is moving much less than previously must be taken seriously, there is so much variation in what women feel as 'normal' movement that attempting to document it as numbers of movements is unrewarding.[35,36]

There are two more developments which have increased the use of medical technologies around pregnancy and childbirth. The very sophisticated techniques of in vitro fertilisation (IVF) and associated procedures are now responsible for the conception of around 2% of all the babies born in Australia each year.[44] The initial investigation of women (and their partners) who are experiencing difficulty becoming

pregnant requires invasive examinations, ultrasound, a range of blood tests, and laparoscopy. The treatment requires even more complex high-tech equipment and medical skill to bring about the production and 'harvesting' of eggs from the woman, fertilisation in the lab, and implantation of the embryos back into the woman's body. Although the political and social implications of artificial reproductive methods are beyond the scope of this study, there are some aspects that have been discussed by feminist scholars which are relevant to the practice of caesarean section. These include the argument that the technology is being used to control women, a concept well developed by scholars inspired by the work of Michel Foucault; however artificial reproduction can also be seen from a completely opposite viewpoint, as women controlling their own lives, as many women would claim themselves to be doing.[45,46,47] This discussion will be taken up further in Chapter 4.

Even greater technological advances have been made in the science of caring for pre-term babies – babies who have been born very early in pregnancy, either as a result of spontaneous labour, or because a serious medical condition has compromised the health of the mother or baby, indicating a need for early delivery (often by caesarean section). Around 10% of babies in Australia arrive pre-term (before 37 weeks of pregnancy).[44] Survival with good results is now a highly probable outcome from 26 weeks of pregnancy, and possible even from 24 weeks; it is likely that the barriers will be rolled back even further in the near future. For a large group of pregnant women and their families, technology is therefore already an important, and accepted, component of reproductive health. So the idea of high-tech monitoring of pregnancy, and of intervention in pregnancy and labour, is for many people simply a logical consequence of what they are familiar with already.

The role of ultrasound scanning in contemporary obstetric practice

The main technique which has allowed progress in determining, during *pregnancy*, which babies are in trouble in the uterus, and therefore need early delivery, and which do not, has been ultrasound. Ultrasound is now the most important investigative tool in obstetric practice, and has an enormous influence on how women view their pregnancies. More than any other technology it has been responsible for the concept, now well understood by physicians, of the fetus as a patient. As Kypros Nicolaides,

one of the first specialists in fetal maternal medicine, commented: "the barrier between the fetus and the obstetrician is being shattered. We now have access to the fetus, and the philosophy of the fetus as a patient is emerging."[28] I will therefore discuss the technology at length.

Ultrasound scanning is an integral part of modern obstetric practice - ultrasound scans are used to image normal pregnancies as often as complicated ones.[2,35,36] The increased use of ultrasound since the 1960s has paralleled the rise in caesarean rates and, as will be shown, the two developments are intimately connected. While EFM and laboratory tests enable physicians to gain much important information about the health of the mother and baby, their clinical nature means that they are detached from the pregnant woman's conception of her pregnancy and her mental image of her baby. Ultrasound is certainly a further example of technology applied to the investigation and medical management of pregnancy, but it also supplies realistic images of the unborn child to the parents, and therefore appeals to the imagination and emotions of those parents in ways that EFM and laboratory blood tests cannot. Ultrasound offers the woman (and her partner) a direct connection to the baby often many months before that baby is born. Through the medium of ultrasound, a pregnant woman can 'see' her unborn child, and identify and bond with that child. This ability to identify with her child increases a woman's sense of control over her pregnancy, and makes her more likely to want to be involved in decision making about her care and the environment in which she delivers her child. It may therefore affect her decision about caesarean section, if the possibility of this arises later in the pregnancy.[12,48] As well, the ability of obstetric ultrasound to predict fetal abnormality, to measure the growth of the fetus, to determine the site of the placenta, and to observe fetal wellbeing in numerous other ways, means that the technique can now be used to give a very accurate indication of when delivery should optimally be performed in complicated pregnancies. Since such early deliveries are frequently by caesarean section, the use of ultrasound is associated directly with an increase in the caesarean rate.[35,36]

From 1910, when sonar was first used to detect submarines on the seabed, the idea that it might be used for medical purposes began to circulate amongst practitioners and scientists in a number of disciplines. However it was only in the mid-1950s that Ian Donald, Professor of Midwifery in Glasgow and familiar with the use of sonar

from his Navy experience during World War II, began to try to apply the technique to assessing the fetus within the medium of the amniotic fluid.[1] His first efforts concentrated on ascertaining the position of the placenta in the uterus and measurements of the diameter of the baby's head (BPD, the biparietal diameter, the measurement from one side of the head to the other). Today these are two of the most basic assessments made of pregnancy. Pregnancy ultrasound has become a sub-specialty of obstetrics and gynaecology and sonography a separate discipline from radiography (the use of X-rays); all are parts of the whole specialty of medical imaging. In medical ultrasound scanning, high frequency sound waves are used to produce dynamic images of organs, tissues and blood flow within the body. A transducer sends a stream of waves into the body (in the case of the pregnant woman into the bodies of both mother and fetus) and detects their echoes as they bounce off internal structures. The sound waves are converted to electrical impulses which are processed to form an image displayed on a computer monitor. From these images videos and individual portraits can be made.[11,48]

There are certain ultrasound procedures that are now routinely offered to pregnant women in most developed countries – these include a scan in early pregnancy to determine or confirm the gestation (how many weeks advanced the pregnancy is) and thus the expected date of birth; a fetal nuchal translucency scan (FNT) at around 12 weeks gestation as part of early screening tests for Down syndrome and related conditions, and an 18-20 weeks gestation scan for fetal morphology (to determine whether the anatomy of the fetal brain, heart, abdomen, limbs and other organs appears normal).[35,36] The underlying medical reasoning for these standard ultrasound screens is that if a major fetal abnormality is detected, depending on its nature and severity, either termination of the pregnancy can be arranged or plans can be made with paediatricians for treatment of the child soon after birth. This purpose is, however, not always spelt out very clearly to pregnant women and their partners who usually express greater interest in 'seeing' images of their fetus -- it is usual practice to display the scan as continuous video images on a screen that the woman, her partner, family and friends can watch, and to supply either a video/DVD recording or still photographs which the woman can take home with her. [49,50] Of course the vast majority of women undergoing routine ultrasound scanning do not demonstrate any fetal abnormality and medical ultrasound generally takes place "in a friendly and

relaxed atmosphere" as described by several practitioners.[11,48] The safety of medical ultrasound for both the mother and her infant has been well-established and documented, for example on the website of the FDA, whose safety recommendations date back as far as 1989.[51] Low doses for relatively short periods are used in obstetric practice and "no confirmed biological effects on patients have been noted in association with the present use of diagnostic ultrasound, although the possibility exists that such effects may be detected in the future" according to the American Institute for Ultrasound Medicine quoted on the website.[51]

The past decade has also seen the emergence of so-called 'keep-sake- ultrasound' – the provision of ultrasound on the demand of parents, with 4-D imaging in colour so that parents can watch the baby on the screen, breathing, moving, yawning, and can if they wish determine the sex of the child.[48] Whilst it is usual practice to display such images during 'normal' medical scanning, 'keep-sake' ultrasound is done purely on the demand of the mother and/or her partner. Such services may be provided by medical ultrasound practices; in the United States there is also a rapidly-growing commercial 'shopping-mall' pregnancy ultrasound industry in which ultrasounds are performed by non-medically trained persons on the request of parents. These have names such as Womb With A View, Fetal Fotos, and Peek-A-Boo, and offer much longer DVDs for parents to purchase.[48,52,53]This is becoming more common in Australia with ultrasound practices increasingly offering longer and more detailed scans and videos/DVDs, and non-medical ultrasound businesses in shopping centres and private homes also apparently increasing in number. The phenomenon of 'keep-sake' or 'entertainment' ultrasound has been strongly criticised by some doctors but supported by others.[11,52,53]As Melbourne obstetrician Dr Lachlan De Crespigny observes: "Entertainment is a legitimate part of a diagnostic pregnancy ultrasound scan. It reduces anxiety, stimulates a parental bond and contributes to positive health behaviour. Most would consider it inappropriate *not* to show women images of their fetuses. I am unaware of this practice ever being discouraged (in medical practice); indeed most would consider patient communication and demonstration of fetal images to be an important part of a diagnostic ultrasound examination."[48] Why, then, he argues, should it not be available at parents' request? He points out that when American actor Tom Cruise purchased an ultrasound machine with plans to perform scans himself on pregnant fiancée Katie Holmes, doctors warned that this was "not

medically necessary." However, says De Crespigny, "if limiting ultrasound exposure was of great importance, professional organisations should have policies that highlight the dangers of ultrasound in clinical practice. They don't."[53] For example, Dr Michael Klein, in an issue of the medical journal *Birth* entitled *Why do women go along with this stuff?* argues that "ultrasound examinations are too often done unnecessarily, redundantly or for frivolous rather than indicated reasons."[52] His arguments are non-specific, but he cautions that the safety of prolonged ultrasound exposure of the fetus to ultrasound is not well established, confirming De Crespigny's view that "medical ultrasound is said to be acceptable and non-medical ultrasound is said to be unacceptable.".[53] Others have criticised the use of ultrasound in pregnancy from a different perspective: "In the eyes of medicine, the fetus is primarily a medical product, subject to medicine's quality control as it moves along the gestational assembly line" write Richard and Dorothy Wertz, American historians of childbirth, and they go on to describe the fetus passing down this production line, subject to frequent ultrasound 'quality control' checks with the possibility of abortion if requirements are not met.[2] The Wertzes thus see ultrasound as dehumanising birth – a view directly opposed to that of the physicians performing ultrasound scans.

Many well conducted studies have, however, established that ultrasound scanning, even in early pregnancy and whether medically indicated or not, can and does affect the pregnant woman's relationship with her fetus.[13,49,50,54,55] Women who visualise images of the fetus well before the appearance of any bodily cues, such as increase in abdominal size or the perception of fetal movements, have been shown to alter subsequent behaviour, and to demonstrate stronger attachment to the unborn child who is perceived as taking on aspects of 'personhood' even in the early weeks of pregnancy. There may be measurable changes in maternal behaviour, such as stopping or reducing cigarette smoking or alcohol intake, improving diet, and scheduling dental visits, and women may also express more positive emotions about the fetus following an ultrasound scan. Sedgmen and others carried out a randomised trial in Sydney presenting women pregnant for the first time with a questionnaire (the Child-Schema questionnaire) which included statements such as 'I am wondering already if the child will look like me or my partner' which the woman then rated on a Likert scale of 1-6. Women were asked to complete the questionnaires both before and following ultrasound scans at 12 and 18 weeks gestation. A significant positive

impact of early ultrasound on maternal feelings was demonstrated as were measurable changes in maternal behaviour, in particular a reduced consumption of alcohol, following ultrasound. These findings concurred with those of similar studies; interestingly, while some studies have shown that 3-D imaging, which gives a more 'realistic' human appearance to the fetus, has a greater impact on maternal emotion and behaviour than 2-D imaging, which has to be interpreted for the woman by the technician or the doctor, others have not. It appears that the fact of seeing the fetus structurally and in movement is sufficient to influence maternal emotion and decision making.[54,55]

Childbirth educator Sheila Kitzinger has caustically described such use of ultrasound in pregnancy as "the medical takeover of mother love." Observing that mothers are surprised, delighted and intrigued when they 'see' their babies on the ultrasound screen, she says, has led "some obstetricians assert that this should be included as a routine part of care to enable mothers to fall in love with their babies. It must be integrated into obstetric management. If it becomes a process which is medically managed there is a real risk that doctors may do more harm than good."[28] This view is perhaps overly critical of doctors attempting to 'humanise' pregnancy and birth, and does not give sufficient credit to the opinions and intelligence of women themselves. Certainly Lachlan De Crespigny, an obstetrician skilled in the use of ultrasound, provides a contrary view. "Patient satisfaction and consumerism is a fundamental part of obstetric care. This should not be different for the ultrasound examination, which is one of the most exciting experiences in pregnancy. The pivotal role that the ultrasound examination can have in women developing a more positive attitude towards their fetus has long been recognised." [48,53]

Certainly it is true that many women do request ultrasounds during pregnancy, over and above that provided as part of normal pregnancy care, as is evident from the proliferation of the 'shopping mall' and 'keep-sake' services, many of which advertise online with recommendations from apparently satisfied customers. Of course, the vast majority of fetuses at 18 weeks and beyond are entirely normal so the ultrasound experience is mostly a happy one. On one website offering these ultrasound services 'Clare, of Suffolk' praises "A really amazing experience! The images were so clear and revealing. Worth every penny!" [56] while on another 'Sarah' displays her pregnant

abdomen with the comment "Phenomenal experience! Now I know what she's up to in there!"[57] And De Crespigny writes of the concept of non-medical ultrasound services like these that "women describe their non-medical ultrasound experience as more positive than their medical ultrasound examination, citing that staff were friendlier, took time to point out fetal features and spent a longer amount of time with them." [53]It is not hard to understand that there is a deep need for pregnant women to identify, observe and connect with the fetus that is met satisfactorily by the provision of the ultrasound images. This appears to exist independently of medical and societal manipulation, and in fact writers such as Kitzinger, the Wertzes and others acknowledge the generally positive impact of ultrasound technology on women's reproductive health, in particular its capacity to assess the progress of pregnancy.[2,28] The ability of early ultrasounds to increase the attachment of a woman to her unborn child in early pregnancy, for a woman who has a wanted pregnancy, is in general viewed favourably (although its use in this regard for opponents of abortion has rightly been criticised). However, together with this greater knowledge of the baby-to-be there comes a greater need on the woman's part to be involved in decision-making around the pregnancy and birth, and an increased assertiveness on the part of women in making their wishes known in this decision-making.[48,53]

In Australia even women who want minimal ultrasound during pregnancy or who live far from ultrasound services generally now opt for an 18-20 week scan.[35,36] From the public health viewpoint, the value of this scan has been questioned – do the abnormalities occasionally detected justify the time, expense and organisation of the necessary ultrasound services in the community?[58] However, on an individual basis, ultrasound is here to stay; women and their partners love the fact that they can 'see' the baby, moving, often in colour, and in real-time.

Early ultrasound (up to 20 weeks of pregnancy) can diagnose structural abnormalities in the fetus, such as failure of normal development of the heart, brain or kidneys. Ultrasound is also used when samples are being taken from the amniotic fluid or the placenta for chromosomal or genetic testing. Through these various kinds of tests a small number of women will be found to have infants affected by serious abnormalities; they can be offered termination of pregnancy, although not all choose this option. [35,36] For the remainder, the majority of women, the ultrasound scan

provides a reassurance of the 'normality' of their offspring. Over the past decade, this reassurance has grown into the *expectation* that the baby will be normal.[48,53,59,60] There is an assumption that parents who do all the right things – live a healthy lifestyle, avoid alcohol and tobacco, attend for antenatal and birth care, have the ultrasounds, follow instructions, have a *right* to a perfect baby. In part, this belief arises from the choices women now have in other aspects of their reproductive lives – choice about contraception, choice about whether and when to have a child, the right to safe legal abortion and to sterilisation procedures on request Richard and Dorothy Wertz, acknowledging "our historical propensity to want to improve on nature", describe middle class American women who "seek the 'priceless child' by requesting an arsenal of tests and treatments."[2] And sociologist Barbara Katz Rothman has pointed out that in a 'consumer' society, people tend to regard children as 'products' they can or cannot afford, and that by that reckoning it is realistic to see the prospect of bringing up a child with a serious physical or intellectual disability as beyond their means, both financially and emotionally.[60] She was referring particularly to the possibility of abortion in early pregnancy of a fetus with severe physical abnormalities. However, in the later weeks of pregnancy, the same assumption of perfection in the finished product at the end of the assembly line may inevitably lead to the belief that if anything at all seems to be abnormal or potentially abnormal, it should be quickly fixed, and the way to fix it is often with a caesarean section.

In later pregnancy, ultrasound is a valuable tool which allows doctors to determine how the pregnancy is progressing and is therefore useful in monitoring women with medical complications such as diabetes, raised blood pressure, a history of previous premature labour, twins and other common problems.[35,36,58] It is possible to measure accurately the growth of the baby and chart progress so it is clear whether or not this is within established normal limits. It is possible to measure the amount of amniotic fluid and to assess the blood flow both through the umbilical cord and in the baby's own blood vessels. Ultrasound therefore provides a guide to when a fetus at risk should be delivered. Such delivery is often well before the due date of birth and therefore is either by elective caesarean or by attempted induction of labour with the possibility of falling back on caesarean if induction fails. So the development of this valuable and sophisticated technology has inevitably led to an increase in caesarean rates. Since the woman can usually see the ultrasound images of her baby for herself

on the screen as the scan takes place, she can feel involved in decisions about early delivery.

Apart from the use of ultrasound in complicated pregnancies, the 'routine' ultrasound also contributes to women's feeling of control over the processes of birth. Women 'know' the fetus from the ultrasound pictures and are intimately involved with him/her. The obstetrician/sonographer has made measurements, accumulated data, measured to two decimal places but the parents have seen the heart beating and the baby moving in the intimacy of the womb. They have seen the child in utero, become emotionally attached and want only the very best for him or her. They want nothing to go wrong on their infant's way out into the world. Naturally they will be more assertive about agreeing to or requesting caesarean section if there is a risk to this precious little person. [48,53,58] Of course other technology such as CTGs also have some of this effect. However ultrasound is the most directly personal, involving as it does the mother, and usually the father, in direct contact with their offspring.

Ultrasound and associated techniques including Magnetic Resonance Imaging will undoubtedly continue to develop and provide more and more insight into the growth and condition of the fetus in utero.[61] They may therefore contribute to our being able to distinguish infants that are truly compromised and at risk from those which are not and should be left happily in the womb. However at the same time women will become more and more involved with the increasingly real images on the screen, and therefore more likely to either demand or to support the doctor's suggestion of intervention, if there appears to be any risk to the outcome of the pregnancy. Ultrasound is at present the medium which seems most effectively, to parents and to doctors, to guarantee the perfect child.

Conclusion

The 'medicalisation' of childbirth has tended to be regarded by sociologists and historians of childbirth as a process originating in the middle of the 20th century. In fact, as I have shown, it has been a continuation of processes developed and refined in the years since the middle of the 19th century, although the decades from 1950 onwards saw an acceleration in the application of technology to pregnancy and birth.

In the view of physicians, this improved the health of women and their babies, and it certainly enabled many women with chronic medical conditions who would previously not have had successful pregnancies to do so. The rates of death of both mothers and babies during pregnancy and childbirth have demonstrably decreased dramatically since the 1950s. Non-medical commentators on childbirth practice have pointed out that much of this decrease may be attributed to better public health measures undertaken at the same time, and have questioned many routine forms of antenatal testing, particularly EFM. In addition, the benefits to the health of mothers and babies needs to be set against the alienation felt by the women to whom the new technologies were applied. The move towards doctor-based and hospital-centric antenatal care meant many women felt they were simply objects passing down the "production line" described by the Wertzes.[2] They had no voice in what was to happen to them. The same feelings were often paramount in descriptions of their treatment in labour and post-natal wards. While this perceived lack of control over their own bodies was partly due to the intrusion and unfamiliarity of the new technologies themselves, it was also partly the product of the times and the societies in which these women lived – the several decades following World War II.

Ultrasound has had a dual effect, something which has become more apparent in the years since 1980. Ultrasound has been evolving rapidly in that time, and increasingly sophisticated techniques and images are now widely available. Ultrasound assists in the diagnosis of abnormalities and problems that may arise during pregnancy, thereby increasing the possibility of interventions including caesarean birth if such complications are found. It also changes the attitudes of parents, stimulating or reinforcing their emotional attachment to their unborn child whose image becomes increasingly vivid as pregnancy progresses; the strength of this second effect is demonstrated by the fact that pregnancy ultrasounds are now offered for sale for their emotional value only and completely outside medical practice.

A rise in the rate of caesarean sections was an inevitable consequence of the medicalisation of childbirth, partly because technology *did* succeed in identifying and assisting in the treatment or early delivery of fetuses who were at risk of death or damage if they continued in the womb. However the indiscriminate use of technologies such as EFM has meant that some babies were also delivered by

caesarean who were not in fact compromised, and although there have been refinements in the use of EFM and the introduction of other technologies, this practice continues. One of the reasons, to be discussed at length in Chapter 6, is fear of litigation on the part of physicians.

In response to the medicalisation of childbirth there arose a movement questioning the validity of new technologies, the rates at which they were used, and the results in terms of pregnancy outcomes. This movement began initially among midwives and among 'consumers' – pregnant and birthing women themselves, who were outspoken in their criticism of much of the management of childbirth by physicians. Latterly, this criticism has been shared by many practising doctors. In the following chapter, I turn to the growth of this consumer movement and its ultimate effects on the rate of caesarean section – which are not entirely as might have been expected.

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4. 'Choice' in childbirth and the growth of the consumer movement questioning the medicalisation of birth

The years of the most intense medicalisation of childbirth – the 1960s-1980s – were also the years that saw the second wave of feminism sweep across developed nations.[1] Women fought in the public domain for equal voting rights and equal pay with men, for the right to maternity leave, the right to enter certain professions and to involve themselves equally in politics. They fought in the home for an equal contribution to housework and childcare from male partners. In these struggles, the private domain of pregnancy and childbirth was not neglected. There is a large body of feminist writing examining and analysing the increasing medicalisation of birth. Whereas physicians saw increasing medical involvement in pregnancy and childbirth as enhancing pregnancy-care choices for women, thereby increasing women's control over what happened to them, feminist scholars saw medicalisation as taking away the control of women over their own bodies during important life events, thereby reducing their choices. These two views are clearly diametrically opposed, and as will be shown in this and following chapters, this polarisation is at the core of today's caesarean debate.

Increasing control over reproduction - and discontent with the medicalisation of childbirth

The introduction of the oral contraceptive pill in the early 1960s meant that, for the first time in history, women had a reliable way to control their own fertility.[1] The benefits and risks of 'the Pill', and its history, are outside the scope of this study, as is a discussion about the Pill's societal disadvantages. However, the effects it had on establishing the reproductive rights of women in developed countries and in changing general mindsets world-wide to accept a woman's right to control her own fertility have been both immense and well-documented.[2,3,4] As a woman gynaecologist who specialised in family planning and sexual counselling remarked, looking back at the arrival of 'the Pill' in Australia: "It was the answer to a woman's prayer. I don't think we'd have had the freedom to go to work, even to be feminists, if it were not for what hormonal oral contraception has done." [5]

Concurrently, the long struggle to obtain legal abortion that had been waged by women (and men) for decades resulted in the legalisation of abortion in various ways in the United Kingdom (Abortion Act, 1967), United States (Roe vs Wade decision in the US Supreme Court 1973) and Australia (Menhennitt ruling in Victoria 1969 and later decisions in other states.)[5,6,7] This further strengthened women's sense of control over their own fertility. It became accepted that women could decide not to marry, not to have children at all or to postpone pregnancies until after establishing themselves in a career or pursuing other interests. The number of children and their spacing was something a woman and her partner could control, as was the decision to undergo sterilisation. Women's sexuality began to be something that could be publicly acknowledged.[1,8]

At the same time, questioning began of what were largely male decisions about practices in pregnancy and childbirth. In Australia and other developed countries, measures that had become routine for uncomplicated labour – pubic shaves, enemas, episiotomies, the placing of women on their backs in stirrups for normal births -- all became subject to scrutiny. The continuous monitoring of the fetus during labour and other uncomfortable or invasive procedures designed to assess fetal welfare were criticised as mostly unnecessary. So with regard to some aspects of women's reproductive health, 'medicalisation' was welcomed because it increased the autonomy of women by giving them more reproductive choices. With regard to childbirth, on the contrary, a movement which promoted more 'natural' childbirth and a decrease in medical intervention increased in strength. The development of this opposition to the medicalisation of childbirth has been well described by many writers (and has been discussed to some extent in the previous chapter). Its protagonists interpreted 'medicalised' pregnancy and birth as the usurping by (mostly male) medical practitioners of the traditional roles of women in childbirth – as mothers, midwives, sisters and friends. While acknowledging that maternal and infant mortality and morbidity rates fell dramatically from the late 19th century onwards, commentators such as Judith Walzer Leavitt, Richard and Dorothy Wertz in the United States, and Sheila Kitzinger in the United Kingdom, believed that most of these improvements should not be attributed to the involvement of specialist physicians and technology in birth practices. These writers see them instead as the

result of improvements in public health and standards of living.[9,10,11] According to these authors, the arguments that have been used to advocate equal rights for women and female control over reproduction also supported a decrease of medical involvement in pregnancy and childbirth. They advocated a return to an imagined ideal past, in which childbirth was apparently without problems and a natural part of (women's) community life. [9,10,11,12]

A number of feminist social commentators have taken a rather rosy view of home birth in the 19th and early 20th centuries. "Birth used to be a social event, experienced at home, in which the birthing woman could get advice and support from female relatives and friends who had borne children," writes Ruth Hubbard, a prominent feminist critic of the effects of science on women's health.[12] "If a midwife was present, she was usually from the birthing woman's class and ethnic group and might know her socially and have attended births by her friends and neighbours. Now childbirth takes place in hospital, where it is made to conform to medical and hospital routines." She adds that "women no longer need to have fears (of death) – as long as pregnant women have access to adequate nutrition and the necessary economic and social supports." Leavitt, writing in 1987, felt that women who gave birth at home in the nineteenth century "retained considerable control, even when they were attended by male physicians."[9] Both these writers appear to overlook the fact that much current antenatal testing and treatment during childbirth frequently prevents those deaths that were common two or three hundred years ago, and their retrospective views of 18th and 19th century childbirth contrast sharply with those of Margaret Llewellyn Davies (described in Chapter 3), who actually lived in the 19th century and wrote that "skilled medical attention was particularly vital because of poverty."[13] Nevertheless, feminist (and other) writers have made valid criticisms of the wholesale 'medicalisation' of pregnancy and childbirth, which they pointed out were, and are, usually natural, physiological processes. "Obstetrics treats the body like a complex machine and uses a series of interventionist techniques to repair faults that may develop in the machine" said health commentator Diony Young in 1978.[14] And Ann Oakley, who has written extensively on childbirth, extended the metaphor: "A mechanical model directly opposes the natural model; it is 'man-made' and requires regular servicing and maintenance to function correctly." [15]

The fact that, in the majority of cases, the results of tests and investigations done during pregnancy are normal has led many writers on childbirth to question their necessity and indeed the motives of the medical profession in introducing new tests. Ruth Hubbard declared: "Because of the fear and costs of malpractice suits, physicians increasingly feel that they need to perform tests so as to be legally covered in case a baby is born with a health problem they could have detected. And because of the responsibilities and costs of raising a child with a serious disability, prospective parents also feel pressure to use the tests. Therefore, as the number of conditions that can be diagnosed before birth increases, more women will have to decide whether to undergo testing. If they do, they will experience the uncertainty of waiting for results, which is often the most difficult part of the procedure. This kind of stress on a pregnant woman gets communicated to her fetus. New choices all too readily become obligations to make the 'right' choice by 'choosing' the socially approved alternative."[12] Naturally, an increase in the range of choices increases the number of decisions that women have to make.

There was sharp criticism of increasing technological intervention in pregnancy as writers looked back with some nostalgia at the era of apparently 'natural' pregnancy and birth. Hubbard wrote: "Many women believe that the new interventions in pregnancy are increasing a procreative choice and are improving our lives as well as those of our families. As the new technologies become part of routine pregnancy management, the experiences of past generations of women are erased and contemporary women find it impossible to imagine how they could live without technologies that women in the past did not miss."[12] Wellknown American feminist commentator Adrienne Rich saw birth as "an experience of passively handing over our minds and bodies to male authority and technology."[16] Ann Oakley commented that "antenatal care can be interpreted as maintenance and malfunction-spotting work; obstetric intervention in delivery as repairing mechanical faults with mechanical skills. Concretely as well as ideologically, women appear to become machines, as machines are increasingly used to monitor pregnancy and labour, to initiate and terminate labour itself. One machine controls the uterine contractions, which are recorded on another machine; regional analgesia removes the woman's awareness of her contractions so that these must indeed be read off the machine; and keeping all the machines going becomes what 'looking after' a patient in labour means." [15] And

Sheila Kitzinger cautioned readers of a book addressed to 'older' mothers: "You may feel under pressure to have tests you do not really want. You need not simply put yourself in the doctor's hands. You can make informed choices, valuing doctors as people with information and skills, but not handing control over to them."[17]

Some feminist scholars saw in the effects of early pregnancy ultrasound on maternal behaviour a reinforcement of the role of technology in pregnancy and childbirth, and not one always to be viewed positively. Ingrid Zechmeister, examining the use of prenatal ultrasound from a self-declared post-modernist feminist viewpoint, says that "women express a positive view of ultrasound and feel empowered by reproductive technology because they are a part of the society's core value system."[18] She refers to Foucault's description of coercion – an influence not necessarily always involving physical force, but as being rather "the direction of free will." In presenting for ultrasound, women are being persuaded to act in the experts' (doctors') interests but also in the interests of society as a whole. They "see what they ought to," as Zechmeister describes it, that is, images of the fetus, and act subsequently to improve the health of the fetus; this is, in the interests of the greater society as well as themselves. Robbie Davis-Floyd echoes these sentiments: "(women have) an uncontested faith in the medical model of childbirth that is reinforced by the technology."[19]

The views of those feminists who are critical of the medicalisation of birth, and those of physicians, have diverged widely, and continue to do so. Physicians believed that the tests and interventions that comprised the 'medicalisation' of childbirth were beneficial to women, in that abnormalities could be detected and in some cases corrected, but these same physicians also feared the legal consequences of not testing. So a majority of pregnant women undertook, and undertake, the tests and interventions prescribed in the belief that a healthier outcome may result, a belief that in many cases has a good deal of truth in it, since there have been demonstrable quantitative improvements in the rates of maternal mortality and morbidity. In contrast, sociologists and writers on the topics of pregnancy and birth questioned the need for antenatal tests, and suggested that society, to a greater or lesser extent, manipulated women into undergoing tests, in order to avoid having to pay for the longterm care of infants born with disease or disability.

Some of the critics of current caesarean rates take a fairly extreme point of view, claiming that genuine choice in childbirth and patient autonomy, is not offered to women, because all models of mainstream care ultimately devolve responsibility to an obstetrician who will be called upon if serious complications arise. Such critics claim that women are manipulated into accepting caesarean births, as Ann Oakley and others believe has happened with the use of antenatal testing and investigation. Marsden Wagner, a former paediatrician who has become a well-known and very vocal advocate of out-of-hospital birth, especially in the United States, and who has lectured in Australia and admonished Australian obstetricians, believes that it is 'society', rather than women themselves, which demands the 'perfect' child – to minimise the costs to the healthcare system of caring for disabled children -and that doctors act as the agents for this societal manipulation. "Giving women choice about certain maternity care procedures is not giving up control since doctors decide what choices women will be given and doctors still have the power to decide whether or not they will acquiesce to a woman's choice," he asserts.[20] And he concurs with Foucauldian views of technology in pregnancy and childbirth as controlling women, describing women as "brain-washed" into accepting technology, such as ultrasound scanning, that can assess pregnancy and may then lead to intervention such as caesarean section.

Wagner has written extensively about 'humanising birth.' "Humanised birth means putting the woman giving birth in the centre and in control so that she and not the doctors or anyone else makes all the decisions about what will happen." And he suggests that women should be free to make decisions that do *not* lead to the best possible health outcome for their child. "Doctors are human; birthing women are human. To err is human. Women have the right to have any errors committed during their birthing be their own and not someone else's." [20] More recently Australian advocates of more 'natural' birthing have claimed that "pregnant women are much more willing than their doctors to accept the risks involved in having a normal vaginal delivery and most are prepared to risk even the most debilitating and painful outcomes rather than have an elective caesarean."[21] Physicians have countered that women making such statements have not been well-informed about the true

implications, for themselves and their children, of such risks when caesarean birth has been recommended to them. [22]

Women as consumers

More recently, the ideas around women's rights and control over reproduction have inspired a very different approach to the medicalisation of pregnancy and childbirth, an approach which emphasises the rights of women as consumers of medical care. In this perspective, the autonomy of women is enhanced when they are given a range of choices with regard to the experience of giving birth, accompanied by complete and reliable information about the nature, risks, and effects of these choices. Medical interventions and the use of medical technology are no longer seen as inherently problematic—on the contrary, when they are instrumental in realising the preferences of medical consumers, women are actually entitled to them. When women medical consumers decide that they prefer a caesarean section over natural birth, this is not interpreted as the effect of medical brainwashing or the medical subjugation of women, but as their inalienable right.[23]

Some commentators on the medicalisation of pregnancy and childbirth have emphasised that, for women themselves, the main complaint was not related to excessive medical control or a frustrated desire for a birth as natural as possible. Rather, it was concerned with a lack of communication on the part of their carers, with birth taking place in an intimidating clinical environment, and with the feeling that they had no control over the process. Kitzinger described how one woman who tried to ask for information at an English clinic was made to understand that "the decision about where to have my baby was nothing to do with me and would be made on my behalf by the hospital doctors." Kitzinger comments that "it is not just that hospital care is sometimes stark and unfriendly; many women see that the failure to achieve any continuity actually results in second-class or dangerous medicine and obstetrics." [24] Feminist writer Diana Scully, in a study of the training of obstetricians and gynaecologists in the United States, questioned doctors about how they would describe a 'good' patient. "Their answers emphasised passivity, obedience and middle-class status. One male obstetrician said: 'The main thing is that the patient understands what I say, listens to what I say, does what I say and believes what I say.'"[25] These attitude and practices, which were more common in the 1960s and

1970s, have already been discussed in the previous chapter; they have rightly been criticised by many commentators.

The evolution of women into 'consumers', and their coalescence into consumer movements, occurred from the late 1970s onwards, partly as a result of women's experiences during pregnancy and birth, and partly because of larger social changes already described. Women began to play an active part in advocating change in the delivery of pregnancy care. Ann Oakley was already writing in 1984, "We must accept that the voice of the consumer will not be quietened – indeed it is going to become louder and louder in the next decade, and therefore we are well advised to take note of it."[15] Oakley's views represent a different type of protest against contemporary practices around pregnancy and birth — one directed not against medical intervention and the medicalisation of childbirth as such, but against the insensitive and paternalistic ways in which care was delivered. She advocated respect for the rights of pregnant women as consumers of medical care and their rights to participate in any decisions about the care they receive.

There are certain assumptions in the concept of 'consumers.' The first is that women who are pregnant or giving birth can be accurately described as consumers of care. This, however, is probably a better description than 'patient' since a patient is a person who waits passively. The term 'consumers' implies individuals with a knowledgeable and questioning attitude to their care who want to be involved in decision making. Kitzinger developed this concept when she wrote that "doctors now also learn to see pregnant women as 'consumers', and to take patient satisfaction into the reckoning. According to this paradigm, pregnant women are like shoppers allowed to choose between brands of washing detergent or to select cakes in a well-presented display. But suppose they do not want cakes in the first place? Women are not just consumers of healthcare. In childbirth we are the producers, without whom doctors would have no jobs. Women should be able to say what they want, and – unless it can be shown through properly conducted research, that this is positively dangerous – expect it to be provided." [18] Oakley repeated these views. "The advent of the consumer movement in health care in recent years is a protest against that process known as the medicalisation of society"she wrote. "In the case of childbirth it is a protest against the increasing medicalisation and intervention in a process seen as

largely physiological."[15] Oakley concedes that not all pregnant women want the same thing from their pregnancy care: "It is, of course, as silly to argue that all women having babies have the same views about what they want from their care as it is to say that all obstetricians and midwives have the same views." However, she makes the point that many studies have concurred in finding that women differ greatly from the medical profession in their views about what they find positive in the maternity services.[15]

The role of midwives

At the same time as the role of the consumer grew that of the midwife was also greatly extended. Midwives have traditionally had a major role in the care of pregnant women in both the British and Australian health systems but until the early 1980s this role was subservient to that of doctors.[26] Increasing assertiveness on the part of individual midwives and their professional organisations has seen midwives come to play an equal and complementary role in the provision of care for pregnant and birthing women. Midwives now train through university courses and can complete higher degrees. Midwife led-clinics and team midwifery have been established to try to ensure continuity of care for women throughout the pregnancy and birth. Midwives were also active in the efforts to discontinue the practices of routine shaves, enemas and episiotomies. Midwives have come to play a central role in the provision of care in pregnancy and during birth, are very vocal in what they see as advocacy of women's rights, and very effective politically in seeking improvements in maternity care.[27]

The response of the medical profession and government health departments to critiques of medical approaches to pregnancy and childbirth

In Australia, doctors and health departments have, to a great extent, listened to what women as consumers and midwives have had to say about the need for changes in the ways pregnant women were cared for. In New South Wales, the Shearman Committee undertook a major review of the state's maternity services in 1987, culminating in the *Report into Maternity Services in New South Wales* that recommended sweeping changes in how care was provided.[26] The Shearman Report, the first of a number of Australian State Health Department reviews of maternity services, acknowledged the

deficiencies of labour ward care then current, stating that "medical interference should be reduced to a minimum compatible with the best interests of mother and baby." The Report noted with concern a caesarean section rate for NSW in 1986 of 15.3%. Furthermore, "outmoded medical procedures of doubtful value should be discarded" and "consideration should be given to the physical and emotional needs of the mother, the father and the family unit as a whole, so that the baby's birth can be as pleasant and happy an experience as possible." The Report specifically recommended discarding practices such as routine enemas and pubic shaves, restricting access to support persons and dictating the position in which women should give birth. The routine use of electronic fetal monitoring was also questioned, and a recommendation made to allow women more choice in analgesics for labour, in particular access to epidural services. The Report acknowledged "the important role that midwives play in monitoring the progress of mother and baby and providing information, emotional support and encouragement during labour and at the birth." Many pages were also devoted to the importance of providing accurate, sympathetic and non-judgmental information to women about all aspects of pregnancy and childbirth. Other State reviews followed including the most recent Queensland Review of Maternity Services in 2006.[28] So what has changed?

Firstly, the language of childbirth has changed. Women now are not *delivered*, they *birth* their babies, not in the labour ward but in the birth suite. They make *birth plans* that set out their wishes (usually) to have minimal analgesia and intervention in labour. They are *empowered* to do so by an increased knowledge of *normal* physiological processes, by developing confidence in themselves and by having the *support* of partners and of known midwives throughout the process. This has not been just semantics, it has also represented a complete paradigm shift in how doctors see birthing women.[28,29,30,31]

The environment of the birth suite has changed, and free-standing birth centres have been built in some (mostly city) hospitals. Both birth suites and separate birth centres feature more 'home-like' surroundings – pastel wall colours and paintings, spa baths, furniture made of timber rather than clinical white-painted metal, the concealment of instruments and machinery behind folding doors, dimmed lighting. Partners are actively encouraged to attend antenatal classes and be present throughout labour and

birth. The advice given to women booking in for birth at the Sydney Adventist Hospital tells them: "Each year around 2,200 babies are born at the San. We are known for our home-like atmosphere which has been created in all maternity rooms and the delivery suites."[29] And in Melbourne an information brochure states: "At the Royal Women's Hospital, we encourage all women to be actively involved in their pregnancy, birth and postnatal care, and we encourage the involvement of your partner, support person and family. We believe that every birth is a natural and unique event, and that you should receive personalised care throughout pregnancy, labour, and birth and in the days after you go home with your baby. Developments in maternity services indicate that women are more satisfied by a team approach to their care. With this in mind, the Women's has introduced an improved way of looking after you and your baby. It is called 'TeamCare' and it means that you will be cared for by the same team of doctors and midwives throughout pregnancy, birth and during the early parenting period. This means your care is more personalised, that you are likely to see the same midwives or doctors from your team for your visits and hospital stay. We aim for you to feel a greater sense of belonging and that your carers are more involved with your pregnancy."[30]

Practices such as routine enemas and shaves of pubic hair have now been discarded. Episiotomy is infrequently done and only in specific circumstances where there is a medical need to assist a birth. Rates of forceps delivery have declined dramatically.[31] So in many ways, interventions that once were considered medical necessities have now been discarded— in other words there has actually been a decrease in many unnecessary aspects of the medicalisation of childbirth. What has not fallen is the rate of caesarean sections. In fact as already discussed this has risen inexorably – from 12% in 1980 to 20% in 1993 to 30% or more in 2008.[28,31,32] The implications are clear: increases in caesarean section rates are only partly related to the increasing medicalisation of childbirth. As I will shortly argue, modern approaches to pregnancy and childbirth, which emphasise the participation of birthing women and the provision of a range of choices to them, have also contributed to this rise.

Have women themselves changed? The answer must be yes – they have changed both physically and psychologically. The average age at which an Australian woman has her first child has risen from 22 years in 1953 in to 27 years 6 months in 2003.[28,33] There

are more 'older' women –women over the age of 35 – amongst first time mothers. In this group there are more women with medical problems before they start pregnancy, in particular hypertension and diabetes, more overweight women and more women who have needed IVF or other fertility treatments to conceive. All these conditions increase the chances of complications during the pregnancy that may lead to a caesarean birth being recommended.[34]

Women have also changed psychologically -- they are more assertive, less likely to accept unquestioningly 'what the doctor says.' This does not mean that they will decline to accept a recommendation for caesarean, just that they want more input themselves in the matter.[23] So the idea of having *control* over the birth process has led also to women feeling *in control* of the decision to have a caesarean. Increasingly, women also expect a 'perfect' baby, and have begun to regard this as a right. So while there may be more choice and more information provided to women, the result is that women may often choose interventions that they believe will ensure, as far as possible, a perfect outcome to their pregnancy. [22,23]

Most women giving birth in Australia today, and most obstetricians, would disagree with the views of Marsden Wagner, quoted above, who believes that 'choice' for women should include the choice to make "mistakes", and decline any medical input even in situations threatening their own or their infants' lives.[20] Australian obstetricians would take the view that the women who present for their care want to make the minimum number of mistakes when it comes to their children's wellbeing. They would also point to the tendency of Australian parents to resort to litigation, usually against the obstetrician, when a poor pregnancy outcome does occur (the role of litigation in obstetric decision making will be further discussed in Chapter 6). In daily practice, while most women may hope and plan for an entirely normal, 'natural' birth, they nevertheless do turn to doctors, usually obstetricians, when pregnancies become complicated. They may be disappointed or unhappy about having to do this, but that is what they do. Somewhere in most women's birth plans there is a fall-back position, and it involves doctors.[22] Most women have no wish to commit any of the "errors of their own" described by Wagner. And most obstetricians who are in active practice in Australia today, although agreeing on the need to 'humanise' birth as much as possible, would disagree with Wagner's anarchical concept of choice for women in

pregnancy. Most obstetricians would believe that women should be given adequate information about the risks, benefits and potential consequences of choosing to birth in various hospital situations, in birth centres, or at home so that the minimum number of 'errors' are committed by everyone involved. Such 'errors' are likely to affect the long-term health of the baby rather than that of the mother. In the words of English obstetrician Michael Bull "I think we have to ask ourselves where does the buck stop? It is the consultant (obstetrician) who carries the can as well as holding the baby. I think we are all influenced by our own experiences. And we cannot blame the consultants if their views are coloured by the problems they have to deal with."[35]

The past three decades have in fact seen an explosion in the amount of information provided to women who are pregnant or are considering pregnancy. An examination of this literature, in the form of books and brochures (though more recently the Internet has played a more major role) shows a gradual shift in how doctors, midwives and childbirth educators have addressed 'consumers' and how caesarean section is presented. The 1945 edition of *The Ladies' Handbook of Home Treatment* tells readers: "At the present time, reference is occasionally made to the surgical operation known as Caesarean section. As this operation concerns child-bearing women, and as but little is generally known of the nature and purpose of the operation, a brief explanation may be appreciated."[36] There follows a short list of the common reasons for caesarean birth, and the recommendation that "good health should be maintained prior to the operation." In Sheila Kitzinger's 1962 handbook for pregnant women, *The Experience of Childbirth*, there is just one line on caesarean section.[11] Even in a 1983 book that promises "everything you need to know about childbirth" the (male) physician author is as paternalistic as ever about caesarean section, which is dismissed in a few lines: "In the last few years caesarean section has become a very safe procedure and you have absolutely nothing to fear from it."[37] At the same time Sheila Kitzinger, in *Pregnancy and Childbirth*, writes a clear description of the reasons, benefits and risks of both operative vaginal delivery and caesarean birth, and in *An Essential Handbook for Australian Parents* Anne Potter talks to the reader as an equal, advocating the idea of a support person in labour, stating that pubic shaving is unnecessary and recommending the drawing up of a birth plan, and again supplying useful, non-judgmental information about caesarean birth.[38,39] During the 1990s several books dealing exclusively with caesarean section

appeared addressed directly to women, although there was an increase also in works exclusively devoted to natural childbirth, such as Rachel Broncher's *Complete Preparation for Your Mind and Body* which does not admit of the possibility of problems in labour or the need for medical intervention.[40,41,42] By the end of the nineties caesarean section had become a part of most works aiming to provide comprehensive information to pregnant women, notably the popular *Up the Duff* by Kaz Cooke, in which the author is followed through pregnancy planning a normal vaginal birth, but ultimately undergoes an emergency caesarean, an experience which she nevertheless finds very satisfactory.[43] Cooke's national reputation as a journalist and women's advocate has undoubtedly contributed significantly to Australian women's understanding and acceptance of the possibility of birth by caesarean.[44]

The effects of gender changes in the specialty of obstetrics

Over the past twenty years there has been a welcome increase in the number of women coming into the specialty of obstetrics and gynaecology in Australia. In 1982 there were ten women obstetricians in Sydney, a city of more than 3 million people - and several hundred male obstetricians. Almost all these women were close to retiring age –having been permitted to train in the specialty during the Second World War, when male doctors went off to the front, and 'allowed' to continue practice after the war was over, although no more women were 'allowed' into training in Sydney until 1983. Most of these older women were unmarried and childless, and although they were all supportive of young women coming into the specialty they held similar doubts to their male colleagues about the ability of women to combine a career in obstetrics with childbearing and family life.[45]

Gradually through the efforts of younger women doctors, many of whom took themselves overseas to complete their training, and aided by increasing numbers of their male colleagues, the situation improved to the point where today the intake of young doctors into the training programs of RANZCOG (the Royal Australian and New Zealand College of Obstetricians and Gynaecologists) is at least 50% female.[46] In the United States, the proportion of women entering the specialty in 1980 was 30%; by 2005 this had risen to 76%.[48] In both countries studies have shown that women specialists in obstetrics and gynaecology work somewhat fewer hours and make less

money than their male counterparts of the same age, consistent with their dual roles of childbearing and childcare, however the differences are slight.[47,49,50]

What effect has the increasing participation of women had on practice, and in particular on caesarean section rates? In general it can be said that while there is a proportion of women who as patients prefer a woman obstetrician, a large number have no particular gender preference. Some studies show that women obstetricians in private practice are likely to spend longer in consultations and to offer more options and suggestions. They are less likely to intervene in pregnancy than their male counterparts and are also less likely to concur with a woman's request for caesarean for no medical reason, especially if they have had children themselves.[48,49] In public hospital practice, which is what many women obstetricians choose, all specialists will be somewhat limited in their practice by protocols agreed upon by all staff and pertaining to all patients so any differences in practice will be small. It must also be emphasised that while, to some extent, women obstetricians are influenced by their own gender and their own experience, in their professional practice, particularly if they themselves are mothers, they are also specialist doctors, trained to deal effectively with abnormal clinical situations, and therefore will act, and react, in many of these situations exactly like their male colleagues. Nevertheless many women obstetricians have been effective in bringing about the 'humanising' of care for women in pregnancy and childbirth.[48,49]

So as far as social commentators, consumer advocates, physicians and midwives are concerned, there are currently two bodies of thought around care in pregnancy and birth. On the one hand there are those who favour 'natural' birth and are opposed to 'medicalisation'. On the other there are those taking a liberal view, advocating the concept of choice as the first group does but seeing that choice as including choice for intervention in pregnancy and birth, and in particular choice for caesarean section.I will now attempt to locate the perspectives of women themselves. Women have made their opinions known through the media and by founding organisations, mostly opposed to the medicalisation of childbirth. Exploring these opinions tends to highlight views on the extreme ends of the spectrum: both those of women who are highly satisfied, and those who are very dissatisfied, can be heard this way. To correct this imbalance, I will discuss a number of empirical surveys of women who have undergone caesarean section. These surveys demonstrate that most women do not

object to medical involvement in their pregnancies and births. Their satisfaction depends most of all on the level of *control* they felt they had during the processes of childbirth. I will first survey the present limits of women's choices in maternity care in the Australian context.

Choices in childbirth and the provision of maternity care in Australia

For women in urban areas of Australia 'choice' is determined, firstly, by whether a woman has private medical fund cover and whether she wishes to use this.[33] Paradoxically, women who are private patients may have less choice than those accessing the public system. Women making use of private fund cover will generally seek antenatal and delivery care from a private obstetrician, and will expect to have all antenatal visits and their labour and delivery supervision from that obstetrician. Once the woman has booked for antenatal care and delivery with a doctor, that doctor takes on responsibility 24 hours a day, seven days a week, for the woman's care, and must be available, awake and sober, to deal with complications that may arise at any time.[50] Given the impact of such responsibility on a normal lifestyle, it is unsurprising that many private obstetricians now work in group practices.[45,46,51] The one surprising thing is how long it has taken Australian obstetricians to organise themselves into such practices - only in the past two decades, with the increase in the number of women doctors practising the specialty, has there been a trend in this direction.[45,46,47] In a group practice one doctor is rostered on for night and weekend work, and is responsible for all patients, so a woman booked with a member of the group may be cared for in labour by any member of the group. However all members of the group will tend to have the same general views on management of pregnancy and labour, and be accredited to attend the same hospitals.

With private obstetric care the birth will generally take place in a conventional hospital setting. The hospital chosen may be a completely private institution, the medical reputation and social prestige of which may play a significant role in the woman's choice of her place for the birth, or it may be a public hospital in which the woman elects to be treated as a private patient by her designated obstetrician. As far as private hospitals are concerned, the non-medical facilities provided may be more important to the woman than the reputations of either the institution itself or the

obstetrician in charge of her care.[28,29,30,37] Although many city and suburban hospitals do provide birthing centres adjacent to normal birth suite facilities, where women judged to be at low risk of complications during labour may elect to give birth, these are usually limited to public patients, since midwives are the main care-givers.[28,29,30,31,33] Home births with a doctor present are almost unknown in current Australian practice; planned home births are undertaken only by independent midwives with a particular interest in providing such care, and at present make up less than 1% of all births in Australia.[28]

Advocates of increasing rates of home birth in Australia often point to the Netherlands as a model that should be followed. In the Netherlands around one-third of births are planned home births to low risk women, mostly supervised by a midwife. However in the Netherlands there is in place a system of surveillance and an emergency obstetric service capable of rapidly deploying a specially-equipped ambulance to the home of any woman who develops a problem in labour.[52] It is the small size and urban nature of the country that make providing such a service feasible. Around 17 million people live in the Netherlands in an area of 40,000 square kilometres; 21 million live in Australia in an area of 7.8 million square kilometres. Providing appropriate back-up services for home-birthing women, even in urban areas of Australia, would be problematic. A recent United Kingdom survey showed that 91% of United Kingdom women responding would opt for hospital birth while 9% would choose home birth if they had that option – however the United Kingdom also is vastly different in size and geographically from Australia.[53] Incidentally, studies show that Dutch women are not all that different from their Australian sisters in their expectations of childbirth – if they do have to be transferred from home to hospital during labour, they are likely to be disappointed by their birth experience.[54] And the caesarean section rate in the Netherlands, although a little lower than in other European countries, has risen in recent years – in city maternity hospitals rates above 20% are reported.[55]

In Australia, if she chooses private care, the woman attends her obstetrician in private consulting rooms throughout the pregnancy and then presents for the birth at the hospital in which she has booked. Her 'choice' will of course be limited to those hospitals at which the obstetrician has admitting rights. One of the assumptions

underlying private care is that, in the course of her antenatal visits, the woman will come to know her doctor quite well, and hopefully the doctor will also come to know her, and even her partner. This should mean that she is able to approach the birth with a good idea of the doctor's views on various obstetric practices and interventions, a degree of trust in the doctor's judgment, and realistic expectations for her childbirth experience. In most cases some measure of personal relationship develops over the six or seven months that a woman attends for antenatal care, especially when she has consulted the same obstetrician for several pregnancies; first names will probably be used and family stories exchanged. The effects of this patient-doctor relationship on the management of the pregnancy can be both positive and negative. On the one hand the woman, hopefully, feels safe and reassured by the care of someone she knows, able to discuss possible interventions and make her wishes known. On the other hand the doctor may feel more responsible and more likely to offer intervention if a problem arises, to a private patient known personally, than to a public patient whom he or she has never previously met. Both these factors may come into play if a complication occurs, during pregnancy or in labour, for which caesarean section seems to offer a solution. The doctor may be more disposed to offer a surgical solution to a private patient, which the woman accepts, feeling that she is involved in the decision-making process. (Although when the woman does *not* feel able to express concerns to the obstetrician, or tries and has these brushed aside, or when her expectations or wishes for the birth differ significantly from the doctor's usual practice, tensions can arise that lead both the woman and her doctor to feel unhappy about the birth experience.) Certainly studies in Australia and overseas confirm that rates of caesarean section are higher amongst private patients than amongst public patients and suggest that this personal relationship may be a factor.[33,56,57]

Private patients in labour will actually be cared for much of the time by midwives employed and paid by the hospital, regardless of whether the institution is private or public. If labour is progressing normally the woman will be attended and observed by a midwife, usually on a one-to-one basis. The obstetrician will visit from time to time, make assessments, and will take over if the situation is judged abnormal. Otherwise, he or she will be called by the midwife in time to perform or supervise the delivery. The important role of hospital midwives in the care of private patients is one that is

often overlooked; midwives in private hospitals also play a significant role in the provision of care after the birth and in helping mothers establish breastfeeding.[28,29,30]

Pregnant women without private health cover will initially book for care during pregnancy and labour in a public hospital antenatal clinic. Most large urban hospitals now offer both midwife-run and physician-run antenatal clinics.[28] There are also well-established relationships with local general practitioners who have obstetric training and who wish to provide shared antenatal care in conjunction with hospitals. Labour and birth take place within the hospital either in the birth suite or in an adjacent birthing centre. The woman may be attended solely by midwives (the usual practice in a birthing centre setting and also common in hospital birth suites when the labour and birth are entirely normal) or by a combination of midwives and doctors in the birth suite. Over the past two decades, there have been major attempts throughout the Australian hospital system to make the atmosphere of labour wards more user-friendly and 'home-like', which includes the concealment of instruments and machines until they are needed.[29,30,58] It is a guiding principle of the state-run health systems that they do not guarantee that a specific doctor or doctors will provide care although the division of specialist consultants and junior doctors into unit systems within most hospitals does ensure some continuity of care. In addition there have been concerted efforts by midwives in all Australian states to establish midwifery units and programs to foster 'team midwifery', ensuring that all women in labour see at least one midwife already known to them.[59,60] Thus in theory at least, urban Australian women in the public system can choose between conventional antenatal care from a combination of hospital doctors and midwives, midwife-only care, or shared care with a general practitioner. Women who want a home birth, who can afford it and can find an independent midwife, can arrange antenatal care and a planned home birth with that midwife in attendance. So in fact, despite the demands of some critics for more midwife involvement in care during pregnancy and labour – such as Dr Sarah Buckley, Brisbane GP, who wrote in *The Australian* in May 2007 that "we would like some decent choices that will enhance our chances of normal birth, such as care from the normal-birth experts, midwives" -- all women giving birth in Australian hospitals have some of their care from midwives, and for a majority it is virtually all their care.[61]

In rural areas there is generally less choice because small numbers mean it is not feasible to provide both conventional birth suite facilities and a birthing centre. In addition in many small towns there are limited numbers of midwives and medical practitioners, who have to provide both public and private care.[28,45,46,50] Women may be less likely to opt to become a private patient and attend a doctor whom they will have to pay, knowing that the same doctor will be the person who attends them anyway in a public capacity. In remote areas choice is even more restricted. Well before her expected date of delivery a woman must travel, often long distances, to the nearest town where there are birthing facilities, and remain in that place until after the birth. Antenatal care is often limited to a single doctor or midwife as part of an outreach program. For example, in Far North Queensland, maternity units in many small towns such as Mossman, Cooktown and Weipa have been closed in recent years.[60,62] There is a shortage of experienced physicians, able to perform caesarean sections and give anaesthetics, who are willing to live and work in these areas. As a result, women must leave their homes and families and travel to Cairns to await the onset of labour. Even for perfectly healthy low risk women, this can mean spending four or five weeks away from their familiar surroundings and other children. This situation also occurs in many other parts of rural Australia – health journalist Melissa Sweet in a recent article noted that "in Western Australia, where the mining boom is swelling government coffers, the closure of Karratha's maternity services for a few months last year (2007) meant expectant women had to fly out at 36 weeks to Port Hedland or Perth."[63]

In practice, 'choice' is also influenced by medical considerations. Since midwives do not have medical degrees or training, and general practitioners are limited in the extent of their obstetric training and their access to hospitals, it is usual for care by these groups to be restricted to women who are considered to be 'low-risk' – meaning at low risk of complications during pregnancy and birth. Women considered 'high-risk' are recommended to attend conventional hospital antenatal clinics with care from specialist obstetricians. There is little disagreement amongst midwives and medical practitioners about this course for high risk women; there continues to be tension, however, over the assessment and management of low-risk women. Such women are, of course, the majority of women.

Professional and consumer perspectives

So two essentially opposing views predominate in this argument, which has grown out of the historical realities of the medicalisation of childbirth, and the movement developed in opposition to that medicalisation. These views have already been alluded to in the work of such sociologists as Ann Oakley, Judith Walzer Leavitt and Richard and Dorothy Wertz discussed earlier. The first can be seen as largely midwife-led, based on the idea that most women will have uncomplicated, trouble-free, 'natural' pregnancies and labours and that the correct person to supervise these women is a midwife; in this view doctors are seen as necessary only for complications, and such complications are regarded as uncommon. The second view, that of most obstetricians, can be summed up as believing that though most pregnancies and labours are *eventually* trouble-free, there is always the possibility of complications, and hence for the need for intervention. In the 2005 Report of the Review of Maternity Services in Queensland, Dr Cherrell Hirst summarised the situation thus:

"There are two distinct cultures in the milieu of maternity care, described by many of the individual carers and consumers who wrote to me or met with the Review (team). They are crucial to the future of maternity care but currently in many care environments they are unable to reconcile their differences, which is a major obstacle to change. Some individuals place pregnancy and birth in a life context as a predominantly low-risk natural process requiring care and support and medical intervention only as needed. Others place pregnancy and birth in an intervention paradigm, a potentially high-risk situation that requires dedicated care and access to the best technology has to offer. These two cultures have different external influences, different ethical considerations, different skills and knowledge, and different values around risk and safety."[28] The Hirst Report makes numerous recommendations to address these differences.

Apart from professionals involved in the daily care of pregnant women, there are numerous non-medical organisations concerned with the provision of information for

women about pregnancy and childbirth. In Australia many of these have joined together under the umbrella organisation *Maternity Coalition*, and they can be described as falling into the 'natural' camp. A good example is *Choices for Childbirth* which has an easily accessible website which makes their philosophical approach to pregnancy and birth immediately clear:

"There are many choices to make when you are pregnant. You'll need to choose where to have your baby, who will provide your maternity care and attend the birth, the type of birth you want and whether or not to have certain medical interventions. Confidence in decision-making relies on a firm grasp of all the options available. *Choices for Childbirth* provides women and their partners with information not generally available in hospital antenatal classes and a forum where women and their partners can share their experiences and support others. Our philosophy encourages a woman-centred approach to the birth process, regards pregnancy and childbirth as normal physiological processes not illnesses, acknowledges the social, cultural and psychological factors influencing childbirth, advocates midwives as the primary caregivers of women in normal birth, and emphasises women's rights to make informed choices about their caregiver and the place of birth."[64]

In contrast, the Royal Australian and New Zealand College of Obstetricians and Gynaecologists, in the brochures the College produces for pregnant women, sees "the aim of antenatal care" as "the need to safeguard the health and well-being of the mother and baby during pregnancy. At the first visit your doctor will take a full medical and pregnancy history, conduct a thorough physical examination, estimate the date the baby is due, and discuss with you any likely problems." Four pages detailing possible problems follow, with accounts of how these can be detected and treated, and the implications of not doing so. There *are* different 'models' of antenatal care and a wide range of educational materials, antenatal classes and childbirth information available, the College material stresses, but caution is needed: "your doctor's advice should be sought on all these matters."[65] The members of both the College, and of organisations like *Choices for Childbirth*, would see themselves not only as believing firmly in choice for pregnant women, but also in providing that choice. It is evident however that their views of what constitutes choice are widely divergent.

In the current Australian health system then, women with a history of previous problems in pregnancy or during birth, and women with a variety of pre-existing medical conditions, may be regarded by their doctors as high-risk for a current pregnancy, and advised to have all their care in a conventional hospital setting, but women considered 'low-risk' – at least when they are public patients -- may be offered greater choice including shared care with general practitioners, midwife only care and the option of giving birth in a birth centre. How accurately, though, can 'low-risk' be assessed? Birth centres located within hospitals have been an accessible option for Australian women in many metropolitan areas for the past twenty years and currently account for about 2% of births.[66,67,68,69] Such centres may be within the main hospital building or free-standing, on the grounds or, rarely, further away. The guiding principle for admission to all these centres is that the woman is classified as 'low-risk' – by a doctor -- with respect to the probable outcome of her pregnancy and labour. However, it is very common for women initially admitted to birth centres to be transferred to the conventional hospital birth suite because some problem has arisen – perhaps a relatively minor and easily solvable problem, but a problem nonetheless. One very large recent Cochrane review analysed six studies involving nearly 9,000 women who had booked into birth centres in a number of different countries. Between 29% and 77% of women initially judged to be 'low-risk' were nevertheless transferred, antenatally or in labour, to a standard hospital setting.[69] A recent Australian study, from St George Hospital in Sydney, showed that 30% of women commencing labour in the Birth Centre were transferred out to the main hospital labour ward because a problem had arisen.[66] These figures indicate that a fairly high proportion of women have their original choice of place of birth radically and quite rapidly altered in the course of pregnancy or labour. Many of these 'low-risk' women, instead of the 'low tech' birth they had planned, would have had a caesarean section. It is evident that currently our ability to predict obstetric risk is far from perfect.

Maternal satisfaction with birth experience

Writing in the *Good Weekend* supplement of the *Sydney Morning Herald* in 2003, journalist Kate Hamilton described the retrospective views of several women who had

undergone caesarean section.[70] Jo Bainbridge was the convenor of the South Australian based group, Caesarean Awareness Recovery and Support (CARES) which she formed after experiencing an emergency caesarean in her first pregnancy. She had been in labour for 17 hours when progress slowed, and she was told she required a caesarean for fetal distress and failure to progress. "At that point," Bainbridge is quoted as saying to Hamilton, "I was really needing somebody to tell me that everything was okay. I didn't want saving from it. What I wanted was somebody to get in my inner circle and tell me I was doing good. But nobody seemed to do that. I asked if I could have an epidural to try and calm down and get refocused, but they said it was too late. I was whisked off to surgery." Bainbridge continued: "I felt really incapacitated, which was against my character. Needing to rely on other people was wearing down my self esteem…I felt completely out of control."

Another woman, West Australian Diana Hubble, also had negative recollections of the events leading up to her first birth, a caesarean, which she recounted to Hamilton. Hubble's diabetes increased her chances of having a larger than average baby and she felt that her private obstetrician pushed her into having a caesarean rather than supporting her desire for a vaginal birth. "He kept saying it would be safer for me to have a caesar but I stood by my decision until he told me this horror story about another diabetic whose baby was so big they had to dislocate its shoulder to get it out. I burst into tears and agreed to the caesarean." [70] A similar article in the *Weekend Australian*, by Susan Horsburgh, quotes Sonya Porter, who gave birth to her first child in 2002.[71] "They said (the labour) was going on too long and I had to have a caesarean."

At the same time, when in a recent issue of *The Australian Women's Weekly* midwife and writer Hannah Dahlen deplored the fact that "one in three" Australian women don't get to experience "the greatest triumph and high a woman will ever get" – vaginal birth -- reader and caesarean mother Rebecca Smith responded sharply.[72] "Hannah Dahlen suggests that a mother who has a caesarean doesn't give birth!" she wrote in the following issue. "I gave birth by caesarean not by choice but because my baby was breech and a caesarean was the safest option for him. I can assure you that, although my son was not born 'naturally', *I gave birth*. I just experienced it in a different way. Let us celebrate all women, whatever their choice or circumstances, for

having the amazing ability to procreate." And Brisbane PR consultant Lisa Tarabay told Susan Horsburgh of her first delivery, of twins, an emergency caesarean done for premature rupture of membranes. She was positive about the experience: "I had done the classes and read the books and had no desire to huff and puff." Tarabay's second birth was an elective caesarean: "I felt far more in control because there's no unpredictability. You're not buggered. You're in a good state of mind to discuss things with the doctor. It's just as fabulous and the father can have just as much participation." Of her third planned pregnancy and caesarean she said: "I hate being pregnant. I would bond just as readily if I went to the hospital and was handed a baby." Another woman, Melbourne accountant Nadia Carlin, told Horsburgh how she had opted for a caesarean on request. "It was all calm, I could choose the time, it was the best 20 minutes of my life. I would have loved an easy natural birth but you don't know what you're going to get – one hour or fifteen with the cord wrapped around the baby's neck."[71]

A similar article by journalist Liz Thompson in the women's magazine *Notebook* tells the birth stories of three women of whom two had 'natural' births.[73] Both felt very elated by an experience they felt they had controlled themselves. A third woman, who had become pregnant with twins through the use of donor eggs and IVF, developed complications with the pregnancy at 34 weeks. A caesarean had to be performed under general anaesthetic. The woman was therefore asleep for the birth although it was captured on film by her partner who was allowed to stay in the operating theatre. The twins were premature and were quickly whisked away to the special-care nursery, but ultimately thrived. Their mother's final remarks about their birth were: "I didn't care how it panned out, so long as the girls were safe and well and I survived to look after them. Now they are finally here there is no greater love in the world." [73] Her views are clearly shared by the writer of an opinion piece in the *Good Weekend (SMH)* in 2003 who described caesarean under epidural as "God's gift to women" and was vehement about "the vocal group of childbirth zealots who rail against pain relief and intervention." [74] This wide range of personal experiences and opinions makes clear that not all women want the same thing in childbirth, a point that sometimes gets lost in the discussion.

The stories of all these women illustrate some of the complexities involved in providing women with choices in pregnancy and birth, and in enabling them to feel satisfied with their experience, particularly when that experience involves emergency caesarean section. Certainly it is now an accepted tenet of midwifery and obstetric practice that pregnant women should have choice about their place of birth and the type of care they wish to receive, and that maternal satisfaction is an important measure of that care.[75] Such views are in line with the practice of medicine generally in Western countries. Informed consent, shared decision making, and patient 'partnerships' are increasingly regarded as a normal part of good medical care both at general practice and specialist level. There is a difference though, in that patients attending doctors in other spheres are injured or sick, or at least believe themselves to be so, whereas for a majority of women pregnancy and labour are physiological events that do not require more than observation and support from their medical attendants. For this reason alone, there would seem to be a strong argument in favour of pregnant women having as much say as possible in decisions about where and how they will give birth. However, having 'choice' implies that more than one option for care is actually available, that these options are equally valid, and that there are no inequities of access for some women. As I have demonstrated, this is currently not the situation for all Australian women.

Maternal satisfaction with pregnancy and birth experience is now accepted as important in assessing the performance of maternity services.[75,76] Recent large reviews of maternity services in Australia, as in the United Kingdom, have accepted the need to consult with consumers (generally represented by organisations such as Maternity Coalition in Australia) as well as providers, professional bodies and health service administrators. However, it remains difficult to measure satisfaction, partly because women surveyed following the birth of a wanted and healthy child tend to give very positive responses to questions about their views of their medical care; in most surveys more than 80% state that they were "satisfied" or "very satisfied" with their care.[75] The authors of one recent retrospective study of 1336 Australian women, all questioned several months after birth, commented: "In the case of maternity care … the birth of a healthy infant, and the survival of one of life's major ordeals, are bound to influence how women view the care they receive."[76]

Both the media and the medical literature support the view that women's impressions of their birth experiences are greatly influenced by their perceptions of whether they had choices offered to them regarding the place of birth and the people involved, and whether they felt well-informed and consulted about the events that unfolded during pregnancy and labour. In the majority of cases where experiences are reported negatively, the event that most provokes comment is a caesarean section, usually done as an emergency.

On the one hand, Kate Hamilton, in her 2003 article in the *Good Weekend*, described the post-birth experience of Jo Bainbridge, who had established the support group CARES for women like herself who have undergone caesarean section and subsequently experienced physical or psychological problems related to the surgery.

"Four months after (her son's) birth Bainbridge began to spiral downwards. 'I started feeling really betrayed by the whole experience,' she says 'I talked to other women who had posterior labours who stalled and then went on to birth their babies vaginally. There were a lot of questions and frustrations. I wrote to the hospital and was basically told to go away – I was just one of those whingeing mothers who didn't get their fantasy birth.' Bainbridge realised she wasn't the only one psychologically scarred by her caesarean" and went on to found the CARES group to try to reduce 'the shame around their negative feelings (about caesarean section) that keeps women silent.'"[70]

CARES, under the umbrella of the *Maternity Coalition*, encourages women to share their personal stories and support one another in subsequent pregnancies. The main aim in these pregnancies is to try to achieve a vaginal birth. Perusal of the websites associated with *Maternity Coalition* reveals a very gloomy view of caesarean section: "I had a c/s earlier this year and have struggled to accept it." "Being unprepared for caesarean section is a very daunting experience that I would hate anyone to go through."[77]

On the other hand, writer Susan Horsburgh in the *Weekend Australian* quoted several women who were happy with the caesarean experience. Sydney woman Elizabeth Lovett told Horsburgh: "I don't see myself as a great Earth mother. For me, seeing

and holding my baby far outweighs the importance of giving birth." And Brisbane mother Lisa Tarabay was blunt: "the mothercraft Nazis should butt out. They go on about maternal satisfaction, but isn't the aim a healthy baby? To me, a caesarean is going to guarantee me a healthy baby."[71]

Reading these stories, it is clear that there are two factors at work. Firstly to some extent these two groups of women approached pregnancy and birth from different philosophical viewpoints – the viewpoints already described. But, in addition, women felt satisfied with their childbirth experiences when they felt *in control*, when they felt they were involved in making a choice. With elective caesareans, women felt that they had time to consider the reasons for their caesarean, and that they had taken part in the decision-making; conversely, when they had undergone the surgery as an emergency in labour, or at short notice in pregnancy, they felt robbed of any choice about what was to happen to them.

What does the medical literature show about choice and its effects on how women view their childbirth experiences? In a prospective 1997 study carried out in Melbourne, 272 women were assessed in late pregnancy and then six weeks after the birth in regard to their perceptions of their own self-esteem and mood (using recognised psychological tests).[78] Significant effects on mood and self-esteem were associated with the type of birth– women who experienced spontaneous vaginal births were likely to report an improvement in mood and an elevation in self-esteem from the late pregnancy to the post-birth interview. However women who underwent caesarean section, in particular emergency caesarean, experienced worsening of mood and a decrease in self-esteem over the same time-frame. They had increased symptoms of depression and irritability and higher anxiety levels.

The authors point to a number of contributory factors to these findings: women undergoing caesarean were less likely to have their partners present at the birth, less likely to see or hold their baby during the first five minutes after birth, and more likely to have narcotic analgesia. However, the most relevant factor to the adverse psychological sequelae of caesarean birth was held to be the difference between the expectation and the reality of the birth experience. In late pregnancy all but one of the women studied were preparing emotionally for a vaginal birth; postpartum, 81% of

women who had undergone caesarean reported that their experience had been unexpected, compared to 33% of women having a vaginal birth. Only 19% of the caesarean group felt that they had exerted personal control over the delivery outcome, compared to 56% of the women having vaginal births. The authors commented: "In general, the women in this study who experienced operative interventions, particularly caesarean surgery, found the procedures unexpected and were less likely to feel as though they had exerted choice and control in the outcome of their deliveries. The marked loss of self-esteem which was particularly associated with caesarean surgery in this study suggests that these women felt that these interventions were required because of some personal inadequacy or failing, rather than being determined by factors which were quite beyond their control. These findings provide support for the conclusions that a fulfilling and rewarding experience of childbirth is linked to having active participation in events. Distress is associated with having this sense of control removed."[78]

Another study, retrospective and carried out by postal questionnaire in South Australia, examined women's perceptions of their role in the decision for a caesarean birth.[79] Nearly 300 women returned questionnaires seven weeks following a caesarean in a single hospital; both public and private patients were included and the response rate was high. Of these slightly more than 60% reported feeling "involved in the decision to have a caesarean section." Factors influencing their decision toward caesarean included physical pain and the partner's reaction to labour (for emergency caesareans), considerations about recovery, pain management and planning for the birth (elective operations), and information from medical staff (both groups). Half of the women "strongly agreed" that they were satisfied with the decision to have a caesarean but 40% only "agreed" and nearly 5% were "not sure." Less than 30% felt that they had been given enough information ante-natally to prepare for the possibility of a caesarean birth and about 20% felt that they should have been given more information on other options. The authors conclude that "it is of concern that over a third of women felt they had not been involved in the decision to have a caesarean section; others were very positive about caesarean section but an appreciable proportion may not have received sufficient information."

However, nearly 30% of women stated that they had "insisted" on a caesarean section and most of these felt they had been adequately informed about the reasons for the surgery.[79] In a similar study carried out in the United Kingdom, of 102 women who had undergone caesarean section, only 2 of 29 having an elective procedure felt that they had made no contribution to the decision, while 37 of 73 women having an emergency caesarean recorded medium or greater input to the decision and 43 of those 73 said they would prefer an elective caesarean in their next pregnancy given the choice; the authors concluded that women undergoing caesarean section, in their unit at least, were well informed and took a considerable part in the decision making process.[80] In other studies examining the phenomenon of caesarean section on request, it is clear that many of the women making such a request feel very satisfied with their decision and certain that it was they themselves who made the choice about delivery.[81]

In essence, what all these studies, and many others, demonstrate is the not-too-surprising fact that when women are well informed about the reasons for suggested caesarean surgery and feel *in control* of the decision-making process, they are content with their birth experience; when they are not well informed and the decision appears to have been made elsewhere, they feel control wrested from them and dissatisfaction with the whole experience that can be translated into serious psychological problems after the birth.

Inevitably there will be less time and opportunity to be involved in decision making, less sense of 'choice,' with emergency caesareans in comparison with elective procedures. To many obstetricians, the solution would appear to be greater provision of information to women about emergency caesarean during their pregnancies, and greater emphasis on the statistical fact that many women will indeed have emergency caesareans, so that such an outcome is seen as a definite possibility and not as a failure on the part of the woman. However, to many midwives and consumer organisations, providing such information seems an unnecessary emphasis on the abnormal and on the role of technology in the birth process, possibly leading women to demand intervention unnecessarily or prematurely. Undoubtedly this is a question that must be more closely addressed by those providing information to and caring for pregnant women, not least because of the increasing role of the internet in making

freely available information which may or may not be accurate, but which may in any case significantly influence a woman's views and decisions about her choices in childbirth.[82] A recent survey by the Australian telecommunications company Telstra revealed that 60% of Australians search for information on the internet before consulting a doctor.[83]

The medical literature and that of the social sciences contains much that deals with women's perceptions and experience of caesarean birth. In peer-reviewed clinical journals such experiential research tends to be conducted so that results can be expressed quantitatively – for example in the studies of women's perceptions of their involvement in the decision to undergo caesarean cited above, results are reported as percentages of women who felt fully involved, or partly involved, or not involved at all, in the decision for a caesarean.

In contrast, popular articles produced by lay journalists tend to contain many anecdotal reports of the experiences of individual women who have given birth by caesarean, and these articles strike a very different tone. The experiences have usually been both positive and negative, and in general this is reported by the journalists concerned, for example in the articles by Kate Hamilton and Susan Horsburgh mentioned above. In most popular articles the journalist reaches conclusions based on these personal stories in combination with statistical and other information gleaned from medical, midwifery and other sources and from the Internet.[70,71]

While both these methods of reporting and discussing the topic of the caesarean experience are valid, what is largely missing is a more detailed and personal reporting of women's views of their surgery, conducted amongst a sufficiently large group of women to be able to draw reliable conclusions applicable to caesarean patients generally. To attempt to fill this gap in current knowledge, an in-depth study involving prolonged personal interviews with more than 100 women who had undergone caesarean section was conducted in 2006 by midwife and midwifery educator Lynne Staff, of Nambour Selangor Private Hospital, Queensland.[84] Staff conducted detailed interviews of up to two hours with 103 women who had the experience of one or more caesareans, and analysed the results. Because of the

detailed nature of her findings, they make a valuable contribution to knowledge in this area.

There are two qualifications that do need to be made about Staff's results. The first is that they deal only with caesarean births; there was no control group of women who had experienced vaginal birth in the same environments or time-frames, so it is not possible to say if the positives and negatives the caesarean mothers reported were particularly different from those that might be experienced by women having vaginal births. The second is that Staff recruited her subjects for interview by advertising in newspapers and providing a toll-free number to call. This may have biased her results to a certain extent, since women with strong opinions about caesareans, particularly those who had negative experiences to report, might have been more inclined to call than those with no particular interest or opinion about their surgery. That being said, Staff did spend a large amount of time in frank and structured discussion with all the women in the study, thereby giving her results much interest and validity.

Staff had three aims in conducting her research. Firstly, to explore women's recollected experience of caesarean section birth. Secondly, to determine whether that experience influenced the women's preferred mode of birth in subsequent pregnancies, and finally, to try to improve the caesarean experience for other women, given that she anticipated, and received, numerous negative views and perceptions of the surgery. She was aware of the high caesarean rates in Queensland, particularly southeast Queensland – rising from 21.4% of all births in 1993 to 31.9% in 2003. Around 80% of SE Queensland women with a previous caesarean will have a repeat operation in a subsequent pregnancy, and for those women attempting VBAC the proportion achieving vaginal birth can in some centres be as low as 13% - so caesarean section is a common experience for Queensland women. Who then, were the women who took part in the interviews, and what did they have to say?

In general, they tended to be older women (60% over 35, 40% under) who responded to Staff's advertisements, Australian-born (88%), relatively affluent (with nearly two thirds holding private health insurance) and in stable relationships. Ten women gave personal choice as the only reason for their surgery and one stated that "my husband

insisted." Fifteen women felt that they had the surgery mainly because it was recommended by their doctors – reasons given included insulin-dependent diabetes, a 'small pelvis', previous IUFD (intra-uterine fetal death prior to labour), no response to attempts at induction of labour, and slowing of the baby's growth during pregnancy. Three women had the surgery on the doctor's recommendation but were unsure of the reason.

Sixty-six women had medical indications for the operation that fell into the categories widely regarded as legitimate medical indications for caesarean delivery: breech presentation (24 women), raised blood pressure (6), placenta praevia (6), placental abruption (3), no progress in labour (16), and fetal distress (11). The remainder had a variety of reasons including previous surgery of other types, previous fractured pelvis, and a number of rarer but recognised medical indications for caesarean. These women felt that they had been more involved than the former group in the decision for surgery.

Asked about their expectations of birth during their pregnancies, 89 women (86.4%) said that they "never expected to have a caesarean." Four women thought it possible because of family histories, and ten had requested caesarean even though the pregnancy was uncomplicated.

Individually many women spoke of the shock caused by the sudden finding of the need for caesarean. Karen* commented: "I never thought I would have a caesarean. Because I've got a back problem, I never wanted to have an epidural. That was always something I didn't want to have and when it turned out I had to, that was a bit of a worry to me. I did want to try and have a natural birth but I was a bit scared of that too." And Emily*, who underwent an elective caesarean for placenta praevia, said: "I was really looking forward to a vaginal delivery and I'd been reading a lot. I felt like I'd prepared myself psychologically for that experience. When I was told that it would be unsafe to do that and very strongly recommended that I have a caesarean I was quite devastated." Kerry*, who an elective caesarean for breech presentation, had similar feelings: "I wasn't given the chance I suppose. Even though I was told how it was best for the baby, and not to worry about me, I was so upset about it. I didn't even get a go at labouring."

Many women felt that they had not been well informed during pregnancy about the possibility of the need for caesarean arising towards the end of pregnancy or during labour. Most had been to antenatal classes but some of these felt that the information given was mostly directed at labour and vaginal birth, although many admitted "switching off" when caesarean was discussed in the classes, because they did not see caesarean as something that might happen to them, and did not want to think about risks. Most women felt they had been informed during the consent process for their operation about the risks of haemorrhage and infection associated with the surgery, but only three women were aware of long-term risks. Even when the decision for caesarean had been made electively, women still felt that accessing good information was difficult: there were brochures describing the surgery itself but little dealing with how they would perceive the procedure.

The speed of the operation and the rapid arrival of the baby were disconcerting for some women. They had seen labour as a transition period during which they would be prepared, mentally and physically, for the emergence of their child, and this process was either truncated, or missing altogether. Joelle*, undergoing an elective operation, summed up this view very well: "Birth needs to take time. That way … you are eased into it … it's hard to describe but you get the chance to know that within the near future, you are going to become a mother. Also, the baby gets to know that it's going to be born. I know I wanted more time – time to come to the realisation that I would be meeting this little person – that we still had work to do together, before we met." And Kelly*, who also had an elective caesarean birth, commented: "You go in and you have a caesarean and you have a baby in an hour. End of story. You labour and you have got a baby in a day. Bit different." However not all women felt this way. Megan*, who had a caesarean on request, was quite clear: "I wanted it perfectly orchestrated. I wanted it to be as quick and as painless as possible."

The most cogent criticisms related to women's feelings that they were "invisible" or at least largely ignored as intelligent human beings, during the actual surgery. Some comments included: "Everyone was looking at my stomach but I had no part in it at all – you are there in body only. I wasn't even there in spirit. There was no way I could contribute", was how Sandi*, who had an elective procedure, put it. "I wasn't

part of a process," Meredith* said of her operation. "I didn't realise – you roughly know what a caesarean *is*, but until you're actually there having one … well my expectation was so different. … It was very strange in that there were people everywhere and I felt…almost like a piece of meat, and not a person." Tina*, undergoing a second repeat caesarean, described her reactions: "We got into the operating theatre and they were all due to go to (regional town) that afternoon for a conference, so they said 'all right let's make this a record'. Because they were all wanting to go to this conference, they were pretty annoyed because he couldn't get the spinal in and they were waiting. How did I feel? Nothing. Rubbish. There's not a word for it. I was just an imposition basically." And Lenore* was only partly joking when she said: "It felt like going shopping at the supermarket … but we couldn't take it back if we didn't like what we got!" Feelings of "invisibility" were particularly strong when the baby had to be taken away quickly because paediatric care was needed, or where the woman's partner left to accompany the baby to the nursery.

A number of women used the word "surreal" to describe their impressions of the surgery: Jan* reflected on her elective procedure: "It's just completely … surreal. It's really missing a critical moment. The actual giving birth. You're not really giving birth, you're there, but you're not. You're numb and suddenly there's a baby. You're awake but not aware of the moment of birth. It's different … not intimate. It takes away from one of the most amazing experiences." Lenore* said: "It was totally surreal … the fact that someone picks your child's birth date … it doesn't happen spontaneously. So there's none of that lead up like there is with labour – you just wander on in, are given some drugs, they cut you open, and bingo! And Sondra* felt: "It was almost as if this was a phantom pregnancy. … I'd had nine months of this build up to this big experience and then … nothing happened. I ended up going into a theatre and I had a baby and I didn't contribute to it at all. It was completely out of my hands and I just got handed a baby."

A number of women also mentioned the effects of spinal or epidural anaesthesia, noting a feeling of detachment or separation of the body so that the woman no longer felt it was a part of her; others were disturbed by the fact that they could no longer feel the baby or the baby's movements once the epidural was in place. These feelings were accompanied by a sense of loss of control of the birth process.

For a number of women having elective caesareans for medical reasons, the fact that they did not experience labour was significant, and some expressed regret not to have experienced it. As Merryl* said of her elective caesarean section: "If I had laboured, it would have prepared me for the fact that I was about to become a mother. There was nothing, you know? One minute she was in me and then she was out. I know the same thing happens with a natural birth, but it just wasn't real. Like the labour lays a path for you, and you have to walk it. It's a hard path, but I believe there's a reason for that." Women who had a caesarean during labour, for whatever reason, often felt that it was important to have experienced labour even though it had not led to a vaginal birth. Reva*, having her second caesarean without having ever experienced labour, commented that: "Even though I am having a caesarean section, I want to go into labour first. I think it's important to the baby … it signals to me that it's the right time to have the baby. The vaginal birth – I don't want *that* but I *do* want some labour. When you ask me what is important to make my birth satisfying – it would be to experience labour." In contrast, women who had undergone caesarean on request had no interest in experiencing labour, and no regrets at not having done so.

Staff was especially struck by the number of women who felt that "success" with caesarean section was defined only "by *live outcomes and the absence of physical complications,* and women are expected to be grateful that they have a live healthy baby." The women interviewed, said Staff, did realise that these things are important, but for many of them disturbing images and recollections of the surgery remained long after the birth of the healthy child. "I wasn't part of a process: I was passive. I had my arms out to the side – I was in the shape of a cross … almost as if I was being crucified," Meredith* remembered. Samara*, who had an emergency caesarean, felt she was "being gutted like a fish – he happily chatted away as he cut me open – I hated it." And Miranda* said: "I just lay there on the table -- I was the vessel from which my baby was being removed. I was very passive during the whole process. … I mean, what can you do? You have your arms pinned to the IV things and boards out to the side. That God-awful feeling of being pinned down and being numb and not being able to move."

With regard to the caesarean incision and the subsequent scar, which women must look at for the rest of their lives, most women, says Staff, recalled being told there would be a scar approximately 10 centimetres across and most knew where it would be situated. "Some women were horrified at the first sight of it, especially if staples were used, or vacuum drains were in place. Some women who felt their scar was horrible (Miss Universe NOT!) excused their reactions as being ungrateful, and attributed this to being 'hormonal.' Some discussed how they learned to 'make friends' with their wounds. Others described it as their 'badge' of birth, and commented that they wore it with pride."

What would women who planned more children choose for a next birth? Amongst women having their first baby by caesarean, more than two thirds would try for vaginal birth after caesarean (VBAC) next time; somewhat less than half of those with more than one child would do so (this may reflect the fact that women with two or more caesareans are generally not encouraged to try VBAC in later pregnancies.) Several women told Staff they would not have any further pregnancies, solely because of their negative experience of caesarean section; this included two of the women who had undergone caesarean at their own request.

From the study Staff reached detailed and very relevant conclusions about directions that should be taken to try to improve women's experience of caesarean birth, something she feels is vital, given that, as she points out, a third of Queensland women giving birth are going to have a caesarean experience. Obstetricians – and midwives – she believes, need to have a greater realisation that while for them caesareans are all in the day's work, for the woman and her partner the birth is one of the pinnacles of their lives. Women need to be included in conversations within the operating theatre, explanations of procedures must be given much more frequently, and unnecessary personnel excluded from the operating area. The woman undergoing caesarean must be actively informed and involved in all that is going on, by nursing and anaesthetic staff and the attending midwife, and where possible, the surgeon and the surgical assistant.

More information is also needed in antenatal classes, says Staff, to educate women realistically about the current rates of caesarean section, the reasons why a caesarean

may be recommended and the risks involved, how women can expect to feel during the surgery, and what effects it will have later, both short- and long-term. In many cases providing information and discussing the reasons for the surgery will allow women to feel much more involved in the decision-making, and will therefore diminish some of the negative feelings she has described. Among the women who spoke to Staff, the majority underwent caesarean for what are regarded as sound medical reasons, and they did end up with live healthy babies. But Staff firmly concludes that this is not all there is to giving birth by caesarean. She believes that health professionals caring for women during childbirth must try harder to improve the emotional and psychological outcomes for women who give birth by caesarean.

Conclusion

Over the past thirty years there have been major changes in how and where vaginal birth takes place, many routine practices that have been shown to have no benefit to mothers and babies have been abandoned, women themselves have become more informed and assertive, midwives have come to play a much more important and acknowledged role in pregnancy and birth care, and a large number of women have entered the obstetric workforce. The importance of including women in decisions about their care during pregnancy and childbirth, the inclusion of consumer representatives in reviews and studies of pregnancy care, and the validity of maternal satisfaction with childbirth experience as a measure of pregnancy outcome are all widely accepted by physicians, midwives and women themselves. Yet the rates of caesarean section have risen, and continue to do so. Part of the reason, as I have shown in this chapter and the previous one, has to do with the increasing ability of technology to deliver live healthy babies to women who previously would not have achieved a successful pregnancy, and the expectations this has evoked of the 'right' to the perfect child. As Richard and Dorothy Wertz commented presciently in 1989: "The desire for perfection and the belief in choice means that less and less is left to chance, the word that has replaced nature in most people's thinking. Hospital birthing suites, conscious mothers, and fathers present at delivery all give a welcome appearance of naturalness; but the emphasis of the future will be on the custom-made child." [10] However, there are several other important influences on the practice and rates of caesarean section in Australia

and other developed countries. I will now examine three phenomena – the emergence of evidence-based medicine, the increase in litigation by patients when pregnancy has resulted in a less than perfect outcome, and the desire of obstetricians to achieve a balanced lifestyle - to see what effect these have had on the practice of caesarean section.

Names have been changed where Staff has reported conversation with a woman she has interviewed, as indicated by an asterisk.

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5. The role of evidence-based medicine in current obstetric practice and its impact on the performance of caesarean surgery

The term 'evidence-based medicine', often abbreviated to 'EBM', first appeared in the medical literature in the early 1980s, and has since spread into the collective consciousness of the medical profession so that now it is widely acknowledged that all clinical practice should, in principle, be based on 'the best available evidence.'[1,2] 'EBM' implies a scientific basis to the diagnosis, and equally importantly the treatment and management, of diseases and clinical disorders. EBM has as its 'gold standard' the blinded, randomised, controlled, prospective trial of new treatments against old, or against placebo. Such trials, especially when grouped into a larger meta-analysis or review, are said to show precisely what is the 'best' current treatment for a particular condition. In this chapter, I will consider the role of evidence-based medicine in shaping the practice and performance of caesarean section and in issues related to childbirth in general. I believe a number of questions need first to be answered. What are randomised controlled trials (RCTs) and how are they performed? How applicable are such trials to the various indications for caesarean section, the operative techniques of the surgery, and outcomes both physical and psychological? Have such trials in fact been performed, is there in fact 'medicine-based evidence' which can be used to define 'best practice' for the performance of caesarean section? And, if trials have been conducted in certain situations, is the data from them valid in other clinical situations, as well as readily accessible to all doctors who may be performing the surgery? How much can the findings of such trials contribute to decision-making about caesarean section, both by doctors and by women themselves? I will begin with an overall look at the concept of evidence based medicine.

Evidence-based medicine and its critics

The origins of the concept of EBM are closely associated with the name of epidemiologist Professor David Sackett, who initially worked at McMaster University, Canada, and later became Head of the Research and Development Centre for Evidence-Based Medicine at Oxford. In 1996, in the *British Medical Journal*

(*BMJ*), he defined EBM as follows: "Evidence-based medicine is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research. By best available clinical research we mean clinically relevant research, often from the basic sciences of medicine, but especially from patient-centred clinical research into the accuracy and precision of diagnostic tests (including the clinical examination), the power of prognostic markers, and the efficacy and safety of therapeutic, rehabilitative and preventive regimes."[1] Later in this article he added: "Because the randomised trial, and especially the systematic review of several randomised trials, is so much more likely to inform us and so much less likely to mislead us, it has become the 'gold standard' for judging whether a treatment does more good than harm."

The arrival of EBM in medical practice has tended to give the impression, both to medical practitioners and to those of the general public who have become aware of the debate, that medicine prior to the 1980s had no valid scientific basis.[2,3,4,5] Some writers have asked whether the existence of 'evidence-based medicine' implies that there is also 'non-evidence-based medicine' in mainstream practice, and have questioned whether protagonists of EBM have "a unique access to scientific truth and the ability to exercise judgment in reference to it" that is lacking in other practitioners.[4,5] There has been concern expressed at "the conviction that there can be absolute authority to identify and recommend "the best external evidence."[3,4,5] Sackett himself has attempted to defuse these arguments. "The philosophical origins (of evidence based medicine)," he stated in his article of 1996, "extend back to mid-19th century Paris and beyond," a period during which, as noted in earlier chapters, there was fervent activity in the new medical sciences, the dawning of understanding of germ theory, and the development of anaesthesia and modern surgical technique.[1] Undoubtedly, and inevitably, much medical practice in the earlier part of the twentieth century *was* built on unsystematic anecdotal clinical experience superimposed on a traditional education of basic anatomy, physiology, pathology and the mechanisms of disease. However, with the passage of time the concepts of prospective research, case-control studies and other forms of more rigorous assessment of treatment methods have been developed and added to a clinical practice of medicine that has itself been

developing, sometimes by trial and error, sometimes by chance, and sometimes with the help of animal or laboratory experimentation, often with a good dose of common sense thrown in.[3,6,7,8]

The apparently sudden arrival of EBM in the medical literature and the clamour of proponents who claimed it as the only way to properly practise medicine, has led to a certain amount of scepticism and resistance on the part of some medical practitioners, including the editors of respected journals. In 1997 an editorial in *The Journal of Evaluation of Clinical Practice* confirmed that: "Evidence based medicine is an approach embraced by all sensible clinicians. It is right and proper that an evidence-based attitude should be increasingly at the heart of all areas of medical practice."[7] The writers added, however, that "like any other system of medicine it has to be used sensibly and not become an unquestioned all-powerful doctrine that pushes aside extensive experience and common sense."[7] And the editors of *The Lancet* commented that: "The voice of evidence-based medicine has grown over the past 25 years or so from a subversive whisper to a strident insistence that it is improper to practise medicine of any other kind. *The Lancet* applauds practice based on the best available evidence – bringing critically-appraised news of such advances to the attention of clinicians is part of what peer-reviewed medical journals do – but we deplore attempts to foist evidence-based medicine on the profession as a discipline in itself."[9] It appears that most medical commentators agree that the scientific evaluation of medical procedures ought to be applauded, but are hesitant to embrace the full rhetoric of EBM. In the words of *The Lancet's* editors: "Demands to have evidence-based medicine hallowed as the new orthodoxy have sometimes lacked finesse and balance, and risked antagonising doctors who would otherwise have taken many of its principles to heart."[9]

A number of critics have pointed out that for evidence-based medicine to flourish there must indeed be 'medicine-based evidence' available.[3] In other words, appropriate and rigorous clinical research needs to be carried out to provide robust evidence, and the results of that research must be accessible to medical practitioners. One critic asked: "(Are) scientific data an adequate basis for clinical decision making?"[3] And the editors of the *BMJ* cautioned that: "Although current clinical practice is often evidence-based, there is still much to be gained. Important new

evidence from research often takes a long time to be implemented in daily care."[10] The *BMJ* also pointed out that "many clinicians struggle to apply the results of studies that do not seem that relevant to their daily practice." The distance between research findings and everyday practice can be quite wide.

As already mentioned, the 'gold standard' for protagonists or advocates of EBM is the blinded prospective randomised controlled trial (RCT) of a treatment.[11] This demands that the treatment being tested is administered prospectively to a group of subjects (human or animal), while another group or groups receive an older treatment, or a placebo, or both. The treatment is administered in such a way that neither the subjects nor the researchers have any idea, until the trial is completed and codes broken, as to who has received the new treatment, who the old, and who the placebo. A well conducted blinded prospective RCT that provides conclusive, clearcut and statistically significant results to a research question is regarded as providing Level I evidence, the 'best' kind of evidence.[1] This evidence may be reinforced by other trials yielding comparable results. In addition, a number of similar trials may be examined as part of a review or meta-analysis; the combined results increase the validity of the conclusions[1] There are now numerous reputable organisations that conduct such meta-analyses, most notably the Cochrane Collaboration, which make their findings readily available to practising clinicians on their websites.[1,9]

This is all easily understood when the treatment tested is, for example, a new drug for a particular condition, such as an antibiotic, which can be prepared as individual white pills identical to those containing the older treatment and to those which are a placebo. The blinded treatments are then administered either to laboratory animals or to consenting humans in an ethically-approved drug trial. Such research however is less straightforward when the research question being asked involves a caesarean section, or indeed any obstetric intervention in a pregnant woman, and the process of devising appropriate and ethical methodology is much more complex.

Proponents of evidence-based medicine do recognise the difficulties of conducting RCTS to answer every research question. Retrospective trials, comparing outcomes from two or more different types of treatment, case-control studies and simple observational studies may all be used as 'evidence' however this is regarded as less-

reliable evidence: Level II or III evidence.[1,2,11] Level II evidence may consist of either "evidence from at least one controlled study without randomisation (IIa) or at least one other type of quasi-experimental study (IIb)," and Level III evidence of "evidence from non-experimental descriptive studies such as comparative studies, correlation studies and case-control studies."[11] Though less reliable, this may be the only evidence that can be ethically and/or practically obtained in an attempt to answer clinical questions. As well, in order to conduct a prospective RCT, there must always be some evidence that the proposed treatment will actually be effective – meaning either that theoretical evidence from basic sciences, or clinical evidence at a lower level than Level I, must exist to justify the trial, both ethically and financially.[8] The financing of RCTs is of fundamental importance - in order for valid studies to be conducted in any field of medicine, there must be funds available to pay researchers and provide appropriate materials. Financial requirements play a huge role in dictating what will and will not be trialled, particularly in regard to drug treatments or to the use of new surgical equipment. Often trials are sponsored by companies with a vested interest in an unequivocal positive result.[12] Such financial interests can influence the researchers in conscious or unconscious ways and can certainly influence the decision as to whether the results will be published, and, if so, where and how. Negative findings may not be published even though these may have as much significance for patient care as positive findings in the same situation would have carried.,[3,4,7,9,12] Many trials of techniques and materials used in the practice of caesarean section could potentially fall into this category.

Early proponents of EBM looked to the work of Thomas Kuhn to justify the validity of their propositions. Kuhn introduced the concept of the 'paradigm' – scientific paradigms are ways of looking at the world which define both the problems that can legitimately be addressed, and the range of available evidence that may bear on their solution.[13] When defects of problems within an existing 'paradigm' accumulate to the extent that the paradigm is no longer valid, the paradigm is challenged and replaced by a different paradigm, a different way of looking at the world. Kuhn describes this as a 'paradigm shift.' Advocates of EBM have stated that "the changes involved in using the medical literature more effectively in guiding medical practice (are) profound enough to be called a paradigm shift."[14] However, as already noted, many practising clinicians, and those publishing for them, do not agree that EBM is a

discipline *in its own right*, but see it simply as the logical and seamless progression of research methods into the 21st century.[9]

Decisions about what to research will also depend on the tastes and interests of the researchers and on their career aspirations. Many editors of medical journals (while nevertheless continuing to edit and publish) have lamented the fact that the publication of scientific papers serves the needs of the authors much more than those of the readers and vastly more than those of many patients. Advancement in an academic medical career, particularly one in a prestigious university hospital, is highly dependent on the number of peer-reviewed papers published by an aspiring candidate. In a climate of such feverish production, it is inevitable that important aspects of 'evidence' may be swamped in a plethora of irrelevant and obscure articles that may mislead a busy practising clinician.[15,16]

The decision about what to research will also be influenced by the professional background of the researchers and their particular choice of subjects. The possible bias these factors exert on the outcomes of research is well illustrated by a recent Australian study which aimed to assess the views of pregnant women on the degree of pelvic floor dysfunction they were willing to tolerate as a result of vaginal birth, in order to avoid a caesarean section.[17] Numerous studies have produced Level II and III evidence showing that urinary and faecal incontinence and sexual dysfunction are more common following vaginal birth than following caesarean section.[17] These outcomes following vaginal birth are not completely prevented by caesarean section but they are certainly minimised, and many women who request caesarean will cite concern about pelvic floor damage as one of their reasons for this request.[18] The 2008 study of more than 100 pregnant women at Prince Alfred Hospital in Sydney was conducted by midwives who showed that "pregnant women are much more likely than their doctors to accept the risks involved in having a normal vaginal delivery and most are prepared to risk even the most debilitating and painful outcomes rather than have an elective caesarean."[17] The study found that colo-rectal surgeons were even more likely to recommend caesarean to women wanting to avoid pelvic floor damage than were obstetricians, and the study's authors expressed surprise at "doctors claiming to know more about what women wanted than the women themselves." However, since the women in the study had yet to experience vaginal birth, and colo-

rectal surgeons are the physicians most likely to be involved in treating women with severe trauma from vaginal birth, they may be the best placed to comment on how women *actually* react when they *have* suffered major pelvic floor damage. In many cases women do express regret about pelvic floor damage after the event. The fact that the surgeons are more concerned than the women is therefore not really surprising. In contrast, in a recent article in *BJOG,* the British journal of the RCOG, evidence is presented from a study of 454 women who were followed through pregnancy at a public hospital in Liverpool, UK. The key findings indicated that "while most women felt that vaginal birth might be preferable, they accepted that their actual birth method would be determined by the circumstances of their pregnancy, the position of the baby, the course of their labour, and the practices of midwives and doctors they encountered."[19] The authors commented that "'choice' may not be the best way to understand women's decision-making about birth method." In the first study, the evidence fitted well with the views of the midwives conducting it; in the second, the findings tailored neatly with the views of the obstetricians who carried it out. It is inevitable that much 'medicine-based evidence' – even well-designed and conducted trials - will be influenced, albeit subtly, by researchers' personal and professional experience and beliefs.

EBM and caesarean section

Those clinicians who do see EBM as a separate entity see the origins of this paradigm shift lying in developments in clinical research over the past fifty odd years. Whereas in 1960 the RCT was unusual, it is now essential that any drug that is to be integrated into clinical practice is first subjected to a rigorous and statistically valid process of RCTs.[20] The same RCT method has also increasingly been applied both to diagnostic tests and physical therapies, as well as to assessments of patient satisfaction and reasons for their decision making. Meta–analysis – the summation of the results of several RCTs – has gained great credibility as a means of assessing the efficacy of diagnoses and treatments and has frequently had a profound effect on setting treatment policy in all branches of medicine. The new 'philosophy' is now taught in all medical schools, and since the early 1990s there has been a profusion of articles in the medical literature instructing clinicians how to access, evaluate and interpret evidence and integrate it into daily practice.[21] The practice of EBM has been extended

into the development of clinical guidelines in many areas of practice, drawn up by institutions such as the professional Colleges.[22] One example is the publication *Clinical Guidelines for Caesarean Section* prepared by the UK National Institute of Clinical Excellence (NICE) in conjunction with the RCOG, issued in 2004 and containing 108 recommendations for practitioners undertaking caesarean surgery.[23] Such guidelines have gained considerable authority among clinicians and from the medico-legal point of view.[22,23]

What then has been the impact of the concept of evidence-based medicine on the current practice of caesarean section? Firstly, there are a large number of conditions for which caesarean section had already become the accepted treatment, well before the advent of EBM, by a process of trial-and-error in clinical practice and the application of common sense. Empirical trial-and-error is in fact the oldest scientific device. These are conditions in which the life of the mother, or the baby, or both, are threatened. An example of these is placenta praevia, where the placenta obstructs safe vaginal birth. There is a strong possibility, as easily understood by the woman affected as by her doctor, that the condition may prove fatal for herself and her child if caesarean section is not undertaken.[24] No change in practice in such a situation is likely – no prospective controlled trial with random assignation of pregnant women to either undergo caesarean, or not to, would be acceptable to patients, physicians or ethics committees.

Even when new research questions are to be answered, the practice of EBM and the use of RCTs becomes much more complex, and complicated, when the subjects are pregnant women rather than laboratory rats, and the treatment being tested is caesarean section, rather than a white pill possibly containing a new antibiotic. Firstly, many pregnant women would be extremely reluctant to take part in a trial in which they would be randomly allocated to undergo a piece of major surgery such as caesarean section, or alternatively not allocated to this. They will be aware before the trial begins that such surgery carries significant implications for themselves and their children even if the nature and extent of those implications is still the subject of great debate. Secondly, it is obvious that prospective randomised trials must be ethically sound – assigning women randomly so that some of them are denied a caesarean section for what seems a commonsense reason to their clinicians, and to the women

themselves, would be unacceptable to an ethics committee. Finally, such trials can never be blinded, either to the women or the researchers – caesarean section is clearly either done or not done. Therefore, efforts to work out whether caesarean sections are beneficial to mothers and/or babies in particular situations often rely on observations from 'lower level' evidence, Level II and Level III evidence.[25]

Such studies are often retrospective studies comparing outcomes of women who have undergone caesarean section, or those of their infants, with those who have had vaginal births. The validity of such studies, and therefore of their results, depends very much upon the accuracy of the records which have been kept. Moreover such studies also very frequently involve a comparison of two groups of subjects who are not in fact directly comparable. This is because caesarean section is already an established operation for certain indications, and thus the women in the 'treated' group will have had one or more of those indications, whereas those in the control group, who have experienced vaginal births, will not have shown the indication for the operation. The indication itself, rather than the operation, may influence the result of the study,

For example, it might be found from a retrospective study that many women having caesareans bled heavily around the time of operation. It could therefore be concluded that caesarean section is more likely to be associated with blood loss during delivery than is vaginal birth. If, however, a large number of the women studied had their operation because they had a placenta praevia, a condition that will itself cause bleeding, then such a conclusion is not valid – the surgery is in fact part of the solution to the problem of blood loss. Much of the debate around caesarean section, both recent and current, centres around claims that the risks of the surgery are significantly greater than those associated with vaginal birth.[26] The proponents of this viewpoint quote mortality and morbidity statistics for caesareans compared with those for spontaneous vaginal birth.[27] Such claims will be discussed in more detail in Chapter 8 but it can be seen from the above example that in many cases such apparently clear-cut statements are in fact based on invalid comparisons, because the indications for the caesareans must also be taken into account.

It is certainly possible to carry out prospective studies comparing groups of women who have caesarean sections (cases) with those who do not (controls), but again, because there are already well-established indications for caesarean surgery these often also result in comparisons of two very different kinds of women – those who have problems with their pregnancies compared to those who do not.

As already noted, advising doctors in clinical practice to search for 'evidence' pre-supposes that this evidence in fact exists, a supposition that in turn assumes that a problem has been identified and appropriate resources expended on trying to solve it, and that the solution has been reported in the accessible medical literature. There are some limits to these suppositions, not least when it comes to the practice of caesarean section. Firstly what might be called 'established practice' or even 'commonsense' dictates that in conditions where the mother's or child's life or health is seriously threatened, rapid delivery is indicated by caesarean and no randomised trial of alternatives would be considered reasonable by clinicians or indeed by women themselves.[28] Secondly, the use of a particular treatment in a trial involving human subjects, and particularly pregnant women, can only take place if an ethics committee can be convinced that there is some reasonable scientific basis for the proposed treatment being effective, together with proof that it is safe. In other words, there really needs to be some Level II or III evidence, or evidence from animal trials, available before RCTs to obtain Level I evidence can be approved.

Sackett, in his 1996 article, qualified his enthusiasm for EBM when he wrote that: "Good doctors use both individual clinical expertise and the best available external evidence, and neither alone is enough. Without clinical expertise, practice risks becoming tyrannised by evidence, for even excellent external evidence may be inapplicable to or inappropriate for an individual patient."[1] The truth of such qualification can be seen when the available clinical evidence for certain aspects of the practice of caesarean section is examined. There may be valid evidence for a number of different potential solutions to a problem. The discussion of the scientific basis of such clinical evidence can be, and has been, extended in the direction of the arguments of Karl Popper (i.e. that the fact that in a RCT 'treatment A' was statistically superior to 'treatment B' does not equate to the same results in another population because scientific work can never prove or even 'nearly prove' scientific

hypotheses but can only, in principle, falsify them).[29] However it is not the intention to develop this more theoretical line of reasoning at this point, but rather to look at current clinical practice in caesarean surgery and the different options facing clinicians in practice.

For example, it is now known that many women who have had their first baby by caesarean can try for a vaginal birth for their second child, and achieve this outcome. However it is also known that some of those who try will have problems during their labour, which means that they need a second caesarean to ensure a live and healthy baby. A large number of studies have now been done looking at the outcomes for women who attempted vaginal birth after a caesarean (VBAC). This subject is discussed further in Chapter 9 but in summary, the research shows that somewhere between half and two-thirds of these women, depending on the particular study, will achieve a vaginal birth.[30] The remainder will have a repeat caesarean done as an emergency. Caesareans done in this situation have greater risks of problems such as bleeding, infection and rupture of the scar of the earlier caesarean, so mortality and morbidity figures for both mothers and babies in this situation are higher than for those succeeding in vaginal birth, and higher than those for women choosing to have a planned repeat caesarean delivery on the second occasion.[30,31,32,33]

On the one hand, 'the evidence' shows that women who attempt VBAC after a previous caesarean generally have a greater than 50% chance of a vaginal birth. This can be looked at positively – 'the glass is more than half-full.' On the other hand, if vaginal birth does not proceed, 'the evidence' shows that undergoing a repeat emergency caesarean carries some risk of serious consequences – 'the glass is close to half-empty.'[32]

It is now common practice amongst Australian obstetricians to put both these viewpoints to the woman concerned, and allow her to make a choice.[33] However no matter how well informed she may be, the woman generally must make this choice with much less personal knowledge of the various possible medical scenarios than her doctor has. She is also, inevitably, going to be influenced by the way in which the information is laid before her and the expressions and body language of the doctor. The doctor, being human, can never be entirely impartial. And the doctor, being

human, may have been influenced in the past, one way or the other, by certain clinical or anecdotal experiences, either good or bad, that override what he or she knows to be valid evidence. Fashion, culture, language, and personal experience will all influence how 'evidence' is presented by a doctor to a patient.

EBM and breech birth

As already noted, in order to conduct something as complicated as a randomised controlled trial in search of Level I evidence, there needs to be some idea that the new treatment that it is proposed to test will be effective. That means having something like Level II or III evidence first. A good example of the evolution of such research is found in the history of the management of breech birth.

It has long been recognised that perinatal mortality and serious neonatal morbidity are greater amongst breech babies born vaginally than those born head-first.[24] Breech presentation occurs when a baby at term –between 37 and 40 weeks of pregnancy –is lined up ready to arrive in the world backwards. Unlike most babies (around 95%) who by 36 weeks gestation are cephalic presentations with the head in the lower part of the mother's uterus, the breech baby lies with the head up, and the buttocks and/ or feet tucked into the lower segment of the uterus. Earlier in pregnancy, at about 28 weeks, up to a quarter of babies may present as breeches but by three to four weeks before full term most of these infants have turned themselves upside down, although what influences this is not yet well understood.[24]

Sometimes a baby in the breech position can be turned by a physician gently but firmly pressing the baby around to somersault into a head-first position, a procedure known as external cephalic version (ECV).[24] However this is not always successful and quite often is declined by the mother as it is not itself completely risk-free: the placenta may be damaged or the umbilical cord compressed necessitating an emergency caesarean section In addition, the baby may simply refuse to budge, or may turn back into the breech position after a few hours of head-first presentation.[24]

When a woman is in labour with a baby in a cephalic presentation, the baby's head is gradually pressed down into her pelvis by the contractions of her uterus. Over a

period of hours, the shape of the head is altered to fit through the pelvis. The soft flat bones of the baby's skull can partly slide under one another in a process known as moulding, a safe and natural event if it occurs gradually as it does in normal labour. [24] The purpose of moulding is to fit a head which may be a little large safely through the pelvis. If it is not going to fit this will become obvious to the birth attendants over time, and appropriate measures can be taken while the baby continues to receive adequate oxygen from the mother. Where the head fits the rest of the baby will almost always easily follow, being softer and more malleable than the bony skull.

With breech presentation, the baby's buttocks and lower limbs are born first followed by abdomen, chest and arms. Then, if all is going well, the head is then pushed out too, and the whole baby is born. Of course many breech babies – in fact most breech babies – can be safely born vaginally. However, if the baby's head is a little too big for the mother's pelvis there is no time for it to undergo moulding, and the baby can remain stuck, delivered to the neck, unable to breathe and no longer obtaining oxygen from the mother because the umbilical cord is now compressed between the baby's head and the mother's pelvis. Clearly this is a catastrophe, and this is the main reason that, when compared to birth head-first, breech birth is associated with a higher perinatal mortality and morbidity. There can also be difficulties with the delivery of the arms, and with the umbilical cord, that can increase the risks of death or damage to breech babies.[24]

Elective caesarean section has been advocated for *some* breech babies for more than a hundred years, and this was justified by a number of studies that looked retrospectively at the results of both vaginal and caesarean delivery of breech infants (in other words, Level II or III evidence.)[34] The difficulty lies in deciding *which* breech babies are likely to have no difficulty being pushed out into the world and which are likely to become stuck and die, or suffer severe damage, as a result. Efforts to measure the size of the mother's pelvis *vis-à-vis* that of the baby's head, by physical examination, or X-ray, or ultrasound, or more recently, CT scanning, have not shown consistent results. [34] A woman who has previously delivered one or more babies weighing three kilograms or more head-first without difficulty, is likely to have little trouble with a breech baby in a later birth, but this is not an absolute rule. A woman having her first baby as a breech (a primigravida) is particularly of concern to

her medical attendants since such a woman does not have a proven 'track record' of safely giving birth to a baby of average or greater than average weight, and because first labours, even with head-first babies, are generally longer and often more difficult than subsequent ones.[24]

To develop guidelines for clinicians, in the last decade of the 20th century a prospective randomised controlled trial was devised, in which women with breech presentations agreed to be allocated randomly into one of two groups – those attempting labour and vaginal birth, and those having planned caesarean section to deliver their infants. This study, known as the Term Breech Trial, was based in Canada and was directed by Dr Mary Hannah from Toronto, but hospitals throughout the world took part: there were 121 centres in 26 countries and 2088 women were involved.[35] Confounding factors were controlled for and the study had adequate ethical approval. It was intended to recruit 2,800 women in total but on review during the study, after 2088 had been recruited, it was clear that the difference in outcomes was statistically very significant as well as clinically and ethically of great importance. The study was stopped at that point. In October 2000 in *The Lancet*, Hannah and her colleagues reported on behalf of the Term Breech Trial Collaborative Group the results of the study. It had been found that the risks of death or damage for babies when vaginal birth was attempted were much greater than those for babies delivered by planned caesarean – three times greater in fact.[35]

As a result of the findings of the Term Breech Trial, obstetricians practising in Australia must now tell women with breech presentations, and their partners, that the evidence shows that the safest option for delivery of their baby is an elective caesarean section, and must explain to them the *evidence* of the Trial.[36,37] The decision for operation, though, must be made by the woman herself, and her family. It is hardly surprising that, faced with the information provided, and an explanation of the devastating things which may happen during breech vaginal birth, most women and their partners opt for a planned caesarean birth. In other words, although the woman is offered a *choice* – attempt vaginal delivery, attempt external cephalic version, or plan a caesarean section, the *evidence* falls strongly on the side of elective caesarean. The doctor who does not actively encourage a woman in this direction, and document this encouragement fully, runs the definite risk of a *negligence claim* in the

event of a poor outcome for the child. The threat of possible *litigation* – a topic to be discussed in the following chapter – therefore plays a major role in the decision-making process around the management of breech presentations.

Thus most breech babies in developed countries now arrive in the world by caesarean section. These operations are performed in the knowledge that many of these breech babies would have arrived safely if their mothers had been left to labour and proceed to vaginal delivery - *but these babies cannot be identified prior to birth*. So at present, for every 'necessary' caesarean done for breech, a number of 'unnecessary' operations are also performed; caesarean section for breech presentation is largely done as a preventative measure for the whole population of breech babies. The Hannah trial was able to quantify the protective effect: "Overall, with a policy of planned caesarean section, for every fourteen additional caesarean sections done, one baby will avoid death or serious morbidity."[35]

Over the past few years there has been some spirited discussion amongst obstetricians about the results of the Term Breech Trial.[36,37,38]Follow-up of babies born during the Trial has continued over several years and of those babies *born alive*, by the age of two, no major physical or developmental differences can be shown between the babies born by caesarean and those born vaginally. There has been some criticism about some of the ways in which the trial was conducted.[36,37,38] Despite the findings of the Trial some doctors have continued to allow some carefully-selected women to attempt vaginal breech birth, and some women with breech presentations for whom a caesarean was planned have started spontaneously in labour and proceeded to birth so quickly that there was no time to perform the operation. In many cases these births have been uneventful and the babies perfectly healthy. The matter is not completely resolved. However, breech presentation is currently a steady and significant contributor to caesarean rates in developed countries. This has had the secondary effect of greatly diminishing the experience of performing vaginal breech delivery of younger obstetricians and those in training.[39,40] Therefore the potential risks of vaginal breech birth – conducted by a doctor with limited experience – have become even greater, and the indications for caesarean delivery even more compelling, thus ensuring that breech presentation will contribute significantly to the indications for caesarean section for the foreseeable future.

Conclusion

Given the number of physicians who practise obstetrics, and the enormous interest in the subjects of childbirth in general and caesarean section in particular, it is understandable that the current available medical literature on caesareans is huge. There is far too much information for any one person to read let alone retain.[41] One result of this deluge of information is that many doctors will be selective in what they read and may therefore have available to themselves and their patients only a part of 'the evidence.' However there are also excellent services that collect and evaluate existing studies and articles, and commission and publish meta-analyses and reviews of particular subjects. The best known of these, the Cochrane Collaboration, has already been mentioned.[9] It is the work of bodies such as the Cochrane Collaboration that informs the development by institutions, such as RANZCOG, ACOG and the RCOG, of guidelines for when and how to perform various procedures, including caesarean section. The importance such bodies place on evidence-based medicine is easily demonstrated. The preamble to the National Institute of Clinical Excellence Guidelines includes the recommendations that: "Pregnant women should be offered evidence-based information and support to enable them to make informed decisions about childbirth," and "Pregnant women should be given evidence-based information about caesarean section during the antenatal period, because about 1 in 5 women will have a caesarean section."[23] However both these statements are in fact based on what the authors themselves define as Level III evidence or simply "good professional practice" and of the 108 recommendations about how to make the decision for caesarean, how to perform the operation, and how to care for women subsequently, only 34 are actually based on Level I evidence. Moreover many of these tend to be simple pragmatic aspects of the surgery, such as giving women anti-emetics to prevent vomiting, the surgeon wearing double gloves to reduce HIV transmission, and the fact that women undergoing caesarean in general have a longer postnatal hospital stay than women giving birth vaginally. In more complex situations, such as whether caesarean section should routinely be performed for women with pre-term labour or for twin pregnancies, the 'evidence' is much less convincing and the guidelines correspondingly less precise.

For the moment, there is a lack of much statistically robust scientific 'evidence' on which to base the practice of caesarean section. However, there is another aspect to the use of evidence-based medicine in the practice of caesarean section. Giving birth, whether vaginally or by caesarean, is one of the most complex and important things a woman may do in her life, and may not always be reduced to a matter of obeying 'the evidence.' Women are individuals, needing individual treatments, and ultimately making up their own minds about whether to accept what the doctor states to be the 'best' available evidence. There is no 'absolute truth' about evidence-based medicine, there is only the knowledge that we have so far accumulated, and this will be tempered by the woman's views, the doctor's views, and simple common sense.

Informing women about their degrees of risk during birth and plying them with statistics will only ever play a partial role in their reaching a decision about requesting a particular mode of delivery. Looking at single issues greatly oversimplifies the reality for an individual woman. The evidence about vaginal birth and caesarean section consists of a large number of single issues which will not have equal weight in the mind of a woman trying to make a decision for herself. It is not possible to feed each variable into a computer and come out with an exact numerical answer for every woman. Most of the risks of caesarean are risks to the woman herself – risks in this pregnancy or in later life – rather than to her baby. Only the woman can decide whether she is prepared to take those risks. Women's fears, wishes, knowledge, long-term plans, previous experience and partner relationships are all important. I will take up this apparent collision between the concept of evidence-based medicine, and that of choice in childbirth for women, in later discussion.

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Chapter 6. Litigation, lifestyle, and the increasing rate of caesareans.

In the practice of obstetricians in Australia over the past three decades, two factors stand out. The first is the difficulty of maintaining a satisfactory lifestyle while coping with long hours, large caseloads and unpredictable emergencies. The second is the threat of litigation and the associated high rates of medical indemnity insurance. The first factor makes the profession unappealing to young doctors and medical students. The second strongly affects decisions about obstetric intervention in pregnancy and childbirth, including decisions to recommend caesarean section. In 1980, at the point where the medicalisation of pregnancy and childbirth was well established, and when the questioning of that process by consumers and others was just beginning, the annual premium for medical indemnity for a specialist obstetrician in Australia was $75. Over the ensuing few years there were modest rises - to $100 then $125. The late 1980s and 1990s then saw dramatic increases in premiums - $1,000, $ 5,000, $10,000 - and by the end of the 20th century the base rate for a NSW obstetrician was more than $54,000 annually, with graded rises up to $150,000 depending on the number of private obstetric cases a doctor took on. [1] These figures were comparable to the most litigious regions of the United States. [2] Why this happened, its effects on obstetric practice, on obstetricians and their families, and their lifestyles, and in particular its effects on the practice of caesarean section, are the subject of this chapter.

Interviews with Obstetricians

In order to gain an idea of what obstetricians think of their own profession, I held semi-structured interviews with twenty Australian obstetricians who were either currently practising obstetrics or had recently done so.[1] The information obtained from these interviews provides valuable qualitative evidence that complements statistical research. The responses demonstrate that the pressures of long hours significantly affect the daily lives and lifestyles of obstetricians, their partners and other family members. These pressures are very much increased by the current very realistic threat of litigation in the event of a less-than-perfect pregnancy outcome.

One of the obstetricians is Phil*, who until the mid-1990s was in specialist practice in a large country town with two partners, working a quite acceptable 1:3 on-call roster. One night Phil was summoned to the birth suite to see a woman named Joanne*, who was in spontaneous labour. Joanne had attended the woman partner in Phil's practice throughout her pregnancy and had declined to meet Phil or his other male colleague during that time. This was her second pregnancy – her first baby had been born by caesarean section when she did not progress in spontaneous labour, and she was determined to have a vaginal birth this time. When Phil arrived in the birth suite, he was told by the attending midwife that Joanne's cervix was about five centimetres dilated – she still had a long way to go to the pushing of the second stage of labour. Phil was concerned about the appearance of the CTG trace. It suggested that the baby was becoming distressed. He recommended testing a scalp blood sample from the baby for acid levels, an indicator of the amount of oxygen the baby was receiving during labour. After much argument Joanne agreed, reluctantly, to this. The sample was taken, an experience Joanne found very uncomfortable, and testing showed the blood acid level to be in the normal range. At this piece of news Joanne became quite angry, saying that she believed the test had been unnecessary.

She continued in labour with the CTG trace hovering between normal and non-reassuring. Two hours later the midwife on duty examined Joanne and found that labour had not progressed at all. Phil was again called – it was now 4 am. He watched the trace become less and less reassuring, and he was concerned about Joanne's lack of progress in labour. She declined a further scalp blood sample and so he recommended stopping the attempt at vaginal birth and repeating the caesarean section – all his instincts and experience told him that this was a baby increasingly in trouble. After half an hour of argument with Joanne and her partner, consent to the operation was obtained. However she insisted on an epidural anaesthetic although both Phil and the anaesthetist he called in advised that a rapid general anaesthetic would be in the baby's interests, and inserting the epidural took a considerable time. Finally, an hour and a half after the initial decision had been taken, under an epidural, the baby, a boy, was delivered by caesarean. He was in poor condition, with low Apgar scores and unable to breathe on his own. He was transferred to the neonatal nursery where he spent 31 days. Subsequent follow-up by his paediatrician has shown him to have severe cerebral palsy and to be intellectually handicapped.

Four years later Phil received a letter from Joanne's lawyers – she was beginning proceedings against him, alleging negligence in his management of the birth and stating that he should have insisted upon an earlier caesarean, which she believed would have produced a normal and healthy infant. Over a period of three years the lawyers argued over the case. Phil understood Joanne's motivation – she and her partner would be caring for the child for the rest of their lives - but he did not believe he was to blame for what had happened. He was well supported by his medical defence union but he lost weight and sleep, and became irritable and depressed worrying over the case. Finally two days before the matter was booked to go to court a settlement was made for a relatively modest sum to be paid by the defence union to Joanne; the lawyers recommended to Phil that he take this course in preference to the glaring and unpredictable publicity of a court case. But while that matter was concluded Phil's confidence in practising private obstetrics was severely shaken. "The buck always stops with the obstetricians," he said, "because we're the ones with the indemnity insurance." He resigned from the practice at the age of 41, left the town with his family, and undertook a course to become a medical administrator.

Tanya* is another specialist who was in solo obstetric practice in suburban Sydney for five years from the age of 34, until one night, returning from supervising a twin birth, she fell asleep while driving and hit a tree. Fortunately she survived – with chest and leg injuries – but the experience convinced her to alter her practice to one treating only menopausal women, which would no longer require her to be up at all hours of the night.

A qualitative study published in the *Medical Journal of Australia* in 2002 took a closer look at these problems[3] All Australian doctors who were specialist obstetricians were asked to complete an anonymous questionnaire about their current practice as well as their intention to continue practising obstetrics in following years. They were also asked whether they had been sued or threatened with litigation by patients who had experienced, or believed they had experienced, a poor outcome to a pregnancy, and how far such cases proceeded. The response rate was 75%. Of these, 19% were female, which was consistent with the composition of the Australian obstetric workforce at the time. Among those who responded, 72% were practising

obstetrics at the time, while the remainder practised only gynaecology. When asked about their intention to go on practising obstetrics, 66% thought they would still be doing so in one year's time, 44% saw themselves still doing so in five years' time, and less than 25% anticipated they would be in obstetric practice in ten years' time. The authors of the study calculated that specialist obstetricians would therefore be lost from the workforce at the rate of about 63 per year. Newly trained doctors are coming in to take their place but at the time of the study this was only at the rate of about 35 per year (this has since increased somewhat). The authors also pointed out that women now make up more than half the doctors undergoing training in obstetrics and gynaecology, and that at least in their first years of specialisation, they may choose to work less than full-time because of childbearing and the demands of young families.[3]

So the picture, confirmed in this and other studies, is of an aging workforce and an increasing shortfall in the number of specialist obstetricians trained and experienced in Australian practice.[3] Undoubtedly some of this shortfall will be made up by recruiting overseas-trained doctors, who must demonstrate the same training and skills as Australian graduates, but of more relevance are the reasons why these obstetricians are so disenchanted with the obstetric side of their practice. Most of those planning to give up obstetrics intended to go on practising gynaecology, and gave as their reasons either the experience of litigation or the fear of this, high indemnity costs, family disruption and long working hours.

The training of obstetricians

What kind of apprenticeship do obstetricians go through before they can put up their brass plates and start charging private patients? First of all, they need to complete medical school. This can be as an undergraduate, either direct from high school, or after a gap year or two, or after training and working in some other career, as a mature student. Entry into medical school as an undergraduate, into a course lasting five or six years, depends partly on the student being close to the top 1% of students in the secondary school exit examinations in the particular state, partly on the outcome of an interview, and in some medical schools on the results of a test of general intelligence. Increasingly, in Australia, universities are offering medicine as a post-graduate course, with entry by students who already have degrees, usually in the health

sciences but sometimes in the liberal arts. The graduate courses are more concentrated four year courses and generally have less didactic teaching and more self-directed learning on the part of students. [4]Whether under-graduate or post-graduate, medical schools in Australia are taking in increasing numbers of students – 400 or 500 per year is not unusual, whereas a generation ago the intake was around 100 per year, small group teaching was the norm and students learnt from real patients. Now much teaching is done on-line and with 'virtual reality' situations. [5]

Having completed medical school, the newly-qualified doctor must spend two years as an intern prior to full registration.[6] Only then can specialist training begin – for this, the aspiring obstetrician, aged at least 26 and often much older, must obtain entry to a training program. All specialist training in obstetrics and gynaecology is under the supervision of the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG), whose headquarters are in East Melbourne although there are branches in state capitals and in New Zealand. Trainees work in public hospitals, at the level of registrars (junior doctors with some experience); their salaries are paid by the relevant state government. Registrar posts are inspected and approved regularly by the College to ensure that the post provides enough clinical material and diversity of experience so that at the end of four years the trainee is well on the way to being a safe and competent practitioner in the specialty. A series of graded assessments in different skills are conducted by the College along the way; the people who oversee these are specialist obstetricians who are already Fellows of the College usually of some years standing. [7] They are not paid for this work, regarding it as part of normal professional obligations.

Much of the daily work of registrars is service provision for the particular government health department employing them. Although hours are very much shorter and better regulated than they used to be, there is still a need for registrars to work long hours and at night and weekends, firstly to provide the needed services, and secondly to gain the required experience for specialist practice. At least one year of work in a rural hospital is required and all states now have programs spanning the years of training, during which registrars are rotated through several hospitals. [7] For most trainees these are the years from 26 to 35 when non-doctors their age are marrying or finding long-term partners and starting families. Although job-sharing is allowed in most rotations

it makes training longer. The need to move house frequently or travel long distances to work, difficulties maintaining relationships with long working hours, regular on-call and the looming exams all make a registrar's life quite stressful and take a toll on families. Many doctors in training look at the lifestyles of their senior obstetric colleagues and decide that it is not for them. Up to 25% do not set up as private obstetricians once they become fully-fledged specialists, confining themselves to gynaecology or subspecialties such as ultrasound scanning.[8,9]

There is a major examination in the fourth year of training; passing this gives the trainee the status of a Member of the College. Two more years of training are necessary, either continuing directly in the specialty in a hospital post as a senior registrar, or as part of further training in a subspecialty such as gynaecological cancer surgery (oncology) or ultrasound.[10] Provided the final two years are completed satisfactorily the candidate is admitted as a Fellow of the College and has full specialist registration with a state Medical Board.

For those who do embark on private obstetric practice, there is an increasing tendency to work in group practices, sharing on-call so that each works one night in three or four. [8,9] In public practice there is now a requirement that doctors working night shifts, including specialists, must have time off the following day to recover – as airline pilots do. There is no such requirement in private medicine and having worked a night without sleep most specialists in private practice would normally do a full day's work the following day.

Life in private practice is well described in fiction by Sydney obstetrician Terry McGee.[11] Her novel *Misconceptions* opens with her main character, Dr Julia Kent, being awakened by a call from the labour ward at 2.15 am.

" 'Dr Kent, it's Liz from Royal Eastside. Your Mrs Roberts has come in. This is her second baby and she's eight centimetres dilated. Her waters broke during the examination and she's very pushy. You'd better come straight away or you'll miss it.'"

" 'Thanks, Liz. I'll be right there,' Julia mumbled, mostly to her pillow, restraining her frustration until the midwife hung up. Then she groaned like an animal in pain. Didn't anyone have a baby during the day any more? The tug of sleep was irresistible. She'd had to work three nights this week already.

"Years of brutal self-discipline forced her legs over the edge of the bed…she lurched forward and tottered unsteadily towards the bathroom…"

A specialist obstetrician like Dr Kent who agrees to takes on the care of pregnant women as private patients effectively assumes responsibility for the whole duration of the pregnancy and the six weeks following the birth. Most obstetricians in private practice in Australia today would expect to be responsible for at least 200 births per year plus a regular complement of gynaecological consulting and surgery. As well most obstetricians in private practice would have an appointment with a public hospital that requires them to do two or more half-day sessions per week of care for public patients plus one or more nights on call each week for the public birth suite.[8,9] In teaching hospitals, which means most metropolitan hospitals and larger country hospitals, there is also a commitment to teach the registrars in training and other more junior doctors as well as medical students. As far as the responsibility to private patients is concerned, the obstetrician undertakes to be available 24 hours a day for any problems that arise during the pregnancy and for the labour and birth. Time off must be covered by another specialist who will in turn require the practitioner to cover for him or her during their time off. At any moment the obstetrician on call must be ready to dash off to the birth suite or the operating theatre, alert and sober, to deal with sudden emergencies. Also of note is the fact that obstetricians setting up in private practice will be well into their thirties, and often older, when they first begin.[8,9,10,11]

Despite all this, job satisfaction levels are generally high amongst specialist obstetricians. Their main concerns are the ability to have time off with their families and to minimise the worry about litigation[1] Amongst those interviewed the following comments were elicited:

- "My wife is still challenged by the new (rural) environment. Partner's contentment is probably the key factor in retaining rural obstetricians" – from

an older male obstetrician who had left city practice to spend the last years of his working life as the single obstetrician in a remote outback hospital.

- "It is really hard to get a holiday. I will probably retire early to save my health" – a woman obstetrician in her mid-forties in partnership with her husband, also a doctor.
- "The worst thing is the hours and the fact that you can't say no" - a recently divorced male obstetrician in his early forties.
- "I'm really worried about the cost of indemnity, and wondering if I'll do private obstetrics at all" – a 34 year old mother of two, in the final year of her training, a woman who has so far managed admirably to combine career, relationship and family commitments.

Amongst the 20 interviewed, in addition to the two already described, were three others who had begun private obstetric practice but discontinued after a number of years. All of these were women, and all had continued some public obstetric practice as well as public and private gynaecological practice. All had children and all continued to work full-time. All stated that although the cost of medical indemnity was an issue it was not a defining one – they were concerned mostly about family responsibilities, and had found that they could satisfactorily manage both financially and professionally without practising private obstetrics. Of the remaining fifteen interviewees, only three saw themselves continuing private obstetrics beyond ten years; all of these were in their late 30s.[1]

The Effects of Litigation on Practice

In recent years, here has been frequent discussion in the Australian media about obstetric litigation and its effects on practice, as well as some scepticism as to the reality of the phenomenon. Writing in 2002 one legal commentator said that: "Claims that the practice of obstetrics is in crisis appear regularly in the media, but evidence for the claims is scarce. While anecdotal evidence abounds, there is no hard evidence to confirm that litigation is the threat to obstetric practice that many practitioners strongly believe it is. It is likely that such practitioners respond by practising defensive medicine but this is very difficult to measure."[12]

In fact, "hard evidence" is not difficult to find. A review of medico-legal files conducted in 1997 at Melbourne's Royal Women's Hospital showed that during the previous 25 years there had been a marked increase in the number of claims for compensation brought by patients who believed that the obstetric care they had received was inadequate.[13] In the first five years of the study period four claims for compensation were received compared to 29 claims in the last five years. Complaints about service provision resulted in a claim for compensation in 29.7% of cases in which the dissatisfied client was represented by a legal firm and in 6.25% of cases where the initial approach was made through the Health Services Commission. One half of all claims for compensation were received in response to perceived complications of birth, caesarean surgery or treatment of a baby born pre-term.[13] In New South Wales during the 1990s both the number of cases, and the amounts awarded to successful plaintiffs, rose demonstrably, leading to escalating indemnity payments.[14] In 1996 Sydney obstetrician William Molloy wrote to the *Medical Journal of Australia*: "As an obstetrician of almost 30 years standing I would like to point out that there is an absolute crisis among obstetricians, especially in NSW, where they have just been notified of a $7,000 increase in their indemnity premium. Approximately 3% of the medical profession are obstetricians and yet 30% of claims are against them. Obstetricians can be sued up to 27 years after the event, whereas all other doctors can be sued only up to seven years after an event."[15]

One of the most publicised cases in NSW was that concerning Calandre Simpson, who was born in 1979 but whose case was finally settled in the NSW Court of Appeal in 2003 when she was 24.[16] Her mother sued her obstetrician alleging that severe brain damage in her daughter was caused by the obstetrician's failure to perform a timely caesarean section, trying instead to deliver the baby using forceps before proceeding to an emergency caesarean. The obstetrician admitted negligence but launched his own claim against the hospital in which the birth had taken place, saying that excessive doses of Syntocinon had been given to the patient. Ultimately the doctor and the hospital shared the cost of the $11 million awarded to Ms Simpson. The Simpson case, and others like it, were directly responsible for elevating the premiums charged by medical indemnity companies. They also had the effect of demonstrating to practising obstetricians in the 1980s and 90s that proceeding rapidly

to a caesarean section in any case of obstetric difficulty, regardless of the outcome of the case, was likely to be more favourably considered in a court of law than more conservative treatment however much that might be considered medically appropriate.[14,16]

The situation in NSW by the mid 1990s was likened to that in parts of the United States.[17] There were counter-arguments that the rise in premiums was at least partly linked to changes in the insurance industry but there was no doubt that in the minds of Australian obstetricians the threat of litigation for a perceived adverse outcome was real.[15] In fact, when asked about their personal experience of litigation in the study referred to above, 68% of the practising obstetricians said they had experienced the threat of litigation by a patient, and 32% had received court documents formally initiating a court claim; some of these claims were still ongoing. In this latter group 46% had experienced depression, 37% said the threat of litigation hanging over them interfered with their work, and 3% had considered suicide. Moreover, 77% of all respondents believed that the current high rates of litigation claims encouraged high rates of caesarean section. [3]

The cost of indemnity insurance was an increasing concern to obstetricians practising right across Australia throughout the 1990s, and an important reason why the numbers of junior doctors wanting to train in the specialty declined in that time. [17,18] After much agitation by specialists and their organisations, especially the National Association of Specialist Obstetricians and Gynaecologists (NASOG), reforms were put in place that have had some beneficial effect and kept premiums stable. By 2005 the Queensland Maternity Services Review was able to summarise the situation thus:

"Professional indemnity has been an issue of increasing importance over the last decade and it reached crisis point in 2000/2001. Specialist and GP obstetricians experienced significant increases in premiums and many ceased obstetric practice. More recently, tort law reform has led to fewer claims and the Commonwealth Government has put in place several effective rescue programs. Queensland Health has provided indemnity support for doctors providing maternity services in rural practice which has been welcomed by practitioners, however it is a potentially volatile area and will need to be carefully monitored for ongoing effects on care."[19]

Other states also put into place schemes to subsidise the indemnity costs of obstetricians working partly in the public health system; however the numbers of applications from those wanting to enter training in the specialty continue to be lower than previously.[20,21]

Effects on caesarean rates

Do concerns with lifestyle and litigation influence decisions about the medical management of patients? In particular are there factors that tend to incline obstetricians to be more likely to recommend caesarean sections to patients? The answer must to a certain extent be yes. Certainly those surveys that have included a direct question to obstetricians have shown that many doctors believe this to be the case. [18,22] While many of these surveys have been conducted in the United States it is likely that these views are also common to Australian obstetricians. One large American survey looking directly at this question concluded that fear of a lawsuit is *the most common reason for doing a caesarean* although this is never documented as such.[22] While this effect has probably always been less in Australia, and more so since tort law reform in many states, there is no doubt that the possibility of litigation is at the back of every obstetrician's mind whenever he or she is confronted with a case where caesarean section is a possible option.[2] Medical practitioners know they are less likely to be sued if they can show they *did something* to try to rectify a problem, and clearly a caesarean section is *doing something*. [23] Furthermore, the obstetrician in private practice gets to know his or her patients over a period of months, developing personal relationships. He or she may feel personally as well as professionally involved in the outcome of the pregnancy, and therefore perhaps more likely to suggest a caesarean if a problem arises in pregnancy or labour.

"It has never been so safe to have a baby, yet so dangerous to be an obstetrician," one member of this specialty wrote recently.[24] What are the reasons that have led to the increase in litigation? The view of obstetricians is clear: While Australia is becoming more litigious as a society generally, the more important answer is the increasingly high expectations on the part of parents – the so-called 'perfect child' syndrome. [24,25] As childbirth has become safer, and mothers and babies much less likely to die or be

damaged in the process, as families have become smaller, and as women have gained more control over their reproductive health, expectations of a perfect outcome to every pregnancy have increased.[25] When these expectations are not met parents may turn to lawyers to seek compensation. As sociologist Ruth Hubbard has written: "In the technologically developed, affluent countries, maternal and child health have improved sufficiently for us to be able to assume that the children we bear will become adults. Full of this new confidence, the more privileged of us seem to have glided over into the illusion that we can control not only whether and when to have children, but the kind and quality of children we will 'choose' to have."[26] If the outcome is not perfect, the obstetrician, known to be indemnified, is the obvious target. If a child is stillborn or dies soon after birth there is no basis for claims of negligence or inadequate management of the case, but where a baby survives but with cerebral palsy or intellectual impairment large payouts are sought to cover a life-time of care. In Hubbard's words, referring to the United States but equally true of Australia: "Americans often meet the challenge of disability with litigation as a way to increase their financial resources."[26] New York journalist Carolyn Lochhead has described the situation in that city: "New York obstetricians get sued—a lot. Eight of ten have been hit with malpractice lawsuits at least once, and at current rates each can look forward to defending about eight suits over a career. 'Everybody I know has been sued or is in the process of going through suits,' says (New York City obstetrician) Stephen Gettinger."

Lochhead continues: "Why obstetricians in particular? One reason is the intensity of litigation over infant brain damage. Varying degrees of neurological handicap, most notably cerebral palsy, occur in up to 5 percent of newborns. Lawsuits over such conditions are especially widespread in New York City, accounting for 40 percent of claims against obstetricians in 1987, compared with 31 percent nationwide. One major insurer has reported that payouts on claims for brain-damaged babies accounted for more than half its payouts on ob/gyn coverage in New York. The lawsuits typically blame cerebral palsy or similar conditions on such delivery-related events as fetal asphyxia (oxygen deprivation during labor). 'The allegation always is that the doctor should have done a cesarean section, or should have done one sooner,' says Gettinger."[2]

Another obstetrician comments that "A perfect baby is the expectation of all parents, and a perfect outcome is the mission of obstetrics. The role of a perceived public expectation of perfection in obstetric medicine reflects a belief that bad outcomes in obstetrics should not be tolerated and that every maternal-fetal injury merits financial compensation and punishment." [27]

It used to be thought that cerebral palsy was commonly caused by the baby becoming acutely deprived of oxygen during birth, as Lochhead explains in her article. Although more research is needed to understand the exact causes acting in the womb, it is now realised that most cases of cerebral palsy have their origins long before labour begins.[28] Then when the contractions of labour start the added stress brings about changes in the baby's heart rate, shown with monitoring (the CTG trace).[28,29] An obstetrician is summoned, an emergency caesarean is advised, the doctor operates but the baby after birth shows signs of cerebral palsy, and possibly other damage. As Lochhead has described, the response of lawyers and parents is that if the doctor had operated earlier the baby would have been perfectly healthy, so it is the doctor's fault and he or she must pay. Until recently, in Australia as in the United States, it has been very easy for lawyers for the plaintiff to find 'expert' witnesses to say exactly this in court.[2,18,24] These witnesses are often retired specialists who have not practised obstetrics for many years. [30] Undoubtedly some cases of birth damage *are* due to doctors' negligence. But huge payouts in Australia, especially in New South Wales, have sent indemnity costs spiralling upwards. [19] Furthermore, the awards as a lump sum have often not benefited the child very much but have succeeded in dissuading a significant number of obstetricians from practice and many potential trainees from ever taking up obstetrics.[21]

Professor Alastair MacLennan of Adelaide has been closely involved in well-conducted studies looking at the possible causes of cerebral palsy. He and his team have confirmed that the vast majority of women with affected infants had very clear causes for the cerebral palsy identifiable *during their pregnancies*, well before labour began.[28,29] These causes included infections, especially viral ones, slow growth of the fetus, premature labour, antepartum haemorrhage, twins or higher multiple births, and some blood clotting disorders. He found that acute lack of oxygen during labour was a rare cause of cerebral palsy, and these findings are supported by other similar studies.

It was also clear from his and others' studies that there is no evidence to support the idea that monitoring a woman in labour with continuous CTG can detect reversible fetal distress that could be prevented from causing cerebral palsy by the performance of an 'immediate caesarean.'. The current litigation situation, he wrote: "uses obstetricians, midwives and the maternity services as an inefficient and expensive *de facto* extra social welfare system for a few of these unfortunate children and their families. The cerebral palsy litigation industry is gradually destroying the Australian maternity services." He added that 60% of *all* doctors' indemnity premiums (not just those of obstetricians) in Australia are used in cases involving obstetricians and children with cerebral palsy, and that up to 70% of the costs of cerebral palsy are spent on the legal process.[28,29]

Some of these problems have been addressed in recent years to some extent. RANZCOG now keeps a panel of expert witnesses who genuinely and currently practise obstetrics, and the College provides training for these doctors in how to present evidence in court.[30] It is strongly recommended that retired doctors not act as expert witnesses unless they are giving evidence relevant to the time when they were actually in practice. Tort law reform and indemnity payments by state health departments have also helped. More obstetricians are now working as staff specialists in hospitals, where decisions about intervention in pregnancy and labour may be made with the help and input of colleagues. Despite these recent improvements it is true that to some extent the thought 'how would this appear in court?' is never too far from an obstetrician's mind in day-to-day practice. This was confirmed in the report from the 1999 Australian Senate Report on childbirth practice, *Rocking the Cradle*, which stated that "nobody has been sued for doing a caesarean. Many people have been sued for failing to. There is no doubt that fear of litigation exerts a powerful influence on obstetrical practice." [23]

Concern about a less-than-perfect outcome in the mother also appears to play a role in obstetricians' personal decisions about caesarean birth. Several studies of young obstetricians have shown that a high proportion of them would choose caesarean section for themselves or their partners in a normal fullterm pregnancy, in order to avoid the possibility of damage to the pelvic floor with resultant urinary or faecal incontinence or sexual dysfunction.[31] As I will discuss in Chapter 8, these outcomes

following vaginal birth are not completely prevented by caesarean section but they are certainly minimised, and many women who request caesarean will cite concern about pelvic floor damage as one of their reasons for this request.[32]

One thing that does not raise caesarean section rates in Australia is a financial incentive to perform the surgery. This is an accusation that has been levelled against American obstetricians. In *The American Way of Birth*, caustic social commentator Jessica Mitford quotes Jane Brody in the *New York Ti*mes as saying: " a common accusation is that greed is responsible for the rising rate of caesareans. Doctors usually earn more and hospitals may double their revenue with a caesarean birth. This is difficult to prove of course, but critics note that the caesarean rate is highest in private hospitals and lowest in municipal hospitals. They also note that resident physicians, who are salaried, are much less likely to operate than private obstetricians, who receive a fee for services."[33]

In Australian public hospitals doctors are salaried and there are no bonuses for performing, or not performing, caesarean deliveries. In private practice the Medicare schedule fee for an obstetrician supervising pregnancy and birth is now the same regardless of method of delivery. Until the late 1980s, fees for supervising a vaginal birth were less than those for a forceps delivery or a caesarean section, and it was alleged that this difference was an incitement to obstetricians to perform unnecessary caesareans. At that time a change was made to the schedule fee which was also reflected in the 'gap' amount paid by private health funds, so a 'global' fee was common to all privately-supervised births. Many obstetricians charge more than the schedule fee, but a 'global' fee regardless of the route by which the baby arrives is common practice. It is also a requirement of all Australian medical specialists that full details of fees are provided to patients prior to treatment being initiated.[34]

'Obstetricians' convenience' has also been cited as a reason for performing caesareans. Jessica Mitford criticises American obstetricians, who perform caesareans "before 5 pm, so that Doctor's dinner hour is free."[33] Do Australian obstetricians perform caesareans at times that are convenient for them? Yes, they do. Where a caesarean is *elective*, that is, planned to take place at some time in then future, it is likely to be done in daylight hours, on the doctor's regular operating list, with the

anaesthetic and nursing staff who normally work with the doctor, and with the woman's partner or other support person well prepared for the experience. This is convenient not just for the obstetrician – it is convenient for everyone concerned, and also likely to minimise the chances of errors or complications occurring. It is also the reason for the oft-observed fact that more elective caesareans are done in the week before Christmas or other public holidays - they are operations that have been planned for some time, and are therefore being done in normal working hours so that the minimum amount of extra work is done during the holiday. *Emergency* caesareans, however, need to be done at the time the emergency arises, or soon after, and can be very *inconvenient* for the obstetrician – especially if the timing clashes with a scheduled consultation or elective operating session, or it's after midnight, or Christmas Day. Dealing with 'inconvenience', working around it and getting back to 'convenient' work that has had to be re-scheduled, is a normal part of an obstetrician's life. A further point is that most obstetricians, in public and in private practice, are concerned about the caesarean rates of the hospitals in which they work, and anxious that these should be lowered. Most hospitals in Australia now have in place some form of caesarean audit, in an attempt to ensure that the caesareans performed have clear medical indications. As Sydney obstetrician William Walters told *SMH* journalist Ruth Pollard in early 2008, "it is vital the number of elective caesareans is reduced."[35]

Do obstetricians perform caesarean sections because it's 'convenient' to do a quick caesarean rather than wait around for a vaginal birth, as Brisbane GP Sarah Buckley has alleged? [36] Not in public practice, where both medical and nursing staff are rostered 24 hours a day, protocols are in place for all staff, and care of labouring women is handed on to the next shift. In private practice, 'convenience' for the obstetrician may be one factor amongst others in the decision-making in some cases – but that obstetrician must discuss in detail with the private patient the indications for the operation, the risks, obtain informed consent, and take total responsibility for the surgery. He or she must also defend their practice of caesarean in regular hospital meetings with peers as a part of the continuing education training required for physicians to be regularly accredited by specialist Colleges and Medical Boards. Convenience is likely to be more a matter of the timing of the procedure rather than the reason for it.

Conclusion

There is ample quantitative and qualitative evidence to show that 'lifestyle' factors and the fear of litigation are both important for Australian obstetricians in decisions about whether to go into obstetric practice, and how long to stay there. This is especially the case for private practice because even in group practice with other specialists the obstetrician has total responsibility for the women under his or her care. In public maternity units there is some overall shared responsibility as several staff are usually involved in the care of a single patient, and there are also usually hospital clinical protocols in place that are based on group decisions by staff. The experience of litigation – being blamed for an unexpected outcome and having to wear the stigma of an accusation of negligence - can lead an obstetrician to cease obstetric practice, and the *perceived* threat of litigation, however unlikely this may be in reality, can lead to a decision for intervention in pregnancy or labour, including caesarean section, if and when a problem arises.

Pregnancy and childbirth involve many of the most basic human experiences and emotions: pain, the possibility of death or disability, a lack of control over one's own body, and fear of the unknown; for many women pregnancy is a time of great emotional vulnerability. There may be the assumption on the part of the woman, and her family, that engaging a private physician guarantees a 'perfect child.' If the outcome is not as expected, disappointment and bitterness will result, leading inexorably to legal action. In part at least, this situation is an inevitable development of the increasing use of technology in pregnancy and childbirth, the promotion of technology by the medical profession, and the belief of both consumers and the media that childbirth can be totally controlled. Awareness of the woman's expectations, and of his or her own responsibilities, can and does influence every obstetrician, both consciously and subconsciously, in making clinical decisions, including the decision to recommend birth by caesarean section.

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7. Indications for caesarean section at the beginning of the twenty-first century: major, relative, and caesarean on maternal request

In developed countries like Australia, about 50% of all caesarean sections are performed on primigravidae, women having their first pregnancy. About 30% are repeat operations on women who have had one or more previous caesarean births, and 20% are for women who have had no prior caesareans but have had one or more vaginal births (multiparae). About 45% of operations are elective (planned procedures for medical reasons) and about 50% are emergencies in pregnancy or in labour.[1,2] For about half of all caesareans, it can be said that there are medical indications for caesarean section that there is absolutely no argument about, from physicians, midwives or consumers – the operation is essential for the life of the mother or the baby, or both.[2] These caesareans have hardly attracted any public interest; the reasons for which they are performed are obvious. For another 40-45% of caesareans, indications are relative, and may depend to some extent on interpretation of information by the physician caring for the woman concerned. Examples of these include 'failure to progress' in labour and fetal distress.[3] Operations in this category may also depend on the choice of the woman herself and her interpretation of the evidence provided to her. Operations for these indications have attracted great interest, as the rate of repeat caesarean sections could be reduced by decreasing the number of such primary caesareans. Finally, there is the recent phenomenon of caesarean section on maternal request (MRCS), with no apparent medical indication in the mother, which accounts for about 3% of caesareans in Australia at the present time.[4] Discussions about the high rates of caesareans often focus on these procedures, despite the fact that they are a relatively small proportion of the total. Advocates of a woman's right to choose her preferred method of delivery consider them an example of enlightened medical care. Individuals advocating 'natural' birth abhor the practice. For some of the latter, MRCS is a medical procedure conducted for non-medical reasons, akin to cosmetic surgery, and inherently unjustified. In recent media and amongst obstetricians, caesarean section on maternal request has occupied a central position in discussions about overall caesarean rates.

In this chapter I will look at all the indications used to justify caesarean birth in Australia today. Established medical conditions will be discussed only briefly, as they are dealt with very adequately in textbooks of obstetrics. Relative indications have been the target of much criticism by advocates of lowered caesarean rates, and these indications I will examine in more detail, in this chapter and in Chapter 9 which deals with vaginal birth following a prior caesarean section. Caesarean on maternal request has been widely debated in the lay media and I will look at recent research into what is known of the extent of this practice in Australia, and the reasons for its apparent increasing incidence in this country.[4]

Major medical reasons for caesarean birth

Antepartum haemorrhage

Antepartum haemorrhage -- heavy vaginal bleeding during pregnancy or labour -- is an indication for caesarean section in about 3% of pregnancies.[3] The causes of such bleeding are divided into two main groups – bleeding due to placenta praevia and bleeding due to placental abruption.

Placenta praevia is still a major cause of death in childbirth for women in developing countries, as it was for women everywhere up until the 19th century. In placenta praevia, the placenta, instead of developing high up on the walls of the uterus, does so low down below the growing baby, thus preventing that baby from ultimately going through normal labour and birth. If labour does occur in a woman with placenta praevia, haemorrhage will result leading to the death of both mother and baby unless a caesarean delivery is rapidly arranged. Placenta praevia can be diagnosed with ultrasound scanning early in pregnancy and caesarean delivery scheduled before the expected date of confinement.[3]

Placenta praevia is more common in women who have previously had a caesarean section. A woman with an unscarred uterus has about a 1% chance of placenta praevia in pregnancy. A single caesarean scar increases this risk to 1.7%, two scars take it to 2.4% and three or more to 2.8%.[3] When placenta praevia does occur in a woman who has had a prior caesarean, the developing placenta rarely burrows deeper than usual into the muscle of the uterus – a condition called placenta accreta. Such a placenta

does not separate easily from the uterus after birth. This can be a cause of life-threatening bleeding -- urgent hysterectomy may need to be performed.[5,6]

In the other form of antepartum haemorrhage, placental abruption, bleeding occurs because some or all of a placenta that is normally situated in the uterus becomes detached. In many such cases vaginal birth is possible but where bleeding is significant and the baby is alive caesarean section is usually the safest option.[3]

Pre-eclampsia and eclampsia

The word 'eclampsia' means 'lightning' and accurately describes the fits or seizures that characterise this condition – they appear suddenly and often without warning during pregnancy, labour or immediately after birth, threatening the lives of both mother and child. Eclampsia is now rare as a result of good antenatal care but pre-eclampsia, the condition that if untreated can deteriorate into eclampsia, is common, occurring to some extent in about 10% of pregnancies. It is more common in first pregnancies.

The most important characteristics of pre-eclampsia is a raised blood pressure. Moderate to severe pre-eclampsia can bring about liver damage, kidney failure or a stroke, and can interfere with the growth of the baby; it can cause the death of the baby and or mother. The only definitive treatment is delivery of the child and when the condition is severe this is often best done by caesarean section. Pre-eclampsia is more common in women who have hypertension prior to pregnancy. Hypertension is more common in older women, hence as women are increasingly postponing pregnancy until their late 30s, or even later, pre-eclampsia among such women is common and has been a factor elevating the rate of caesarean sections among Australian women.[3]

Diabetes

The incidence of diabetes is rising amongst Australian women, especially women over 35, and as a result diabetes in pregnancy is more common. This may be diabetes that was present before the pregnancy began – insulin-dependent or managed by diet and/or drugs, or it may be diabetes brought on by the pregnancy itself – a condition known as gestational diabetes mellitus (GDM). GDM occurs in women who have a

diabetic tendency that they are able to cope with when not pregnant, so that blood sugar levels remain in the normal range. Pregnancy however puts an increasing demand on the pancreas which is unable to produce enough natural insulin, and the high blood sugar levels of diabetes are the result.

Diabetes in pregnancy needs to be carefully managed to ensure that the woman's sugar levels do not become too high or too low – either can threaten the baby's life and the mother's health. Getting it right becomes more difficult as the pregnancy progresses, and poorly-controlled diabetes can lead to stillbirth in the later weeks of pregnancy. To avoid this outcome caesarean delivery earlier in the pregnancy may be recommended. In addition, abnormally high sugar levels in the diabetic mother may result in a baby that is much larger than average. Women with large babies may experience problems during vaginal birth, in particular shoulder dystocia (difficulty in delivering the baby's shoulders) - a serious emergency that can lead to death or permanent damage to the baby. If this difficulty is anticipated an elective caesarean section is often recommended.[7,8]

Maternal obesity

Around 50% of Australian women are either overweight or obese. While women tend to put on weight as they age, a large proportion of these overweight women are in the reproductive age group, and this is increasingly the case as women postpone childbirth until the later reproductive years. Obese and overweight women are more likely to develop hypertension, pre-eclampsia and diabetes during pregnancy. They will also tend to have larger than average babies and face the same problems in achieving normal vaginal birth as diabetic women. Thus caesarean birth is commonly recommended in this group of women.[9]

Cord prolapse

This is an acute emergency – the umbilical cord lies in the uterus below the baby and if it slips out into the vagina during labour or when the membranes rupture it will be compressed against the mother's pelvis rapidly bringing about the baby's death. Urgent caesarean section is needed to save the baby's life.[3]

Malpresentation

This term refers to the way a baby is lying in the uterus. In addition to breech presentation, there are other ways in which a baby may present that make safe vaginal delivery difficult or impossible. These include transverse lie, where the baby lies sideways across the mother's uterus, and oblique, when the baby lies at an angle. All forms of malpresentation are indications for caesarean section.[3]

Multiple pregnancy

Twins and triplets have become much more common in Australia in the past 30 years. Non-identical twins are more common in older women, and twins and triplets are more frequent with IVF pregnancies. In multiple pregnancy it is very common for one or more of the babies to be found in a malpresentation, hence caesarean delivery is common in such pregnancies.[3]

Pre-term births

Babies may be born pre-term – prematurely – meaning before 37 weeks of pregnancy, either because labour starts spontaneously, or because the mother or baby develops a medical complication that means early delivery is necessary to ensure a good outcome. A large number of babies born pre-term are delivered by caesarean section. This is often because one of the conditions mentioned above is present – for example severe pre-eclampsia or a twin pregnancy. Small pre-term babies also often present as breeches and caesarean is then warranted. Fetal distress and/or signs of infection may be present in a woman who presents with premature rupture of the membranes, a not uncommon event, and this may be a reason for early and urgent delivery by caesarean section.[3]

Small-for-dates babies

Babies who are found during the later weeks of pregnancy to be growing at a rate below average (as a result of hypertension or other maternal conditions) are frequently born by caesarean section to avoid the extra stress of the contractions of labour with potential decreased oxygen levels.[3]

There are also other less common conditions that are regarded as definite indications for caesarean delivery. These include infections such as herpes and HIV, various

types of heart and liver disease in the mother, and previous pelvic surgery. Where a serious abnormality has been detected in the fetus that is nevertheless compatible with normal life if paediatric surgery is performed immediately after birth, delivery is usually by caesarean. There are also numerous much rarer conditions that warrant caesarean birth.[3]

Relative indications for caesarean section

There are a number of other conditions frequently listed in patient charts and hospital reports as reasons for proceeding to a caesarean section, but in which the criteria are not as well defined as those listed in the previous chapter. 'Fetal distress' and 'failure to progress in labour' are the two most common of these.

Fetal distress

'Fetal distress' is an emotive term frequently used as the reason for performing a caesarean section, with greater or lesser degrees of urgency, in the course of labour, and certainly the image of a baby deprived of life-giving oxygen, rescued in the nick of time by the surgeon's knife, is a compelling one. Indeed many babies born by emergency caesarean section for fetal distress *are* in grave danger of death or disability, and the operation not only saves their lives but also their quality of life. However, it is well recognised among physicians currently practising obstetrics that methods for detecting distressed babies are far from perfect.[3,11] As a result, babies are also delivered in this way who would not have been compromised if labour had been allowed to proceed to a vaginal birth. But, as with breech babies, it is often not known which ones are truly at risk.

Fetal monitoring in labour, using CTG, is commonly practised in birth suites during labour to try to detect babies in distress due to a diminished supply of oxygen.[12] The CTG machine runs continuously and the emerging paper trace, the record of the baby's heartbeat, is watched by the midwives and doctors overseeing the labour and birth. Continuous CTG monitoring involves placing probes on the mother's pregnant abdomen and securing these with elastic straps – not a particularly comfortable experience for a woman in labour but one which is tolerated by most women because it is considered to be in the interests of the baby. In addition to the record of the

baby's heartbeat, a record is made of the contractions of the mother's uterus and of the movements of the baby. A heart rate within the normal range, a degree of variability in the rate, a response to contractions – a temporary increase in the rate – and an absence of any prolonged slowing of the rate – are all considered indications of the baby's continued well-being.[3]

Abnormalities in the heart rate -- slowing, loss of variation and certain other patterns – may predict a baby in distress. But this is not consistently the case. Although many caesarean sections done for fetal distress diagnosed by apparently ominous changes on fetal monitoring have resulted in the arrival of a baby clearly suffering oxygen deprivation, many others have been done in which the baby once delivered cries immediately, with no subsequent evidence of any difficulty.[13,14] Various other procedures have been developed to try to detect which babies really are at risk – these include taking a small blood sample from the baby's scalp, which can be a difficult task if the mother is in early labor, and never a comfortable encounter for her. The sample is tested for the acidity of the blood – increased acidity indicates a baby at risk. Another technique is to use an oximeter, a tiny probe slipped in next to the baby's head and remaining there during labour, measuring oxygen levels. The latter device is still at an experimental stage. Whilst there is much technical detail involved, and work continues, so far no really reliable method, easy to use in practice, has yet been developed to detect accurately which babies are genuinely experiencing oxygen deprivation in labour, and which are not.[15] It is also the case that, although all Australian hospitals with maternity units can provide EFM, not all have the technology to measure acid levels in babies.

Another of the problems with this testing is that it simply gives an indication of the baby's health *at the time the sample is taken*. It will not accurately predict the baby's condition in an hour or two hours – if there are concerning changes on the CTG and these continue, and the woman is still far from being ready to deliver her baby, the obstetrician will need to take another blood sample. This of course is extremely alarming for the mother, her partner and whatever other support people surround her.

In exactly the same way that parents of breech babies choose not to take the risks of vaginal birth, parents of babies showing suggestions of fetal distress, either on

monitoring or with some of the newer techniques, will often request caesarean section when the options are put to them. [16,17] Making such a decision, of course, can be a very stressful business for prospective parents, and in the unfamiliar setting of the birth suite, the heightened activity will certainly also heighten anxiety for the parents. However, in general, nobody wants to risk their own baby's life or health, no matter what opinions they may hold about caesarean rates in the community as a whole. It is understandable that it will seem very reasonable to the woman and her partner that if there is a potential problem then solving it by delivering the baby directly, by caesarean, is the right thing to do. There may be disappointment, a feeling that this is not what was planned, but when it comes to one's own child the best and most rapid method of birth is demanded.

In the case of women who are private patients, it may be that the obstetrician who has got to know the woman, and often her partner, over many months of pregnancy, has more difficulty making an objective and dispassionate recommendation than has a doctor working in a public system, who meets the woman only in the course of labor and is usually following a hospital protocol. When the obstetrician is on familiar terms with the woman and concerned about some aspect of her progress, it is very easy to recommend the 'safe' option of caesarean section to 'just take it out'. [18] If there is a problem with the baby it then becomes a paediatric problem, and the obstetrician can be seen to have taken some decisive action, rather than procrastinating and peering anxiously at the fetal heart trace for hours. As noted in Chapter 6, there is a strong belief among obstetricians that should a case come to court then having been seen to 'do something' – in particular a caesarean delivery – will be viewed favourably by a judge or jury.[19] Most obstetricians would feel that while they sometimes regretted *not* doing a caesarean in a particular case, they rarely regret doing one, even though they have concern for overall caesarean rate figures.[20]

'Failure to progress' in labour, with a relative degree of obstruction to the baby's passage to the outside world rather than the absolute impasse of rickets, is another common reason given for caesarean delivery.[3] This is particularly the case in primigravidae, women experiencing labour for the first time. First labour is always an expedition into uncharted territory. In about 70% of women, the first labour proceeds normally to the safe delivery of a healthy baby. But in the other 30%, difficulties, delays, distress and excessive bleeding, in various measures, mean that intervention is considered necessary. Labour lasting 24 hours or more is exhausting for the mother, and increasingly dangerous for the baby as every hour passes. There are now drugs available, synthetic versions of the natural hormone of the human pituitary gland, oxytocin, which can safely assist labour. If the lack of progress arises during the second stage of labour, when the mother is actually pushing the baby out into the world, obstetric forceps or the vacuum extractor may be used. However there are limitations on the use of these various techniques and in many cases caesarean section is the safest option. Few obstetricians or hospital midwives today would be happy to allow established labour to proceed for more than 24 hours.[17]

These two conditions, failure to progress and fetal distress, make up a large number of indications for caesarean section in developed countries including Australia. However there are quite marked individual variations among obstetricians in both public and private practice as to *when* these interventions should take place. The result is therefore variations in the caesarean rates for both the doctors and the hospitals concerned.[19,20,21] These variations will depend on such factors as the doctor's assessment of other physical and emotional factors in the woman's medical history, the woman's own concerns and desire to be included in the decision-making process, and the availability of operating theatre and other hospital staff to perform an unexpected caesarean if the need arises.

The role of antenatal education

All hospitals and birth centres in Australia, whether public or private, organise antenatal education for women attending for pregnancy care, especially those

expecting their first child.[22,23] Women and their partners are expected to attend antenatal classes where they will listen to talks, usually from female midwives or professional childbirth educators, watch videos of vaginal birth, learn about methods of pain relief, and form opinions, based on what they are told by these experts, as to what they believe they want during their own labor and birth. There is undoubtedly a strong tendency with the provision of this information to favor 'intervention-free birth.[24]Women are encouraged to draw up 'birth plans' for themselves that usually include drug-free labour, no induction or augmentation of labour unless medically indicated, and no use of forceps or caesarean section unless medically indicated. In itself, this cannot be criticised. However often this antenatal preparation is not accompanied by the information that pregnancy and labour can 'naturally' have complications. Indeed in about 30% of women pregnant for the first time this is the case. [3] It is also 'natural' for mother and baby, at least sometimes, to die during birth, a concept little considered now that childbirth in Australia has become so much safer.[2] Caesarean section in particular, and the reasons for it, tend to be described only briefly.

The result, as already described in Chapter 4, is often a sense of deep disappointment on the part of the woman who gives birth by emergency caesarean section. This is especially the case for the woman who has meticulously prepared a birth plan stipulating minimal pain relief and minimal intervention, a woman who finds the pain of labour more overwhelming than she had ever imagined possible, or discovers that complications of childbirth have occurred over which she has no control. Most obstetricians would see the solution to this problem as being the provision of more detailed accurate information to pregnant women so that if a complication occurs they are better prepared to involve themselves in the decision-making process – and feel more in control of this.[13,16] However midwifery and professional childbirth educators would generally take the view that only limited education about complications is needed as most births are uncomplicated, and their aim is to prepare women for normal birth so that they feel in control of this.[24] Once again, the two strands of thought behind the provision of care in childbirth – the 'natural' and the 'potentially complicated' views of birth – collide.

Non-medically indicated caesarean section on request

In May 2006 an English journalist, Joanna Moorhead, shared her personal experience of natural childbirth with her readers in the UK newspaper *The Independent* under the heading *Drugs are for wimps*.[25] "I have never done anything as affirming or uplifting as delivering a baby without drugs, and I honestly doubt there's an experience to challenge it," she wrote. She continued by saying that: "For the majority of women in the majority of labours there's simply no better way to do it. Our society has ceased to believe drug-free childbirth is possible, and forgotten that it's how every woman used to do it." Moorhead has had two home births that did not involve the use of any analgesic, and her article also provides a litany of complications that can potentially result from drugs used for pain relief in childbirth.

Also in 2006, in the July issue of the Australian women's magazine *Notebook*, two Australian women shared their experience of drug-free natural birth, and again their reports were very positive.[26] Kirsty Cassidy said of the birth of her daughter Bibi: "After giving birth I felt amazingly energised; I felt this incredible euphoria, deep contentment and fulfilment, and was just so proud of myself." And Carol Quelch was equally delighted: "Having a natural birth is something I'm really proud of myself for doing; I feel as if I could do anything now!" she exclaimed, after birthing Sienna. In this article journalist Liz Thompson noted that each woman achieved what she hoped for in her birth experience, and each was overjoyed by the outcome. However Thompson also clearly recognised that each story is just that: an individual woman's experience, without the admonition of the Moorhead article that "every woman should do this!"

Thompson pointed out that not every woman *can* do this – physically and emotionally every woman is unique, every labour is unique, and many women have very valid medical reasons not to attempt vaginal birth, with or without the assistance of drugs. She also observed accurately that not every woman *wants* to do this. "Times have changed," she wrote. "Everyone has very different hopes and expectations prior to the birth of their first child." She goes on to balance her account of the first two births with a description of the caesarean delivery of another woman, Katherine Peacock, who was just as thrilled with her newborn son Luke as the previous two mothers.[26]

Katherine explained that she had an intense desire for a child, which her partner Josh shared, but that she was extremely concerned that her body would be damaged by the experience of vaginal birth. She also wanted to give birth in a "planned and controlled" environment. The couple discussed these concerns with Katherine's obstetrician and to their great relief he agreed to a caesarean for these reasons alone. "'(We all felt) comfortable with the fact that we could take out our diaries and determine a date," Katherine said, and added: "It's a comfort thing for me to have everything very scheduled and very planned because I live the rest of my life like that. It's safe, I'm not going to go into labour, not going to have any anxiety. I think this is actually more empowering for me – I've made a conscious choice to not go into labour. I can have the house cleaned, go to the beautician, do the groceries, and leave home knowing it is all under control."'[26]

The most difficult aspect of her decision was in fact the attitude of others – '"I had women saying, 'Oh I was fine with my birth, millions of women have babies every day.' I wanted to say, no, this is *me*, having *my* baby – it was quite upsetting that people chose to judge my choice.'" In the event, she was extremely happy with that choice and confident she had made the right decision. She had an epidural, Josh was present for the birth, baby Luke arrived in perfect health, Katherine went home after five days, and one week after the birth was at a parents' group followed by shopping. '"I got back to what I felt was a comfortable lifestyle. Recovery has been quick, controlled and driven by me."'[26]

Laura Neppe, a trainee psychiatrist from Scarborough in Queensland, is another woman who made a conscious and very informed decision to have a caesarean birth, and was completely satisfied with her choice. Neppe described her experience in an article written for the magazine *O&G*.[27] "In my mind the risks involved in a caesarean section, although not negligible, were far more acceptable than those involved in a vaginal birth. From the outset, I was not planning to have more than three children, and I felt that this was still an acceptable surgical risk." Her family lives in South Africa, and she added: "One cannot overlook the convenience factor of a planned caesarean delivery, where you can pick the date, and make arrangement for family travelling from overseas to be there for the birth."

"The actual caesarean," said Laura, "was fantastic, I really enjoyed the whole experience. I had a spinal anaesthetic and so was able to enjoy the birth fully conscious and pain-free, and it was the most beautiful and miraculous experience. In fact I enjoyed the experience so much that almost two years to the day I decided to repeat the whole procedure and had a second son. I have had two wonderful birth experiences and do not regret having chosen surgery as my primary mode of delivery."[27]

'Too posh to push'?

In 1999 Victoria Beckham, aka Posh Spice, gave birth to her son Brooklyn by an elective caesarean section that she herself had requested, giving rise to the catchphrase 'too posh to push'. There has since been a spate of articles in both the medical literature and in newspapers and popular magazines debating the morality and emotional stability of women requesting caesareans, the professional ethics and motivation of obstetricians performing them, the safety of the procedures, and the financial cost to the community. [28,29,30,31,32] Many of these articles have come from women journalists who frequently cite their own experience of childbirth. In a recent article in a Brisbane newspaper Jane Fynes-Clinton wrote forcefully "The women themselves are driving the rate up, and skyrocketing doctors' insurance premiums, fear of litigation and schedules have also played a part. Women need to stop seeing caesareans simply as a panacea for the unpleasantries of childbirth. Caesareans are not just another tool that show women are in control of everything, including a process which at its best is as natural as breathing."[33] However, some articles have come from obstetricians themselves. In the *BMJ*, in a piece entitled *Maternal choice alone should not determine method of delivery*, three British obstetricians have this to say: "Ultimately, competent women are free to decline medical advice and treatment for rational or irrational reasons, or for no reason, even if, as a consequence, they or their fetus suffer death or injury. The law is clear that the unborn child has no independent status and that a mentally competent expectant mother's wishes must take precedence. Unfortunately the law does not distinguish between the rights of a mentally competent but foolish pregnant woman and other adults. Therefore, if caesarean section is the preferred mode of delivery by the mother her choice, however foolish or irrational, must be respected."[34]

The suggestion that a woman who requests a caesarean section is foolish or irrational has however been strongly countered by many doctors, and many women. Sara Paterson-Brown, a consultant obstetrician at Queen Charlotte's Hospital in London, has written extensively on this topic.[16,35] She points out that the strongest argument against caesarean delivery on request relates to potentially serious complications *for the woman*. But as she says "data on mortality from caesarean section relate to procedures performed for medical or obstetric reasons, often emergencies and often under general anaesthesia. These are *not* comparable to elective procedures." Complication rates for requested operations on healthy women, under epidural, with antibiotic cover and with measures to prevent post-operative blood clots developing in the legs and lungs, she notes, have not yet been widely collected, but are probably very low.[35] The death rate from caesarean section currently estimated for the United States, for example, of six per 100,000 women, mostly relates to women having caesareans for major medical reasons, either urgent or long-term. Caesarean-on-request in healthy women is likely to be associated with a very much lower death rate (though not zero) and it must be noted that rarely, otherwise healthy women giving birth vaginally still die, in developed countries, from unexpected complications. Brisbane gynaecologist David Molloy, who, defending what he sees as the right of pregnant women to choose a surgical birth, archly refers to caesarean section as "vaginal bypass," says: "Modern emancipated women are increasingly exercising their right to choose by deciding that a planned caesarean section is their preferred mode of delivery. This is not a decision lightly made. Most patients carefully research the subject using a wide range of references."[36] In other words, women requesting caesarean birth for no definite medical reason are usually well informed about the risks of surgery long before they make their request, and have made a conscious decision that those risks are acceptable to them.

Another obstetrician, and editor of an international journal of obstetrics, John Queenan, asks: "Given a clear delineation of risks (we will never know the absolutes) who is in the best position to decide on caesarean delivery? The mother undergoing the surgery? The advocate for the baby to be delivered? The father? The physicians performing the delivery? The paediatrician? The hospital administrator? The third party payer?"[30] He points out that "the mother, father and baby must live with the

consequences of these decisions, so the information on which the decision is based must be accurate." And Molloy adds: "When childbirth education classes were introduced it was assumed that informed women would reject technology and medical interference and opt for the most natural childbirth choices available. It is a great irony that this has turned out not to be the case. Informed women are increasingly choosing pain relief and surgical delivery, which fits the pattern of their otherwise busy, productive and technology-based lifestyles."[36]

While the subject of caesarean section on request has engendered widespread and polarised debate, it is unclear how many elective caesareans really are simply for maternal request, with no medical indications whatsoever. Figures in the medical literature over the past decade range from 2.6% of all mothers undergoing caesareans in one Belgian survey to 27% in Western Australia.[4,16,17,18] A recent large European survey asked obstetricians whether they were prepared to perform a caesarean section at term for a healthy 25 year old woman in the absence of strict medical indications.[37] Surprisingly, agreement with the woman's request was lowest in Spain (15%) which nevertheless has a relatively high caesarean rate, and highest in Germany (75%), and the United Kingdom (79%) where caesarean rates are relatively lower. A study looking back at medical records in Oxford compared the main reasons given for elective caesareans for the years of 1976, 1986 and 1996. In the first two of these years the main indication was a previous caesarean.[32] But in 1996 it was maternal request and this accounted for 23% of all the operations done as elective procedures in that year. Interestingly, studies amongst obstetricians, asking about their personal preferences for themselves or their partners in hypothetical pregnancies with no complications, have shown that large numbers would opt for a planned caesarean birth.[38] There is nevertheless ongoing argument, among doctors and midwives, and in the media, as to whether women really are requesting caesareans in increasing numbers. After a recent major US meeting and report on caesarean delivery on maternal request, one of those present launched an angry assault on the organisers. "The conceptual core of the conference was based on the false premise that mothers are requesting caesareans," he charged, asserting that in many cases there are relevant major or minor medical factors present in addition to the wishes of the woman concerned for a surgical birth, and that in many centres really accurate information about the indications for caesarean are not recorded.[39] In other words, this is a

polarised debate in which actual statistics have not always been available. A very well designed recent and prospective Australian study indicates that the probable rate of caesarean-on-request in current Australian private obstetric practice is around 3% of all births.[40]

Much that is written on the subject of caesarean-on-request makes the assumption that women requesting caesareans do so from an excessive and unreasonable fear of childbirth – in the words of Joanna Moorhead, these women are simply "wimps." One woman who felt very fearful about the pain of childbirth was Sydney mother Claire Shannon, who spoke to the journalist Kate Hamilton of *Good Weekend* magazine.[41] She said: "I was absolutely terrified of doing it the natural way. I was scared of the pain. I was scared of being deformed down there afterwards because of ripping and tearing. I thought, if you're going to cut me anywhere, you can cut my belly. I guess that from about the age of 18 when you start listening to other people's horror stories, they all mount up until you've got one giant horror story." After discussion with her doctor she had a caesarean and plans more. "It wasn't a nice experience by any stretch," she told Hamilton, but clearly she felt it was the best option for herself.

For some critics, women requesting caesarean without major medical reasons should now be seen as suffering from a new disorder – 'tocophobia' – fear of the pain of labour.[31,41,42] Along with the naming of this new condition has come the further assumption that with appropriate 'counselling' such women can be talked into attempting vaginal birth, and that this is the best solution to their newly-christened problem. Of course, for some women this is the case – better informing them about the course of natural labour, the availability of pain relief, and the assistance that is provided by midwives and support persons, does in fact relieve anxiety and allow a positive experience of labour and birth – this is one of the main aims of antenatal classes. However 'counselling' is an imprecise term that can mean different things to different people and is not easily quantified.

A recent Swedish study looked at the outcomes for pregnant women counselled about fear of childbirth, and came up with some interesting conclusions.[42] Fear of childbirth has gained increasing attention in Sweden, and is estimated to adversely affect about 10% of pregnant women; understandably it is more common in women having their

first child. Nearly all maternity hospitals in Sweden have now established special clinics, called Aurora clinics, to counsel women who are particularly fearful of giving birth. The study found that amongst women who were counselled, there was a three to six times *higher* rate of elective caesarean section, but also a high rate of reporting of a *positive* birth experience. Among women who expressed very *negative* feelings about childbirth during pregnancy, but who did *not* have counselling, there was no higher rate of elective caesareans but there was a marked tendency to report a *negative* birth experience. So counselling, at least in Sweden, does seem to lead to more caesarean sections, but also to happier mothers. And certainly there is the belief in Swedish maternity services that it is *normal* for some women to be very concerned by the prospect of pain in childbirth.

But is fear of childbirth really a major reason for caesarean section on request, and therefore an important cause of increased caesarean rates in countries such as Australia? While there are numerous articles in the medical literature on the pros and cons of the caesarean-on-request phenomenon, there are relatively few scientific studies that look at why women themselves make such requests, and their resultant satisfaction, or dissatisfaction, with the results. In particular, the reasons women themselves give for requesting caesarean section in the absence of medical indications had not been studied in a quantitative fashion in Australia until recently.

This has now been rectified by the publication of a recent survey conducted by Dr Stephen Robson of the Canberra Hospital.[40] Robson looked at the responses to an anonymous questionnaire of 76 Australian women who, as private patients, had undergone caesarean delivery at their own request. His study specifically addressed the reasons for their choices, their levels of satisfaction with the procedure, and their future intentions for childbearing. Robson's 2007 cohort of women were all patients attending private obstetricians in eastern states for pregnancy and intrapartum care. Robson used an anonymous two-page questionnaire that sought demographic information regarding age, employment status, and past obstetric history (including whether the pregnancy in question resulted from IVF treatment). Participants were asked how many children they intended to have, and whether the reasons for their choice of delivery had been revealed to family and friends. The survey then asked the following: "There are likely to be *many* reasons for your decision to have a caesarean

birth. From the following list, please pick the 3 most important reasons for your decision, and rate them in order of importance, from 1 (most important) to 3 (least important)."

- I was concerned about pain
- I was concerned about risks to the baby
- I was concerned about loss of control in labour
- I did not want uncertainty about timing/convenience
- I was worried about future problems of prolapse or incontinence
- I was concerned about trauma to my vagina
- Other members of my family had difficulties in labour

To allow the participants liberty to describe motivating factors, the above question was supplemented with the instruction, "If you feel that one or more important reasons for your choice are not included in the list above, please describe them here, and rate them," with space to write three further comments.

Information was sought about whether maternal and neonatal complications had occurred during or after delivery, and participants were asked to rate their level of satisfaction using a Likert scale from 1 (totally unsatisfied) to 10 (completely satisfied). They were also asked whether they would wish to try for a vaginal delivery in the future.

Twenty obstetricians in private practice in four states agreed to participate in the study. The obstetricians sent the survey form to *all* patients in the calendar year 2006 for whom they had performed a primary elective caesarean delivery with no other indication except for maternal request. In contrast to Staff's study, the researchers had no direct contact with the study group: the participating obstetricians sent the questionnaires to the women, who then returned them direct to the researchers. Thus the obstetricians did not have any opportunity to see survey results from women they had recruited. Questionnaires were sent after the birth.

Of 120 women sent questionnaires, 79 (66%) returned them completed, of which three were excluded as a medical indication for the caesarean was noted. The median age of respondents was 32 years, with a range of 23 to 43 years. Sixty respondents (79%) did not have any children at the time of their index caesarean section. Seventeen respondents (22%) reported that their pregnancy resulted from IVF treatment. The majority of respondents reported being in either full or part-time employment, reflecting the demographics of the population with private health insurance in Australia. Most respondents reported that they had disclosed the reason for their caesarean section to family (70, 92%) and friends (67, 88%).

The most commonly reported primary reason for requesting caesarean was, 'I was concerned about risks to the baby,' selected by 35 respondents (46%). In reporting the level of satisfaction with the experience of birth, the majority of respondents (61; 80%) rated the delivery at 9 or 10 on the Likert scale. A further 13 respondents (17%) gave a rating of 7 or 8, with only two respondents rating the experience at 6 or less. The mean rating was 9.25/10.

Eleven respondents (14%) reported either maternal or neonatal complications of the procedure. Of the 11 respondents who reported such complications, none rated their birth experience at 6 or less, with 7 such respondents still rating the experience at 9 or 10. Reported complications were not associated with decreased levels of satisfaction and only one respondent who reported complications stated an intention to try vaginal delivery in the future. Overall, only 4 respondents (5%) answered 'yes' to the question, "Would you wish to try for a vaginal delivery in the future?" with 6 respondents (8%) answering 'not sure,' and 66 respondents (87%) answering 'no.' Answering the question, "How many children do you intend to have?" 9 respondents (12%) answered 'just this one' and a further 49 respondents (64%) answered 'probably two.' In total, 15 respondents (20%) reported an intention for 'probably more than two' children but of those, 7 had already had a previous vaginal birth, meaning that only 8 respondents (11%) had an intention of more than two caesarean deliveries. The respondents' rating of satisfaction with the delivery did not influence intentions for vaginal birth in the future.

Robson concluded that women who underwent caesarean section on request did so most commonly because of concerns about risks to their baby. The other common reasons given were concerns about incontinence of urine and vaginal prolapse in the future, or of vaginal trauma at birth. Interestingly, reasons least frequently reported were, 'I did not want uncertainty about timing/convenience,' 'other members of my family had difficulties in labour,' and 'I was concerned about loss of control.'

One of the reasons for these findings may have been the fact that a high proportion of these women had conceived by IVF. More than half of all babies conceived by IVF in Australia are currently born by elective caesarean.[2] Some of these operations will be done because of major medical conditions in the mothers, but it is not hard to understand that many others will be done because of the very great concern on the part of the women, and their partners, for the wellbeing of the child. Having run the gamut of investigations for infertility, and then endured the time-consuming, invasive, potentially risky, expensive, and often heart-breaking procedures involved in IVF, women who have finally carried a child to the last weeks of pregnancy (and their doctors) often feel that a planned caesarean gives them greater certainty of a healthy infant than waiting for the onset of spontaneous labour. Having successfully conceived through the high-tech methods of IVF, they have often also acquired a fair degree of faith in the power of technology, and a greater acceptance of medical intervention, than women who have conceived spontaneously. They are therefore inevitably going to be over-represented amongst women requesting planned caesarean.

However women who had conceived by IVF accounted only for about a fifth of those in Robson's study so it is clear that this is just a part of the explanation. [40]The study shows clearly that most women request caesarean for a number of reasons, all of which are important to them and their partners, and that when their requests are fulfilled, their birth experiences are overwhelmingly positive. In the words of David Molloy: "It can be argued that women exercising their rights to choose a mode of delivery is a logical endpoint in female reproductive emancipation. For centuries women have been limited in their lifestyle and career choices by their reproductive systems. Reproductive emancipation is now enhanced by many contraceptive choices,

the provision of safe termination of pregnancy services, IVF and other infertility treatments, and good childbirth education classes."[36]

Risks of caesarean section on maternal request

But what of the risks of the surgery, not only to women themselves, but also to their babies? The fact that many women are requesting caesareans, for either no medical reason, or for what are regarded as trivial reasons, is of great concern to many lobbyists for 'natural birth.'[34,43,44] A whole series of articles about the avoidance of various interventions in childbirth, in the journal *Birth* and written by health professionals, is entitled *Why do women go along with this stuff?* and has a great deal to say, either directly or by implication, about the dangers and risks of caesarean, including haemorrhage, the need for blood transfusion, the small possibility of hysterectomy being required, infection, damage to other abdominal organs, and, for the baby, respiratory difficulties after birth.[45] However, as noted by Paterson-Brown in the article cited earlier in this chapter, while any woman considering caesarean on request should certainly expect a full and frank discussion with her doctors about the risks of both the surgery and the anaesthetic, she should also expect an account of the risks of vaginal birth, and those of emergency caesarean which can frequently be the outcome of the best-planned attempt at vaginal birth. This information should be as accurate as possible to assist the woman with her personal decision. There are also medico-legal considerations. The doctor who agrees to a request then has a serious complication may be considered negligent. The doctor who does not agree and then has a serious outcome may also be considered negligent. It is clearly essential that women making a choice for caesarean for no medical reason must be extremely well informed about all aspects of the surgery.

As regards risks to the baby, the literature indicates that these are minimal provided the gestation (the length of the pregnancy) is accurately known and the baby is not inadvertently delivered prematurely.[46,47,48] Planned caesarean section is safest when done at 39-40 weeks of pregnancy. There has been some concern that babies delivered by caesarean experience more respiratory complications directly due to the surgery, than do babies born vaginally. But this is probably because all available evidence is

for caesareans done for medical reasons; caesareans sometimes need to be done early in the interests of the health of the mother or the child, and the child then may require paediatric care after birth. Caesarean on request done after 39 weeks of pregnancy should not pose a greater risk to the baby than does vaginal birth. A large study in Ireland has also shown that in maternity units with high rates of caesarean section, the rates of death amongst normally-formed babies born at term (that is, not prematurely) are lower than in units with lower caesarean rates.[46] Caesarean section is probably only part of the reason for the lower death rates, since caesarean is part of a 'package' of obstetric and midwifery care including comprehensive antenatal care and surveillance in labour in these hospitals, but certainly these figures, which have been confirmed in some UK hospitals as well, support the view that caesarean section birth is at least as safe for babies as vaginal birth.[47,48]

To settle the question of safety absolutely, and to provide 'Level I' evidence, there would need to be a prospective, controlled trial randomly allocating healthy pregnant women either to have a planned caesarean section or to attempt vaginal birth. Clearly, women are not going to agree to this and nor, probably, would any hospital ethics committee. It is necessary therefore to depend on 'lower level' evidence to make decisions about the safety of caesarean on request.[43]

One potentially strong argument against a liberal policy of performing caesarean on request relates to the impact on subsequent pregnancies. It has been well established by observational studies that the risks of haemorrhage, of damage to bladder and bowel, and of placenta praevia, increase with increasing numbers of caesareans.[5,6] However women requesting caesarean seem in the main to be women who carefully plan and control their lives, and those plans generally include only a small number of children, possibly even just the single child born by the first caesarean. Of the women in Robson's study, only a very few planned to have more than two children.[40] Although the risks of the surgery of a second caesarean must, overall, be higher than those for a first, they are still quite low, so the implications of a large number of future caesareans are irrelevant for most of these women. Moreover longterm studies following women who have given birth by caesarean compared to those who have had vaginal births have found a higher incidence of urinary incontinence and prolapse of the uterus in later life in the latter group, with the need for surgery that may involve

several operative procedures.[16] Proponents of caesarean on request have used this information to support the case for permitting women to have this choice.

The cost of the surgery is another argument often made against offering elective caesarean simply on the request of the woman. This argument is based upon the costs of such procedures as compared to uncomplicated vaginal birth and to VBAC (vaginal birth after caesarean section) – although it should be noted that a large proportion of all attempts at VBAC will result in emergency caesarean delivery rather than vaginal birth. The true costs of caesareans on request have not yet been satisfactorily estimated. Most studies of cost-benefit for caesarean delivery are for medically-indicated procedures and do not differentiate between emergency and elective caesarean births, and those that do attempt such a differentiation have shown that the cost estimates are remarkably close.[40] If costs of caesarean births are to be truly assessed, it would be appropriate also to add in the costs of treating prolapse and incontinence resulting from vaginal births, often long after the event. And, as the editors of *The Lancet* have remarked, "We should remember that the point of providing full unbiased information is to enable the consumer to make an informed choice, not to enable government departments to reach targets," which they see as "an authoritarian approach to health care, suggesting women should have no say in what happens to them."[49]

What about the threat of litigation? Are Australia's obstetricians performing caesarean sections they would rather not do, because they feel that if they do not agree and the woman then has a serious complication of vaginal birth or emergency caesarean, they may be considered negligent? In May 2007, the results of a Perth study of nearly half a million births in the period 1984-2004 showed that West Australian women having their first baby were now 4½ times more likely to have a caesarean birth than twenty years previously.[50] Commenting on this, respected paediatrician and Australian of the Year Fiona Stanley said: "If women are following this as a lifestyle choice, because they don't want to damage their perineum or because some celebrity has had one, and pressure is being put upon obstetricians for these lifestyle reasons, then women need better advice."[51] This may be so, but on the other hand, obstetricians also have to consider that the doctor who agrees to perform an operation for no definite medical reason and has a serious complication may also be considered negligent. Fortunately

there are now well defined guidelines to assist obstetricians in discussion with women requesting caesarean. For example, the Royal College of Obstetricians and Gynaecologists based in London takes the position (in the NICE Guidelines) that "when considering a caesarean section there should be discussion on the benefits and risks of caesarean section compared with vaginal birth specific to the woman and her pregnancy. Maternal request is not on its own an indication for caesarean section and specific reasons for the request should be explored, discussed and recorded. When a woman requests a caesarean section in the absence of an identifiable reason, the overall benefits and risks of caesarean section compared with vaginal birth should be discussed and recorded."[10] Clearly though, even when this is done a substantial number of women *do* make up their minds to have a caesarean for no major medical reason, well understanding of the risks long- and short-term.

Current Australian practice follows the lines recommended by the RCOG, at least in private practice.[10] Women requesting caesarean without a defined medical indication have the subject discussed at length with their obstetricians, and must sign detailed consent forms. On the best information currently available, the surgery is safe both for them and their babies. They appear overall to be satisfied with their birth experiences. They also generally see their choice as a personal one and not something that they advocate for other women. This is in contrast to some of the members of the natural birth lobby, at the other end of the spectrum of views on how childbirth should be undertaken, who have a tendency to claim to be speaking "for all women" when they make claims for the benefits of home births or "drug-free birth." For example, journalist Jane Fynes-Clinton wrote recently in Brisbane's *Courier Mail* that: "It is time for women who choose caesarean for no medical reason to take a long hard look at themselves, it's time to stop being selfish." [33]And she dismisses caesarean section on request as the "slice and serve" method of childbirth. However Robson, in an article in the magazine *O&G*, points out that principles of patient autonomy dictate that women should have a wide range of choices in childbirth, and that clearly for some women at least this includes the ability to request a caesarean, and have that request granted, in a way that provides the most satisfactory, guilt-free outcome possible.[4]

Conclusion

The indications for caesarean section, at least in developed countries, fall into three broad groups. Firstly, there are those performed for definite major medical reasons – these reasons are generally accepted by all those concerned and there is little argument about them. There is ongoing discussion about 'relative' indications for caesarean birth – such conditions as fetal distress and failure to progress in labour, in particular, are open to interpretation by doctors, midwives and women themselves, and decision-making around them may be subject to personal opinion and experience, as much as to objective criteria. The decision to proceed to a caesarean may also depend on the extent of the technology available to the physician supervising a birth. Certainly if primary caesarean sections could be safely decreased in this group then a decrease in the number of repeat caesareans would be a welcome longterm effect.

The caesarean section on request by the woman (MRCS), with no apparent medical indication, is the procedure that has attracted the most public discussion, much of it passionate and widely polarised. This is despite the fact that the proportion of true MRCS is quite small, and that many of the procedures currently done do have some quite justifiable reasons, such as an IVF conception. This category also contributes only to a small extent to the repeat caesarean rate since many women choosing MRCS plan only one child. The reasons for the passion and vehemence that the MRCS has attracted include assertions that it is an artificial, even cosmetic procedure in which nature is set aside. This argument is one aspect of the wider general debate about medical interventions for supposed non-medical conditions, including such procedures as breast enlargement and face lifts, but also surgery for obesity. There are further claims by opponents of caesarean-on-request that simply avoiding pain and 'inconvenience' is not a valid indication for major surgery. Proponents of MRCS, however, believe that the ability to request the operation increases women's choices in childbirth, and is therefore an extension of their liberty. It would appear that the MRCS will be a feature of obstetric practice in Australia at least for the foreseeable future, and that the boundaries between true maternal-request caesareans and those done for relative reasons may become increasing blurred. And what is certain is that the polarised debate will continue.

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8. The risks of birth and caesarean section at the beginning of the 21st century in developed and developing nations

All surgical procedures carry some degree of risk for the person being operated upon, no matter how small or trivial that procedure may seem. Caesarean section is without doubt major surgery – it requires an incision into the abdominal cavity, and the opening of an organ, the uterus, with an abundant blood supply. Anaesthesia in some form must be used and carries its own particular risks. Infection is possible after any type of surgery. Thrombo-embolism – the development of blood clots within blood vessels in the lower limbs that can travel to the heart and lungs – can occur with any form of surgery and be life-threatening.[1,2] In this chapter I will discuss the risks women face in undergoing caesarean birth. The medical details of these risks will be summarised in a few paragraphs as this information is easily accessible in textbooks of obstetrics. The chapter will deal more fully with how information about these risks is conveyed to pregnant women, the shortcomings of the informed consent process for women undergoing emergency caesarean section, and the difficulties inherent in providing women with information about longterm risks of caesarean section. I will also look briefly at the experience of birth and caesarean surgery in various parts of the developing world, and at the changes in caesarean rates that seem inevitably to occur as a nation industrialises. The situation in many developing countries provides a dramatic contrast, in terms of pregnancy outcomes, to that of developed nations such as Australia.

Information and informed consent

It is now standard Australian medical practice to provide all patients with information, both verbal and written, about the risks of any surgery being contemplated. This would include discussion with doctors involved in the surgery and the provision of one or more brochures produced by the relevant health department or hospital or one of the professional Colleges.[2] All accredited Australian hospitals require this. The aim of this measure is to help patients in making an informed decision as to whether to consent to surgery or not – the woman herself (in the practice of obstetrics and gynaecology) compares the risks of the surgery with the potential benefits. For

example, a 40 year old woman with heavy painful periods who is considering hysterectomy can balance the risks of the surgery against perceived long-term benefits to herself. She can also think about other less-invasive non-surgical treatments for her problem. In other words, as already discussed in Chapter 5, she can make a decision based on the evidence available at the time in the medical literature.

The situation is more complex for a woman considering a caesarean section, because, while she might or might not end up having an operation, she is definitely having a baby, and that baby must inevitably be born – in one way or another. So in addition to considering both the advantages and the risks of caesarean section, she must consider those of vaginal birth. In many cases attempting vaginal birth is not at all in the interests of either the mother or the baby, the risks of doing so are much greater than those attendant upon caesarean section, and this is obvious to the woman. Nevertheless it is essential that *all* women be as well-informed as possible about *all* the risks of caesarean prior to the procedure. The more knowledge a woman has, the greater her feelings of control over her birth process, and the greater her chances of feeling contented with her birth experience. If a complication does occur, understanding that it was a possibility can assist her to come to terms with the event. Obviously, knowledge of the risks of caesarean surgery will be easier to give to a woman (and her partner) who is considering an elective caesarean section. She will (or should) have time for discussion with her doctor, possibly with midwives, and time to return with questions before signing her consent form. It is normal practice also to provide information about risks of caesarean surgery in written form. This is much less likely to be possible with emergency caesarean – the imperative to get the woman to the operating theatre, often in the baby's interest, may be great, with little time to give detailed information and the woman in no condition to absorb it, particularly if she has been a long time in labour. Much reliance, therefore, has to be placed on the information a woman has received in her antenatal classes about the risks of caesarean – and this may be little or none. Again, it is desirable that the antenatal information given to women also includes the risks of vaginal birth, and again, it is desirable that this is evidence-based.

Much of the concern about caesarean section rates stems from the belief that as major surgery, it is dangerous. However the fact that risks *exist* does not necessarily equate

with danger for an individual woman. What is important is that a woman is made aware of what the risks of the surgery actually are *for her*, the likelihood of the complication occurring *to her*, what can be and is done to minimise risk, and why.

From discussion in previous chapters it will be clear that, until about twenty years ago, the vast majority of caesarean sections were done for very definite medical reasons, threats to the life or health of the mother and/or her child. Even in the past two decades most caesareans have been done only for accepted medical reasons – caesarean sections on request have not been common until the first few years of this century, and are still relatively few in number. So when the outcomes of these operations are examined, in order to work out the risk of various complications occurring with caesarean section, it must be borne in mind that these complications may be partly or completely related to the condition that caused the operation to be done, rather than the operation itself. A baby delivered prematurely because the mother had severe pre-eclampsia may well have problems in the first few days of life with breathing and feeding, and may develop jaundice, and need to be in a newborn nursery – but this is a result of the mother's illness, which led to the operation and the premature delivery, not of that fact that the birth was caesarean.[1]

It is also the case that medical practice has made many advances in the past two decades, and so the risk of a particular complication may have changed since 1980. For example, one study showed a slightly increased rate of ectopic pregnancy in women who have pregnancies following a caesarean.[3] However the women in this study had their caesareans before it became routine to give antibiotics to all women having caesareans. Ectopic pregnancy can be caused by infection in the fallopian tubes that adjoin the uterus; possibly giving antibiotics to women having caesareans now is successfully preventing them from having infections following the birth and therefore an increased risk of an ectopic in a future pregnancy.

Another important point to note when considering the risks of caesareans is that a proportion of women who begin labour spontaneously do not go on to have a vaginal birth but have instead an emergency caesarean. So if the risks of caesarean section compared to those of vaginal birth are to be compared, which is the obvious comparison to make, that comparison should be between caesarean section and

attempted vaginal birth. There are also risks associated with vaginal birth. Obviously, too, not all women facing a caesarean have the same risks. The risks will depend on the woman herself and her general health, the condition for which she is having the caesarean, and whether she has had previous caesareans. When the risks of the surgery are explained to a woman prior to her operation, it is part of the physician's role to try to quantify as much as possible the risks most relevant to the particular woman. It must also be said that, overall, there are greater risks in having an emergency caesarean than an elective procedure.[1] This is partly due to the indications for the emergency caesarean, as can easily be understood, but is also the result of emergency caesareans often being done in haste, by staff who have had to drop other tasks or been called into the hospital in the middle of the night, or who are working overtime. Much of the criticism of caesareans levelled at obstetricians centres around allegations that the time of the surgery is chosen to suit the obstetrician – there are more elective operations just before Christmas and other major holidays, for example.[4] This is often true – the reason being that the obstetrician is awake and alert, and so are all the other staff required for the elective procedure. It is important to note that these elective operations are done for clear medical indications – it is simply the timing that is convenient to the obstetrician and other staff – and probably to the women concerned. There will also be staff on duty in Australian hospitals, for Christmas and other holidays, who are able to perform emergency caesareans as needed. However it is inevitable that during emergency surgery of any kind, there are sometimes items neglected or overlooked, with resulting complications for patients.[1,2]

As far as caesarean section on request is concerned, the degree of risk faced by a healthy woman choosing to have a caesarean section for no medical reason has not yet been quantified. If this operation is planned, the woman is in good health, the operation is done during routine working hours, and she has not had any abdominal surgery before, it would seem on the basis of observation of women who have done this that the risks are small.[5] As noted in the previous chapter, most women requesting caesarean plan small families, which in itself will tend to minimise long-term risks.

What are the risks of caesarean section?

I will now look briefly at the general risks posed by caesarean section at the beginning of the 21st century. The immediate risks of the surgery include complications of the anaesthetic, haemorrhage, infection, damage to other organs adjacent to the uterus, and thrombo-embolism. With any major surgery there is always a risk of death, and this is true also of caesarean section, although that risk is very small. Currently, among all women giving birth in Australia, there are around 8 deaths related to pregnancy per 100,000 births.[1,6] Less than half of these deaths (3 per 100,000) are in women who underwent caesarean section. However in almost all of these cases the death is due to a major medical condition which was the reason for doing the caesarean. Having to undergo surgery may worsen the woman's condition, so that the caesarean contributes in part to the cause of death, but it is neither the main nor the initiating cause.

Risks of anaesthesia

All caesareans are done under some form of anaesthetic, usually regional anaesthetic – epidural or spinal. Occasionally for very urgent or complicated cases general anaesthesia may be used. Regional anaesthesia enables the woman to be awake during her operation while complete analgesia occurs in the lower part of her body. Her partner can be present during the surgery and she can usually hold her baby immediately after birth. This increases the woman's sense of control of the process of caesarean birth, and of involvement in her delivery.[7]

The risks of epidurals include the possibility that the epidural may not work, a drop in blood pressure, difficulty in emptying the bladder, headache, and backache. The chances of major nerve damage are extremely small and the occurrence of paralysis following epidural virtually unknown. Small amounts of the drugs used for epidurals cross the placenta and reach the baby, who generally tolerates the effects of these very well.[7]

General anaesthesia (GA) means that the woman is fully asleep for the procedure. Occasionally an epidural will be ineffective or there may be a medical reason why it cannot be offered, or the woman herself may request a GA. The risks of GA include unexpected sensitivity to the drugs used, with allergic reactions, and inflammation or infection of the lungs following the surgery. Very rarely women die as a result of the anaesthetic given for a caesarean, and this is more likely with GA than with epidural – the risk is about 2% of all deaths of women that are directly related to pregnancy and childbirth, that is, 2% of 6-8 deaths per 100,000 women, a very small risk indeed. Statistically, planned caesarean section under epidural has a slightly higher risk of anaesthetic complications than planned vaginal delivery when the birth is actually vaginal.[7] However emergency caesarean puts anaesthetic risks up above the rate for elective caesarean. This is understandable – the anaesthetist has no time to correct any health problems that may be exacerbated by the anaesthetic, something which can be done for women having elective operations, and as already explained, an operation done as an emergency, particularly late at night, when staff may have had to be called from their beds, inevitably has greater potential for errors to occur.

Immediate risks of the surgery itself

Haemorrhage (excessive bleeding)

The possibility of excessive blood loss is generally the first risk discussed by a doctor with a woman considering caesarean, and the possibility of the need for blood transfusion should always be explained. At the same time, it should be noted that severe bleeding can also occur in the course of a vaginal birth or soon after this – a postpartum haemorrhage - and require the woman to be examined in the operating theatre, lacerations sutured, and occasionally, undergo hysterectomy. The risk of post-partum haemorrhage following elective caesarean is less than that following vaginal birth or emergency caesarean.[1,2]

Infection

This can occur at the actual site of the operation, in the healing uterus or in the skin and tissues overlying it. Prophylactic antibiotics are given routinely for caesarean section in Australia - they an integral part of caesarean practice.[2] If this were not done the rates of infection associated with the surgery would be much higher, with more

deaths and more severe chronic illness in women having caesarean section. Many antibiotics become less effective when they are widely used as bacteria develop resistance to them, and this is a cause of concern in current obstetric practice. Infection can also occur following a vaginal birth. Antibiotics are relatively often given to women having spontaneous vaginal births but they are not used routinely. The risk of infection following elective caesareans is less than that following vaginal births, and considerably less than that following emergency caesareans done in labour, where several interventions (such as vaginal examinations) by doctors and midwives, plus the fact of the surgery itself, expose women to a greater chance of bacteria gaining access to the uterus or bladder.[1,9]

Damage to adjacent organs

The most relevant of these is the bladder, which lies directly in front of the uterus, followed by the bowel which lies behind. With a first or second caesarean the risk of damage to these organs is small. With increased numbers of operations, the risk increases as the previous operations have tended to cause scar tissue that binds the organs firmly together. Vaginal birth can also be accompanied by significant damage to the bladder and lower bowel.[1,5]

Thrombo-embolism

During caesarean surgery the woman lies immobile on the operating table. Pooling of blood in the lower part of the body puts the woman at risk of clots forming in the blood vessels (thrombosis) and of bits of these clots breaking off and passing via the bloodstream to the lungs (embolism.) The hormones produced in large amounts during pregnancy tend to make pregnant women more prone to this clot formation. Thrombo-embolism is a significant risk for women having caesareans especially women who have the operation after many hours in labour, during which they have been relatively immobile. For this reason prophylaxis is used during caesarean section in Australian hospitals for all women. There is a risk of thrombo-embolism for every pregnant woman, regardless of her birth method, that is greater than that for women who are not pregnant, so thrombo-embolism can also occur in association with vaginal birth.[1]

Long-term complications of caesarean surgery

Post-natal depression

There is now good evidence to show that when a woman has prepared for her baby's birth with a particular scenario in mind, usually a drug-free birth, with her partner and perhaps friends present, possibly in a birth centre, and then has that plan quite dramatically and suddenly changed because a problem has arisen, she is more likely to experience feelings of grief, anger, regret and loss of self-esteem following the birth. In contrast women who make such birth plans and find all goes according to plan report feelings of elation and achievement post-natally.[10]

Well-conducted prospective studies have shown that caesarean section- in particular emergency caesarean - *does* increase the chances of women experiencing true post-natal depression (PND). There is also evidence to suggest that some women may suffer from post-traumatic stress disorder (PTSD) following births that did not go according to expectations. This has been shown to be related to women's feelings of lack of control in the decision to have the operation. Where women have felt involved in the decision they are much less likely to experience negative feelings post-natally. In other words, post-natal depression is much less likely after elective caesarean than after emergency caesareans. However PTSD can also occur in women who requested but did not get some form of intervention during labour, as shown by the following quote from a Victorian woman having recently had her second baby:

"I am one of the unrepresented and voiceless small percentage of women who suffer post-traumatic stress disorder as a result of the degree of pain experienced during childbirth. I think the medical profession could do more to recognise and anticipate this, and to safeguard women against this type of outcome.

"Epidural anaesthetic should be offered during labour in all hospitals as the standard procedure, to be withheld at the patient's request. During consultation prior to the birth, doctors should initiate discussion to encourage its use. If the doctor cannot or

will not provide this, then he/she should be required to refer the patient elsewhere. Educating women to consider epidural anaesthetic in antenatal classes would help counteract their conditioning into blind acceptance of intolerable unanaesthetised pain.[11]

"Women who experience major medical problems in pregnancy, especially problems related to the baby's wellbeing, are also at greater risk of PND and PTSD. Having a pre-term (premature) or very small or sick baby who is confined to the special care nursery understandably can have a similar effect. Pregnant woman with major medical problems are more likely than healthy women to undergo caesarean section, so again the *reason* for the caesarean, rather than the surgery itself, may be the basic cause of the PND or PTSD."[11]

De-briefing

This implies a meeting between a woman who has undergone an emergency caesarean (or other unexpected procedure) and her doctor or doctors, midwives and other staff involved in the birth, to explain what happened and why – the reasons for the surgery, the type of anaesthetic, how urgently the operation was needed, any complications that occurred and what the woman can expect in the immediate convalescent period as well as long-term. There is no conclusive evidence to show that de-briefing reduces the risk of a woman developing post-natal depression or other psychological problems following a caesarean. However commonsense suggests that it does seem a logical and compassionate thing to do whenever there is an unexpected outcome and particularly an adverse outcome.[12] De-briefing does not absolve physicians from blame if they have been careless or negligent. But certainly medical indemnity organisations recommend it as a strategy whenever there is an adverse outcome in medicine, in order to explain to the patient the doctor's viewpoint. If patients and their families understand what happened and why (from the staff's perspective) and receive this information sympathetically explained, they are more likely to feel satisfied or at least not dissatisfied with what happened. Where studies have been done asking women how they felt after de-briefing, the practice has been found to be well received by those women.[12]

Breast feeding

Several studies have shown that women who have had caesarean births are less likely to breastfeed their babies, and that those who do are more likely to have difficulty establishing breastfeeding, when compared to women having vaginal births. It is likely that this is because among babies born by caesarean will be many very small or sick babies who require a period of time in the neonatal nursery – again, it may often be a matter of the condition leading to the caesarean rather than the caesarean itself being the cause of the subsequent problem.[13]

Future pregnancies

The most common long-term health consideration of women undergoing caesareans concerns future pregnancies. VBAC, vaginal birth following caesarean section, is discussed extensively in the following chapter. Several studies have shown that women who have a caesarean birth are less likely to have any future pregnancies. However this is not a direct consequence of the caesarean but rather is due to the fact that women having caesareans include many women who have required assistance to become pregnant, and many women with major medical problems, two groups who are likely to decide on no further pregnancies anyway. A recent study in which healthy women undergoing caesarean section for breech presentation in their first pregnancy were compared with women having a vaginal birth for their first child showed no differences in the number or timing of later pregnancies.[14]

Rupture of the scar of a previous caesarean occurs in about 1% of women attempting VBAC following a single caesarean, and this risk increases to about 2-3% in women who have had two or more previous caesareans.[15] These are lower segment caesareans – a figure of 10% for the rupture of classical caesarean scars in subsequent labour is usually quoted, using the experience of obstetricians of many years ago, since attempted VBAC is not recommended in the small number of women who have had a classical operation.[16]

Placenta praevia occurs in about 1% of pregnant women who have never had a caesarean. The chances are increased to 1.7% in a woman with a single caesarean scar, and increase further with the number of previous caesareans.[17] The placenta praevia that develops over a previous caesarean scar may also cause the condition of placenta accreta discussed in Chapter 7.[18] The diagnosis of placenta accreta can be made with reasonable certainty while a woman is pregnant, using ultrasound, and arrangements made for her delivery in the best possible surgical environment, nevertheless she does need to be aware that she faces a definite risk of hysterectomy and that the condition itself is potentially life-threatening. The apparent rise in the number of cases of placenta accreta that has paralleled the increase in caesarean rates has concerned Australian obstetricians greatly, although it should be noted that numbers are still very small.[19] Dr Alastair Morris from Sydney's North Shore Hospital described to the *SMH*'s Ruth Pollard how "women can quite easily lose half their blood volume within five minutes." Only an emergency hysterectomy can save the woman's life. " 'This is not a standard hysterectomy,' Morris explained, 'this is as difficult as it gets, and things have to be done extremely rapidly.'"[20]

A small number of studies have suggested that there is an increase in the proportion of women having miscarriages or stillbirths in pregnancies following caesarean section. All these studies have been retrospective, looking at what happened to women who had caesareans up to fifty years ago, so the information may not be relevant to the current practice of caesarean section.[21] Of much more relevance is a study conducted prospectively in the late 1990s in Nottingham, England: 576 women having a caesarean in their first pregnancy were compared with 576 women having a vaginal birth and both groups were followed for five years. No difference was observed for the time (in months) to next pregnancy/birth, the proportion suffering miscarriage or ectopic or the number of subsequent children. The authors concluded that: "Women delivered by caesarean section in the 1990s can be reassured that future fertility and miscarriage/ectopic risk will not be affected."[21]

Health benefits of caesarean section

Damage to the perineum and anal canal is much less common after caesarean section than following vaginal birth, unless there has been an attempt at vaginal delivery (for

example with forceps) that has been unsuccessful, and so emergency caesarean has been immediately performed. [22] Likewise damage to the pelvic floor, the muscle layer which supports the bladder, vagina and rectum, is considerably less after caesarean especially elective caesarean, when compared to vaginal birth.[22,23] There may be some pelvic floor damage simply from the pregnancy itself pressing on these muscles and the nerves supplying them. Research is proceeding in this area. Following a caesarean birth the risk of incontinence of urine is less than following a vaginal birth. Incontinence of urine affects around 50% of all elderly women and in most of these can be attributed in part to previous vaginal births.[22,23] Whether the risk of incontinence of faeces is also less than after a vaginal birth is still debated. Utero-vaginal prolapse in later life – in which the uterus, vagina and the attached bladder and bowel protrude through the vaginal opening – is considerably less likely after caesarean births than following vaginal births. Along with incontinence, prolapse is a major problem for women in later life, often requiring more than one attempt at major surgical repair. The various procedures to improve or cure the symptoms of prolapse form a large part of gynaecological practice in Australia today. Some studies have shown that women who have had vaginal births experience more sexual dysfunction in the year following the birth than do women having had a caesarean birth.[24] Others have shown no difference. Obstetricians themselves would often favour caesarean birth for themselves (among females) or their partners (among males).[25] So these long-term benefits of caesarean section on women's health are worth considering in the whole picture of what caesarean surgery costs the healthcare system, as well as what they mean for women themselves.

Risks to the baby

Risks to the baby from the operation itself – as distinct from those due to the condition that led to the caesarean being performed – are mostly related to immaturity of the baby's lungs if the baby has been delivered early. Each week of prematurity doubles the incidence of breathing problems in the baby. This may be unavoidable if delivery of the baby is required for a serious medical problem in the mother. However if the operation is elective it is important to be sure that the dates are right, and that the pregnancy is, preferably, at least 39 weeks in length, to minimise risks of respiratory difficulty in the baby.[26]

Consent for caesarean section

Obtaining consent from a woman for an emergency caesarean is a very different and indeed more difficult process compared to that employed for elective caesareans. With most elective caesareans there is time to discuss fully with the woman and her partner the reasons for the surgery, to explain the procedure, spell out and quantify risks, answer questions, choose (within certain limits) the date and who will be present, and take on board particular requests. The woman herself has time to consult other sources of information, discuss the matter with her partner, friends and family, and generally come to feel that she has participated in the decision to have the operation. [2,10]

With emergency caesareans, most of this is not possible. Of course the term 'emergency caesarean' covers all caesareans that are done unexpectedly, in pregnancy or in labour. Those done most urgently, for example for cord prolapse or severe haemorrhage, will obviously offer the least opportunity for a full explanation of the operation and its long-term implications. But even those done less urgently, for example for severe pre-eclampsia worsening in labour, may allow only very limited time for discussion of the operation. Practical considerations – getting to the operating theatre, arranging for an anaesthetist and paediatrician, informing the woman's partner or family if they are not present – may over-ride other matters. A consent form for the surgery must be signed by the woman but in the majority of cases consent cannot be said to be truly informed; it will appear to the woman that she has no choice, particularly if she is aware of a risk of death or damage to her baby.[2,10,12]

To some extent this lack of really informed consent can be compensated for with de-briefing. If the doctor and other staff present for the birth go over the reasons for the surgery and how events unfolded this can compensate a great deal for the woman's feelings of disappointment at not having a vaginal delivery. Being told "you're healthy and you have a healthy baby, get over it" is likely to be unhelpful to many women. [10,11,12,27]

One of the purposes of antenatal classes is to inform women about the various problems which can arise in labour, for which caesarean section may be indicated.[28]

However so much is covered in half a dozen classes that it is impossible for women to retain all of this information, and it is usually felt by those conducting the classes that too much information about complications is likely to be inappropriate and possibly frightening to first-time mothers.[28] Of course many pregnant women themselves search the internet and read widely about pregnancy and birth and will come across a great deal of information, some accurate, some less so.[29] But until an abnormal event actually occurs it can be hard to visualise such a situation for oneself. The lack of truly informed consent in many cases where emergency caesareans are performed is likely to continue for the foreseeable future.

Women can withhold consent to the procedure and allow the processes of pregnancy or labour to continue. They can do this perfectly legally even when their physicians and other attendants believe that the baby's and/or mother's lives are seriously threatened. Under longstanding English law, from which Australian law is derived, a mentally competent patient has an absolute right to refuse medical treatment for any reason, rational or irrational, or for no reason at all, even where the decision will lead to his or her death. In English law the fetus is not a legal entity separate from its mother and therefore has no legal rights.[30] There have been a number of cases of forced caesarean sections in the United Kingdom and the United States where permission has been (usually very hastily) gained from a judge.[31] Often it has become clear subsequently that the woman was not questioned and the judge was not in possession of the full facts, and in some of these cases there may have been an alternative to the caesarean. The general view now among the Australian medical profession is that there should never be any need to seek permission from a court for caesarean section for a woman who is mentally competent, even when her refusal might place her life or her child's in jeopardy. The preferable approach for a physician in this situation is to try to continue discussion with the woman, her partner and others involved in order to make clear the medical implications of her decision.

It is clear that not all women leaving hospital following a caesarean understand the reason why the operation was done. A recent study showed that 22% of women gave a different reason for their caesarean from that given by their doctors. In Lynne Staff's study three women didn't know why their operation was done, and several more simply said that their doctor recommended it.[32,33]

Consent forms differ from one hospital to another although in State-run public hospitals the same consent forms are used throughout all institutions. In some cases consent forms are several pages long. The name of the operation, the patient's details and those of the doctor witnessing the signature are common to all. There must be a statement that the doctor has explained the procedure to the patient and the reasons why the surgery is recommended, that all risks both short and long-term of the particular operation, and of surgery in general, including the possibility of death, have been explained and that the doctor believes that the patient understands these.[2] If the patient does not have English as a first language then an interpreter may be provided although in practice in Australian hospitals relatives often interpret for patients. The consent form for caesarean section must be signed by the woman herself - a spouse or other relative cannot sign on her behalf. The role of the consent form, from the ethical viewpoint, is to safeguard patients' autonomy and freedom of choice. In practice, this is not always the case.

From the small amount of research that has been done in this area it is clear that many patients do not share the view of doctors, others working in health care and hospital administrators, that the consent form protects patients' rights. In the *BMJ* in 2006 doctors from Leicester in England published the results of a survey they conducted amongst more than 700 women undergoing obstetric and gynaecological procedures including caesarean section. Nearly half the women questioned believed the primary purpose of the consent form was to protect the hospital and an even higher proportion believed that the form gave the doctor the right to change the operation performed without further consultation, if they believed it was in the patient's interests – in fact this can only be done in a major emergency where the woman's life is at stake. Ten percent of women said that they did not know what operation they had agreed to. Some of these had felt frightened by the consent process and 'pressured' into signing.[34]

Clearly, information provided to a woman about potential surgery needs to be tailored to that woman's level of literacy and education and to her cultural background. Again this is more likely to be achieved when the caesarean is an elective procedure. Unfortunately the ability to understand the written word is limited amongst some

groups of women in Australia. In an emergency situation especially it can be impossible for the physician to know what the woman really understands about the reasons for her caesarean and the implications it has for her, even though she has put her name in some way on the consent form.

The experience of caesarean section in developing countries

Many of the women in the world today do not have the possibility of choosing their birth method or its surroundings. More than half of all women in the reproductive age group have no chance at all to consider the benefits and risks of caesarean section.

Dr Catherine Hamlin is an Australian-born gynaecologist who trained at the Crown St Women's Hospital in Sydney where she met her husband Reg, at that time the Medical Superintendent. The Hamlins moved to Adelaide but hankered for a life more challenging than that of suburban medicos. Then Catherine saw an advertisement in *The Lancet* seeking gynaecologists willing to travel to Ethiopia to set up a school of midwifery. They arrived in Addis Ababa in 1959 and were soon delivering babies as well as teaching in the government hospital. But before long it became clear that there were problems they had never learnt about in Sydney and had no experience in treating.[35]

In their first year in Ethiopia they saw about 30 cases of obstetric fistula. This condition occurs when normal labour becomes obstructed, mostly because the woman's pelvis is too small to allow the passage of the baby's head. In Australia women in this situation are assisted to a safe birth, usually by caesarean section. In Ethiopia, a poor and mountainous country which had then, and has still, few obstetric facilities, such assistance is not easily obtained. As well, many first-time mothers are very young and poorly nourished, with resulting small pelvises that predispose to obstructed labour. The contractions of labour continue in the face of the obstruction, forcing the baby's head down into the mother's pelvis and cutting off the blood supply to her bladder and upper vagina, and sometimes her bowel, as these organs are compressed against the bony wall of the pelvis. Many women in this situation die from exhaustion, dehydration and infection but in a proportion the contractions eventually push the baby out into the world, dead. Even worse is to come -- the lack

of an adequate blood supply has caused the compressed tissues to die and slough away, leaving a gaping hole through which urine and sometimes faeces pour continually. [36]

Women with obstetric fistula are like lepers - shunned by their husbands, their former friends, often by their own families. They cannot bear more children, cannot cook or work in the fields. The smell of urine is overpowering. There are women like this, many confined on their own to small huts, all over Africa, parts of Asia and the Pacific including Papua-New Guinea, and parts of South America.

The Hamlins studied old textbooks, contacted overseas colleagues and began to repair the fistulas. In the following years, as word of their skills spread through the countryside, they saw 200 cases, the next year 300. There wasn't room for all these cases at the government maternity hospital and even when a separate 10-bed ward was provided the waiting time for surgery was still up to a year.

Reg and Catherine Hamlin decided to build their own hospital exclusively for the treatment of fistulas. They travelled back to Australia and New Zealand, talking to medical groups, aid organisations and politicians, seeking donations, and in 1974 opened the doors of the Addis Ababa Fistula Hospital. The hospital now has sixty beds, four doctors and a staff of more than sixty. In the first three months of 2007, 357 fistula patients were treated. Three more fistula hospitals have been set up by Catherine Hamlin's colleagues in regional centres, and two more are under construction. Almost all finance for the building and running of the hospitals has come from donors in developed nations. A large number of overseas doctors travel to Ethiopia each year to assist the permanent staff who now include Ethiopian medical graduates. [37]

Theses hospitals also provide care to young women waiting for their surgery, improving their health and nutrition in order to improve their chances of a successful surgical outcome. The hostel in Addis Ababa providing this care is overcrowded – two women to a bed – so great is the demand for the surgery. A long-stay village caters for women whose fistulas are so extensive they cannot be completely cured –

these women are trained to be employed in various fields including nursing, agriculture and craft work, so that they can become self-sufficient.

Catherine Hamlin's hospital has treated more than 18,000 fistula patients since 1974. Hamlin, now in her mid-eighties, estimates that there are still 40,000 'old' cases of obstetric fistula (untreated) in Ethiopia, with 9,000 new cases developing each year. Reg Hamlin died in 1993 but his widow continues to operate, teach and seek ongoing financial support for the hospitals. Her work has been widely acknowledged, including in Australia.[35,36,37]

Interviewed in *The Australian* in 2000, Hamlin described a young girl, possibly 16, who was then a patient.[38] She had spent four days in labour before delivering a dead baby. When her fistula developed her family carried her for four hours to where she could take a bus the 520 km to Addis Ababa. If the hospital wasn't there, "she would just lie in her hut," said Hamlin. And one of her Ethiopian colleagues added: "Her husband would desert her. They can't understand what has happened. She can't cook, they can never have any more babies. They think: this is an act of God. I'll get another wife." [37]

Catherine Hamlin understands clearly that obstetric fistula is an entirely preventable condition – preventable, that is, if Ethiopian women had access to the same standards of obstetric care that women in developed countries, including Australia, take for granted. She has worked not only to treat established fistulas but also to prevent them by training and employing midwives and doctors to work throughout the remote rural areas of the country. A midwifery school has been constructed which had its first intake of 20 students into a three-year course in September 2007. But Hamlin is a realist – hospitals throughout Ethiopia able to provide caesarean sections to all women who need them are not going to appear at any time in the near future, and the services of the Ethiopian fistula hospitals will be needed for years to come. [39]

There are other fistula centres in Africa – in Northern Nigeria a Dutch surgeon, Dr Kees Waaldijk, has been repairing fistulas for 25 years. [40] An estimated 800,000 Nigerian women currently suffer from an obstetric fistula. "These patients are the forgotten women," Waaldijk has said, "rejected by their husbands and sometimes by

their families, because their bodies have suffered excessive trauma during childbirth." There are also growing numbers of general hospitals offering the surgery and fistula surgeons (who number less than 20 in the whole of Africa) have formed their own association to support each other and train other doctors in the techniques. All however acknowledge that prevention of this hideous condition is the real answer.

Each year throughout the world more than 600,000 women die from conditions related to childbirth. [41] Less than 1% of these women live in the developed world. The World Health Organisation believes that these official figures for maternal mortality underestimate the number of women dying – possibly by up to one third. When a pregnant woman, seriously ill in an overcrowded understaffed hospital, is moved from the obstetrics to the general ward, and dies, registering her as a maternal death can be easily overlooked. Current WHO figures show that at least 40% of maternal deaths each year occur in Africa, which has less than 20% of the world's women. In parts of Africa a woman of early reproductive age faces a 1:16 chance that she will die from complications of pregnancy or childbirth. An Australian woman of the same age has only a 1:8333 chance of such a death. [41]

The main causes of death are haemorrhage, both before and after birth, infection, pre-eclampsia, and obstructed labour. [41] Many of the women who die would have been saved by the timely performance of caesarean section, although others lacked something as simple as a drug such as ergometrine to treat a post-partum haemorrhage. The low rates of caesarean section in many developing countries are an indicator of the lack of the whole package of midwifery and obstetric care that makes childbirth so safe in a country like Australia. In addition, if a woman dies in childbirth, her whole family, particularly other children, suffer the loss of a mother and provider which can be devastating for their prospects of survival let alone of fulfilment or happiness. [41]

In developing countries, when facilities improve and pregnant women can be offered obstetric care of a high standard, caesarean section rates rise.[42] Tu Du Hospital in Ho Chi Minh City, Vietnam, admits mainly women with complicated pregnancies or labours, most women who have normal births being cared for by midwives at home. The caesarean section rate iss 50%. [43] The maternity department in Colombo South

hospital, in Sri Lanka, serves a population from the teeming suburbs of the capital typical of an expending Asian city. Maternal request is not an indication for caesarean section, the operation is done only on the decision of obstetricians – for haemorrhage, pre-eclampsia, diabetes, failure to progress in labour, in other words what are seen in Australia as the essential medical indications. Nevertheless, the caesarean rate for the hospital is 27% of all births.[44] It is possible that with improvements in nutrition and education of women caesarean rates may fall in such circumstances in developing countries. However, a look at the current situation in China suggests that the reverse may in fact occur.

The rapid industrialisation and urbanisation that has taken place in China during the past two decades appears to have been accompanied by a steep rise in the rates of caesarean births.[45] Chinese women, once they have had choice in childbirth methods, have often opted for caesareans. A study from 2006 published in *AJOG* examined trends in the rates of caesarean birth amongst women having their first baby in China. The caesarean delivery rate in urban areas of China rose from 18% in 1992 to 39.5% in 2002. Amongst women who lived in large cities the caesarean rate was 50%. Better educated women were more likely to have caesareans, 40% of high school graduates and 48% of tertiary-educated women undergoing the procedure. The authors of this study described the widespread belief amongst Chinese women, including the better educated, that the operation is safer and less painful than vaginal birth. In some cases caesarean delivery was requested because of the desire to give birth on an auspicious day. The wish to avoid sexual dysfunction following the birth appeared to be an important factor leading some Chinese women, like their European and American counterparts, to request planned caesarean births. However the authors also pointed out that increasing birthweights amongst babies of better-nourished women have led to an increase in caesareans for obstructed labour. The current Chinese health system functions with a number of payment schemes. Both public health care and health insurance schemes allowing private care are available, in urban areas at least. In both systems hospital staff may be financially rewarded for more complex procedures, and the authors speculated that in some Chinese hospitals there is a financial incentive to perform a caesarean rather than awaiting a vaginal birth. Exactly how important different factors are in increasing caesarean rates is still not entirely clear, but it is evident that in China, as elsewhere, increasing industrialisation and technological

development, plus increased education and reproductive control for women, have been accompanied by increased rates of caesarean section.

Conclusion

Much of the opposition to increasing caesarean section rates in developed nations rests on the contention that such surgery is dangerous, or at least more risky than vaginal birth. However the risks of caesarean surgery are well known to the medical profession, are quantifiable and can be clearly outlined to pregnant women early in pregnancy, and this information can be refined as the pregnancy continues. For the majority of women the risks of the surgery are quite small, and medical facilities in developed countries are such that complications, when they do occur, can usually be adequately treated. This is true also of the risks associated with vaginal birth, which are also well-known. The comparison of birth outcomes following caesarean section, with outcomes following planned vaginal birth which actually results in spontaneous vaginal birth, is not however a valid one. This is because women planning a vaginal birth are generally low-risk with no major health problems, whereas the majority of those who plan a caesarean birth, or who are advised by their physicians that this is recommended, have a strong medical indication for this. It is more appropriate to make comparisons between the outcomes of planned caesarean section and the outcomes of all planned vaginal births, including those that end ultimately in emergency caesarean section or an operative vaginal delivery with forceps or the vacuum extractor.

In many cases in the practice of midwifery and obstetrics, accurate statistical information about the results of interventions is lacking. As discussed in Chapter 6, prospective randomised controlled trials are frequently impossible to conduct in order to answer complex questions about the advantages or disadvantages of a particular intervention in pregnancy or birth. This is because consent for randomisation cannot be obtained from women understandably unwilling to submit their unborn children to experimentation, because ethics approval would not be forthcoming, and because it is often impossible to isolate the effects of a single intervention from other influences on a pregnancy. In addition, providing women with the most up-to-date evidence on a particular aspect of pregnancy care may not result in their making a decision to accept

that care, since the principle of choice in childbirth is now a widely accepted one, and social, educational and economic factors may all play a role in a woman's choosing or refusing care.

In contrast, the situation in developing countries clearly illustrates that in the absence of facilities for the timely performance of caesarean section, women frequently die from the complications of pregnancy and childbirth, or suffer lifelong disabilities such as fistulas. Of course, it is not merely the inability to perform caesarean sections that leads to these poor outcomes. Rather, it is the absence of good midwifery and obstetric care as a whole, which reflects in turn a lack of good medical facilities generally, as well as poverty, poor nutrition and few public health measures, little or no formal education for women, and often major societal disruption. Nevertheless caesarean section rates in developing countries do act as a marker for the standard of maternity care generally in those countries. Where rapid industrialisation is taking place, where improved medical facilities are being established, and where economic and educational opportunities are expanding for women, the caesarean section rate can be seen to rise; at the same time, outcomes for both mothers and babies improve.

Finally, as far as caesarean section on maternal request is concerned, although accurate figures for risks are at present not quantified, it does appear that for a healthy woman with an uncomplicated pregnancy the risks are probably quite low. Women requesting caesarean birth at present constitute only a small proportion of those undergoing caesarean section in developed nations and generally make a very informed choice when requesting the surgery.

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9. Birth after caesarean section

From the 1880s onwards, once it was established that caesarean section could be performed safely, there was interest in the course of subsequent pregnancies and discussion about the safest method of birth in women with previous caesarean sections. As the Porro procedure entailed removal of the major part of the uterus, pregnancy could not occur after this operation. However the classical caesarean section, as described by Sanger and Kehrer, and the lower segment operation, increasingly in favour from the 1920s onwards, and now universally practised, did not interfere with the woman's anatomy. Therefore they did not prevent further pregnancies. It soon became clear that many women who had an indication for caesarean in a previous pregnancy that was not present in a current pregnancy could successfully give birth vaginally (vaginal birth after caesarean section, VBAC). It also became clear that there were some potential risks in attempting vaginal birth after a previous caesarean, the most serious being rupture of the scar on the uterus from the previous caesarean. As the numbers of caesarean births have increased there has been great interest in the subject of VBAC and major efforts by obstetricians, midwives and health departments to encourage women to attempt it. Many women, and numerous obstetricians, have however preferred a 'repeat' caesarean – a subsequent elective caesarean section. Repeat caesareans now constitute about 10% of all Australian births and therefore a high proportion of all the caesareans done in this country.

Vaginal birth following previous caesarean section (VBAC)

In the last years of the 19th century and the early years of the 20th, there was much debate among medical practitioners as to the best way to manage a subsequent birth in a woman who had undergone a caesarean birth. Many physicians dealt with the problem by offering sterilisation to the woman at the time of the first caesarean – there was no other reliable method of contraception available at that time. There was a common and compassionate view summed up in the words of a London obstetrician, Professor A.L. Galabin, who, addressing the annual meeting of the British Medical Association in 1902, said: "I think it right to leave to the patient the decision as to

whether she should be sterilised for the future; considering that, if a woman is so formed by Nature, that she cannot bear a child spontaneously, she is entitled to ask to be relieved from the perils of artificial delivery."[1] However not all doctors offered such options, nor did all women want sterilisation, and numerous reports exist from the 1890s onwards of two or more caesarean sections performed in the same woman, with good outcomes for both mothers and babies. Galabin, later at that same meeting, stated that "(many) cases are on record of caesarean section successfully performed as many as three times on the same patient, and the results now obtained justify the advice that sterilisation not be carried out (routinely)."[1] He cited studies from the previous fifteen years showing 88 cases with two, 26 with three, five with four and one with five successful caesarean operations.[1]

Initially the only indication for caesarean section was a bony pelvis so contracted that safe vaginal birth was impossible.[2,3,4] Obviously this anatomical situation was unchanged from one pregnancy to the next and the indication for caesarean delivery persisted. However once indications relating only to a particular pregnancy were recognised as justifying the operation (such as eclampsia and placenta praevia) a different set of considerations prevailed at the time of the next delivery. It soon became clear that where the indication for the previous caesarean was non-recurrent, and where conditions were otherwise favourable, vaginal delivery could be achieved in one or more subsequent births.[5,6,7,8] However it also became clear that with attempts at vaginal birth there was a risk of rupture of the uterine scar during labour, and indeed this accident could also occur spontaneously in late pregnancy. Uterine rupture was often accompanied by the death of the fetus from hypoxia, and almost always by serious consequences for the mother including severe internal haemorrhage, hysterectomy and possible death. Between 1902 and 1908 several writers reported cases of rupture of the uterine scar in late pregnancy.[5,6,7,8]

In the *New York Medical Journal* in1916, Dr Edwin Cragin published an article entitled "Conservatism in Obstetrics."[9] Cragin was indeed a conservative, in his medical practice at least; he was a careful and cautious New York obstetrician who journeyed by horse-and-carriage to his patients' confinements at home, bringing his instruments in a velvet-lined case. After expressing his opinion that younger doctors were losing the obstetric skills of their predecessors (an opinion still being expressed

a century later), Cragin turned his attention to the subject of caesarean section. "With the present popularity of Caesarean section," wrote Cragin, "and its low mortality – in the writer's last seventy-three cases there was only one death and in the sixty-one cases just preceding this one there had been no death – we naturally ask the question, What is a conservative position to take regarding Caesarean section?" Cragin believed that virtually the only legitimate indication for caesarean surgery was a pelvis so contracted and misshapen, usually by rickets, that vaginal delivery of a live and healthy infant was out of the question. He was also very concerned about the possibility of rupture of caesarean scars in subsequent pregnancies: "One thing must be borne in mind, that no matter how carefully a uterine incision is sutured, we can never be certain that the cicatrised (scarred) uterine wall will stand a subsequent pregnancy and labour without rupture."

He then stated concisely: "This means that the usual rule is, *once a Caesarean always a Caesarean*." [9] Cragin was clearly a man gifted with both intelligence and insight, but it is unlikely that he foresaw how firmly this phrase would become embedded in the minds, not only of the medical profession but also of the general public, over the next hundred years. However, as already discussed, many other obstetricians were becoming more liberal in their approach to indications for the operation, and once it became clear that safe vaginal birth could follow in later pregnancies both the risks of attempting vaginal delivery, and the anticipated outcomes were carefully studied.

In 1921 an English obstetrician, Eardley Holland, published in the *Journal of Obstetrics and Gynaecology of the British Empire* an article entitled "Rupture of the Caesarean section scar in a subsequent pregnancy or labour."[10] Holland was concerned that if rupture proved to be a reasonably common complication of Caesarean surgery then "we should be contriving an operative technique which would give us a more dependable scar." He was also sympathetic to "patients wanting to know about their obstetric futures."

Holland's study consisted of two parts. The first was a series of 97 case reports of uterine rupture. The second was a retrospective study of women who had undergone caesarean section and whose subsequent obstetric history was known: Holland wrote to obstetricians in all major maternity hospitals in the British Isles seeking

information about patients who had undergone caesarean section in the years 1912-1918. He collected 1103 cases of whom 616 had no further pregnancies. There were 487 who had full-term pregnancies of whom 352 had repeat caesarean sections and 78 had successful vaginal births. Eighteen uterine ruptures were reported in either pregnancy or labour. From these figures Holland calculated a rate of 4% uterine rupture; his work formed the basis for most studies undertaken in following years.

Almost all the women in Holland's study had undergone a classical procedure or some variant of this, since the lower segment operation was still in its early stages of development and acceptance. As the lower segment operation became more widespread, it became apparent to practitioners that the scar of this procedure was less likely to rupture than a classical scar, was less likely to do so in pregnancy rather than labour, and that the rupture was more likely to be only partial with less risk of fetal death or major maternal morbidity. A 1948 study from Boston reported on 177 vaginal births following caesarean section; the rupture of classical scars occurred sixteen times more frequently than that of lower segment scars. [11] Another article, in 1949, entitled "Rupture of the transverse uterine scar after lower segment Caesarean section," reported an incidence of rupture of less than 1%; this was a prospective study making it unlikely that any cases were overlooked.[12]The lower segment operation was in any case becoming the procedure of choice for caesarean delivery and the safety of the scar simply contributed to its widespread acceptance.

In 1957 Dewhurst in Britain published two major papers on caesarean scar rupture in subsequent pregnancies.[13,14] The first was a report of ruptures of scar following both classical and lower segment procedures from his own hospital, St Mary's in Manchester, together with a case series from numerous hospitals of 79 ruptured classical scars, and 32 ruptured lower segment scars. The second was a meta-review that included his series and five others. He found an overall incidence of scar rupture of 2.2% for classical scars and 0.5% for lower segment scars. However he pointed out that the ruptured classical scar was more likely to be complete and to present with severe haemorrhage and shock in the mother, with the discovery of a dead baby when the abdomen was opened. Dewhurst, who later became President of the RCOG, and was already at that time an influential figure in British obstetrics, was very much opposed to allowing women with classical caesarean scars to attempt labour in

subsequent pregnancies although he encouraged women with lower segment scars to do so. He summed up his views by saying that "Only if the lower segment operation supersedes the classical almost exclusively can vaginal delivery be allowed with equanimity, and by so doing justify many of the temporary indications for Caesarean section."[13,14]

Dewhurst's work marked a turning point in the thinking of British and European obstetricians about trialling vaginal delivery after a caesarean had been performed in an earlier pregnancy. It became well accepted that where the operation had been a classical one, no such trial should be permitted. Where it had been a lower segment procedure, and the indication was not recurrent, an attempt at vaginal delivery *could* be made for future deliveries, in cases judiciously selected and under direct obstetric supervision in adequately equipped hospitals, where emergency repeat caesarean could be performed if required – in particular, if uterine rupture seemed to be occurring or to be imminent during labour. However not all doctors or hospitals offered this option to patients; in the 1960s in Australia the proportion of women with a single prior caesarean attempting vaginal birth was around 3% , and in the United States the idea of 'once a caesarean always a caesarean', which had been entertained by many doctors and their patients for more than forty years, continued to be widespread practice for women in whom the prior surgery had been a lower segment operations as well as for women whose caesarean had been classical.[15]

However the question of what was the best or safest way to give birth to a baby in a pregnancy following a caesarean section continued to be a widely debated one, in Australia as elsewhere, and the debate has become more intense as the rate of primary (first time) caesarean sections has increased.[15,16,17] For some women, all births will need to be by caesarean section because the reason for the first is still present in the second or later pregnancies, for example diabetes that is difficult to control. For many others though, the first caesarean will have been done for an indication particular to that pregnancy and not present in a subsequent pregnancy. Concern on the part of obstetricians and consumer groups alike to decrease the rates of caesarean section has fuelled a movement to increase the rate of VBAC, and thus to decrease the overall rate of caesarean sections; repeat operations are a major reason for a high rate of caesareans in all populations and account for 30% of caesareans performed in

Australia and around 10% of all births.[17] Much pressure has also come from health administrators because in immediate terms, vaginal births are cheaper than caesarean births.

Certainly at the beginning of the 21st century, many women *are* keen to try for a vaginal birth following a caesarean in a previous pregnancy.[16,17,18,19] Often, though not always, this is because the woman in her first pregnancy prepares mentally and physically for the natural onset of labour and a vaginal birth. Then in the course of pregnancy or labour, some unanticipated event occurs that leads her doctor to recommend a caesarean. The woman's birth plan is interrupted and this can lead to the feelings of failure described in Chapters 4 and 8, and even sometimes to postnatal depression. In a subsequent pregnancy the woman is often keen to try for a vaginal birth again, to 'make up' for perceived 'failure' on the previous occasion. It is important that such women are well counselled and keep an open mind about what may in fact happen. Earlier reports (in the 1990s) suggested that about three quarters of all women attempting VBAC would have a vaginal birth as the outcome of that attempt.[20] However, a recent very extensive study of women's hospitals across Australia and New Zealand showed that, in the period 2000-2003, only slightly more than 50% of women who attempted a vaginal birth after a previous caesarean actually ended up having a vaginal birth.[21] The remainder – a figure quite close to 50%- needed a second emergency caesarean during attempted labour because some risk to the baby, or the mother, or both, had developed; a similar figure was noted in Queensland's Maternity Services Review of 2006.[22]

At present in Australia around 60% of women with a previous caesarean scar currently attempt a VBAC – this procedure is also sometimes referred to as a 'trial-of-scar.' However there are wide variations between hospitals, with attempted VBAC much more common in public and teaching hospitals.[22] In the United States, the proportion of women attempting VBAC also varies widely between public teaching hospitals (where it is around 50% of women with a prior caesarean) and smaller private and rural hospitals (where in some cases it is not an option offered to women at all.)[15] The proportion of women with previous caesareans in the Women's Hospitals Australasia study who attempted VBAC was 58%, in the Queensland Review, 67%.[21,22] Many of these women do have an untroubled pregnancy and

labour, and the vaginal birth of a healthy baby – a good outcome for the woman and her partner, and for hospital administrators concerned about short-term budgets. However others have a labour that does not progress in the same way, and to ensure safe birth require a repeat caesarean as an emergency. There are more complications in the latter group and these cases cost more to the health system than those of women who have a vaginal birth. A planned repeat caesarean section after a single previous caesarean carries risks of complications similar to those of women having a successful VBAC, and certainly less than those of women who require an emergency caesarean during their attempt at VBAC. Counselling a pregnant woman who has had a previous caesarean section, and who is now trying to decide between a planned repeat operation and an attempt at a vaginal birth, neatly illustrates one of the dilemmas obstetricians face: steering a path between patient choice and the dictates of evidence-based medicine, to reach a happy outcome for all concerned.

There has not been any trial done in which pregnant women with a single prior caesarean were randomised to undergo either repeat caesarean or an attempt at VBAC, and it is hard to imagine that many pregnant women would agree to such randomisation, with no input of their own into the decision. The information that can be given to pregnant women about their chances of achieving vaginal birth, and the risks involved, is therefore based on less reliable evidence – observation of what has happened to other pregnant women. There are now many studies based on observation of women who have attempted vaginal birth following a caesarean, to support the view that VBAC after one previous caesarean is a safe procedure when it takes place in a hospital birth suite, in appropriately selected women under close observation by midwives and doctors.[23,24] It is also safest when the labour starts naturally, rather than being induced. However for those women who end up with an emergency caesarean section rather than a vaginal birth, the risks are considerably greater than if they chose a planned repeat caesarean section.

Studies of women's feelings about attempting VBAC have shown that attitudes are strongly related to their perceived chances of success. One study of 99 Australian women showed that only 53% would try VBAC when told that the chances of success were 70%; in fact, it has been established that the chances of vaginal birth are probably less than that.[23] Therefore women considering VBAC should be in

possession of accurate and unbiased information.[25,26,27,28] A history of a previous vaginal delivery in an earlier pregnancy, and a negative feeling towards the previous caesarean operation, were positively associated with acceptance of VBAC in several studies.[25,26,27] The major causes of negative feelings towards previous caesareans were the experience of post-operative complications or pain, and a long recovery period. For women who had undergone caesarean in labour either for some degree of fetal distress, or because labour did not progress, about half felt negatively about their previous caesarean, and half did not – these feelings are clearly reflected in the figures for women choosing to attempt VBAC quoted above. The convenience of a planned caesarean section and a fear of labour (even when there had been no labour in the past) were the strongest reasons for refusing VBAC.

Sydney midwife and childbirth educator Hannah Dahlen has written of VBAC: "There are many reasons why a woman may want to have a vaginal birth after a caesarean. Some of these reasons are to avoid the physical impact of caesarean section and others are the emotional desire to give birth vaginally to a baby. Since the early 1980s the rate of VBAC has risen steadily (in Australia.) When research showed its safety women voted with their feet. In the mid 90s there was again an increase in obstetricians promotion of elective repeat-caesareans as a safer option. The supposed increase in the safety of caesarean section over the years has certainly made this a more reasonable option for women. The main reason behind the declines in VBAC however is the risk of litigation. A couple of successful malpractice suits involving VBACs made obstetricians nervous and the fact that they rarely get sued for doing a caesarean makes elective caesarean a better option for them."[16]

It is now accepted Australian obstetric and midwifery practice to discuss the possibility of VBAC with a woman who has had a previous caesarean birth, early in her next pregnancy, so that she can consider all the facts, consult with her partner and friends, and reach a decision herself about her wishes for the forthcoming birth.[23,28] The well-informed woman with a caesarean section scar finds that there are advantages in VBAC (the satisfaction of achieving vaginal birth being the most commonly remarked upon), but also risks; likewise there are advantages in choosing a repeat operation (control over date and time of delivery, diminished anxiety about scar rupture, for example) but also some risks – the risks of what is still definitely

major surgery. Currently obstetricians find they spend much time discussing the pros and cons of VBAC and repeat surgery in attempts to find acceptable solutions for individual women and their partners.[28]

Initially the risk of rupture of the uterus during an attempt at VBAC was thought to be around 1%.[29] Uterine rupture is the most serious possible complication of VBAC as it can be catastrophic, even fatal, for baby and mother. Recent evidence from the United States suggests that in fact risks of uterine rupture during attempts at VBAC may be somewhat higher (although still a quite small percentage of VBAC overall) and in the United States the pendulum is starting to swing back, to some extent, against attempting VBAC. [30] There has also been a realisation that sometimes women are pushed into VBAC rather against their will – by other women or midwives advocating 'natural' birth, or doctors trying to reduce their caesarean rates, or hospital administrators anxious to decrease the immediate costs of hospitalisation. This has been the case in some institutions in the United States where a policy of trialling VBAC for every woman with a previous caesarean has been introduced. [31] However the overall costs of repeat caesareans are probably not greater than those of attempts at VBAC when the costs of emergency repeat caesareans are added in, as well as the costs of dealing with any long-term complications. In 1997, the editors of *The Lancet* wrote that " decisions about methods of birth should be made on the basis of what is best for women and their babies, not the desires of health administrators (or even doctors or midwives) to reduce caesarean section rates to an arbitrary figure set by a committee."[32]

In current Australian practice, when a woman does attempt VBAC, her labour is closely watched, because of the small but significant risk of uterine rupture. Women who have had at least one previous vaginal birth are more likely to have a vaginal birth again following a caesarean than are women who have never given birth vaginally. [25,33] Women attempting VBAC are counselled against birthing in midwife-led birth centres and certainly not at home – it is important that the woman be close to facilities where caesarean section can be repeated in an emergency. Most developed countries offer strict guidelines as to where and when a woman should attempt a VBAC, for example the American College of Obstetrician and Gynaecologists' guidelines which state that women should be in a hospital offering 24 coverage by

obstetricians and anaesthetists, operating theatre access and suitable surveillance in labour. [34] If the labour slows down, the baby shows signs of distress, or bleeding occurs, it may be necessary to abandon the trial and proceed to a repeat caesarean.

These guidelines have been questioned by groups such as Caesarean Awareness Network Australia (CANA), who have criticised the "stringent conditions attached to VBAC" in Australian hospitals. "Almost all research on VBAC occurs in tertiary settings with women subject to interventions," writes Caroline McCullough, spokesperson for CANA, in the magazine *Kindred*. [35] And she continues with what most obstetricians would regard as an extreme point of view: "If the push to curtail women's birth choices and expose them to all the risks of uterine surgery is based on clinician fear associated with rare and adverse outcomes, then it seems a matter of urgency that this problem is addressed through appropriate education and support. Practitioners need to be able to process traumatic events and move on if they are to adequately support the hundreds of women who do not experience adverse outcomes." Mc Cullough achieved a vaginal birth for her third child following caesareans for the first two, in a setting that did not comply with those recommended in Australian hospitals, and in her article "Vaginal birth after caesarean? Yes you CAN' makes it clear that she believes that her success is proof that the same outcome is likely for other women in her position. Certainly being highly motivated and well supported in a decision to attempt VBAC is associated with a greater rate of achieving vaginal birth. A large Canadian study demonstrated that "women with high motivation were much more likely to be successful, irrespective of the type of educational program they received."[36]

Advocates of VBAC can be extremely passionate about the benefits arising when vaginal birth is achieved. "The journey of vaginal birth after caesarean," wrote one, "is often long and involved, with twists and turns along the way. VBAC is certainly not all about 'the day of the birth' and that is something that many people who make unwelcome comments have not quite grasped. It is a story of growth, of reclaiming your birthright, of rediscovering who you really are." [37]

Elective repeat caesarean following previous caesarean

Around a third to a half of women with a previous section will choose a planned repeat caesarean in their next pregnancy.[21,22] While trial-of-scar after one caesarean is relatively safe, the chances of scar rupture increase if there have been two previous caesareans (although still low, probably about 2% overall according to various studies.) [38]A woman with two previous caesareans who has never had a vaginal birth needs to be well-informed about her chances of succeeding if she attempts VBAC in her third pregnancy – the chances of achieving vaginal birth are not high. Not all obstetricians will agree to supervise an attempt at VBAC after two previous caesareans. There are a few reported cases of women giving birth vaginally following three (or even more) caesareans but this is rare and most women in this situation plan a fourth caesarean if they become pregnant again.[38]

Increasing numbers of caesareans beyond two or three mean increasing risks of surgical complications for the woman in following pregnancies, as discussed in Chapter 8.This information needs to be given to all women who have had previous caesareans and are planning further pregnancies – the risks are quite small, but they are important. It has been suggested that there is an increased risk of ectopic pregnancy, miscarriage and stillbirth in pregnancies following caesarean sections but at least one large study has shown this not to be the case. [39] Most caesareans are done for sound medical reasons so the group of women having them will include a large number with health problems, which may anyway predispose them to miscarriage, stillbirth and even ectopic pregnancy. As well, when a woman is considering all the information she needs to make an informed decision about an elective caesarean in a current pregnancy, such information about possibilities in the distant future may not seem very relevant, and will be even less relevant to the woman and her partner who are told that an emergency caesarean is necessary and who have to make a rapid decision in stressful circumstances. Their concern will naturally be for the wellbeing of the present pregnancy, and the woman's health, and not for yet-to-be-conceived children in the future.

Is there some upper limit to the number of caesareans a woman can have? Today in Australia most women having caesarean births stop at two, some have three or four,

and a very small number up to six or more. With every operation the risks of uterine rupture in pregnancy, damage to bladder and bowel during the surgery, and haemorrhage, increase. A large study in Finland looked at women who had undergone up to ten caesareans; the authors did not prescribe an upper limit but noted that women experienced more pain during pregnancy, and were subject to more risks from the surgery, with increasing numbers of operations. This study also confirmed an increasing incidence of placenta praevia as numbers of caesareans increased.[40]

It is well recognised that women who have caesarean sections have fewer subsequent pregnancies than women having vaginal births and this has been used by some opponents of caesareans to justify claims that these women are put off having children by the experience of the operation or that caesarean interferes with subsequent ability to become pregnant. However the situation is more complex than that – amongst women having caesareans will be many with chronic conditions such as diabetes and hypertension, or infertility requiring IVF. Many such women will be very content with one or two children, and will therefore voluntarily refrain from planning future pregnancies, in a decision that is completely unrelated to the method of birth.

From the studies which have been done -- observational studies of women who have a second caesarean as a planned procedure following either an emergency or elective caesarean in their first pregnancy -- it is clear that these women face only low risks of complications.[41,42] Women who choose the elective caesarean option after an emergency caesarean in the first pregnancy are often very pleasantly surprised at how smoothly the whole process goes. They feel much more in control and recover well, in comparison to the first operation– which was usually done after they had been in labour for many hours, frightened by the thought of surgery, worried about the baby, and disappointed that they were not having a vaginal birth.

Conclusion

Repeat caesarean is one of the common reasons for caesareans today in Australia. This is despite quite strong encouragement by doctors, midwives, childbirth educators and professional bodies for women with previous caesareans to attempt VBAC in subsequent pregnancies. The figures for repeat caesareans include women who elect

from the start to have another caesarean, and those for whom there is a medical indication for another caesarean over and above the fact that there is a scar on the uterus. It also includes women who would like to have a vaginal birth, and attempt this, but for whom problems arise in labour that necessitate repeating the caesarean.

As noted above, in the past two to three years there has been a swing back from encouraging VBAC in the United States, and this may possibly be repeated in Australia. This is a subject of intense discussion amongst obstetricians and all those with an interest in childbirth. [41,43] As one obstetrician wrote recently:

"How many other specialties would recommend a management strategy with only a 50% rate of success? And at what level does the risk of an adverse outcome become strong evidence for an obstetrician to recommend a particular course of action? There are not only physical risks – bleeding, infection and so on – that must be discussed with the pregnant woman. There are also psychological considerations. On the one hand, achieving a vaginal birth may positively influence a woman's subsequent relationship with her child. On the other, the woman who has to have a repeat caesarean after attempting VBAC may feel she has 'failed', and have severe psychological consequences, particularly if she has set her heart upon vaginal birth as the outcome."[41]

As I have made clear, the debate around vaginal birth after caesarean section forms a large part of the debate over caesarean sections generally. If more women with one previous caesarean section attempted vaginal birth in following pregnancies obviously the number of elective repeat caesareans would decrease. However the number of emergency caesareans done for women attempting VBAC whose labours did not progress to spontaneous birth would increase concomitantly. Though the numbers of additional emergency caesareans in the latter group would not be as great as the number of elective ones in the former (because a proportion of women attempting VBAC would achieve a vaginal birth) there would be a number of complications amongst the women having emergency caesareans.

The motives of all those involved in providing care for women with previous caesareans also need scrutiny. As far as pregnant women themselves are concerned,

their decision to attempt VBAC should be a genuinely informed one. Doctors, midwives and childbirth educators should all be providing women in this situation with accurate and unbiased information about their alternatives. Ideally, this information should be firmly evidence-based. However, as discussed in Chapter 5, evidence at Level I is lacking because of the impossibility of conducting prospective RCTs in many real-life situations around caesarean birth. Health administrators encouraging VBAC because of short-term benefits in hospital costs should also be factoring in costs of emergency caesareans for failed VBAC attempts plus the costs of treating the later sequelae of VBACs.

While current Australian practice is to encourage women to try VBAC, if the real outcome figures are presented to women and they are asked to make a choice and assert their autonomy, many do choose an elective caesarean delivery. When a woman plans to have only two children -- and such women make up a large proportion of the current Australian population – and chooses an elective repeat caesarean knowing that the risks of surgery are low and that her pelvic floor is largely protected from the damage inflicted by vaginal delivery, 'the evidence' supports her decision. [25] When she chooses to try for a vaginal birth, knowing that there is a good chance of achieving this, and encouraged by her obstetrician, partner and family, 'the evidence' also supports her. [25] In practice, evidence-based medicine and patient autonomy can guide doctor and woman down two very different paths. Formerly it was believed that "once a caesarean, always a caesarean!" Today, in the words of Bruce Flamm, an American obstetrician who has written extensively about VBAC, it is more appropriate to say that "once a caesarean always a controversy!"[15]

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10. Conclusion

In this final chapter I will first summarise the information I have provided in the preceding chapters, linking the various aspects of the practice, history and social and political implications of the operation of caesarean section and analysing the relationships between these. My aim will be to provide a coherent and informed answer to the question of why the caesarean section rate in Australia, as in other developed nations, has reached a figure of 30% of all births. As part of this discussion I will attempt to answer the further question: is there a 'correct' caesarean rate and if so, what is it and how is that rate determined? I will also look at what the immediate future holds for the operation and whether any marked changes in the practice or the rates of caesarean section are imminent. This part of my discussion will look at whether physicians themselves, in particular obstetricians, are able and/or willing to make any changes in caesarean rates, and whether this is desirable.

My opening chapters reviewed the history of the development of the caesarean operation. The idea of abdominal birth has fired the *imagination* of generations of men and women, with myths and legend dating back to Antiquity. However the successful *practice* of the surgery was hampered until the latter part of the 19th century by a lack of understanding of the need for antisepsis in surgery, the absence of anaesthesia, and the consequent rudimentary state of surgical techniques. Traditional Judeo-Christian beliefs about the subservience of women, and the divine instruction that they should suffer in childbirth, also hindered progress in the development of the surgery. The operation was rarely performed before the end of the 1870s and was almost always fatal for both mother and child.

The discovery of the safe anaesthetic properties of various chemical agents, and the gradual dawning of understanding of germ theory and the need for antisepsis in surgical practice, meant physicians could venture into much more major surgical procedures than previously, with good outcomes. The first successful modern caesarean section is attributed to Eduardo Porro in 1876; this was followed by the introduction of the classical caesarean in Germany over the next six years, and the rapid spread of the use of both Porro's procedure and classical caesarean throughout

Europe, North America and Australia. By the end of the 19th century the operation had become an accepted obstetric practice, accounting however for less than 1% of all births. In the years 1900-1950, improved methods of anaesthesia, improved surgical techniques – in particular the introduction of the lower segment caesarean section – and general medical developments such as the use of intravenous therapy and blood transfusion meant that the caesarean became a safer operation, and therefore the indications were extended to cover many obstetric difficulties. The discovery and subsequent commercial production of antibiotics immediately prior to World War II, by combating puerperal sepsis, improved childbirth outcomes and thereby increased the safety and hence the rate of caesarean births. In the same time period, antenatal care and the involvement of physicians – often specialist obstetricians – in pregnancy and birth came to be widely accepted by women themselves, by physicians, and by midwives. It was understood that intervention during pregnancy or labour might improve the outcomes for both mother and child. By 1950, a caesarean section rate of 7% of all births was common to most Western countries.

Over the past six decades, caesarean section has become even safer for mothers and babies, thereby decreasing the number of medical objections against it. As a consequence, the number of indications for which it is considered an appropriate procedure has increased.

Over the same time period, developing technologies came to be increasingly applied to obstetrics as to other aspects of medical practice, a process now referred to as the medicalisation of childbirth. It was realised that technology offered the prospect of assessing the wellbeing of the fetus while in the womb – previously this had only been possible to a very small extent. Imaging of the fetus using ultrasound had by the 1980s become a routine antenatal practice, and ultrasound scanning is now an extremely sophisticated technique for investigating fetal growth and welfare. Other techniques such as electronic fetal monitoring and assays of hormonal levels in the mother's blood have also played a role in improving assessment of the fetus *in utero*. However the quality of the images now provided by ultrasound means that the pregnant woman and her partner can 'see' and identify with their child very early on in the pregnancy. The emotional link established means that women (and their partners) are more personally and directly involved in the physical and social

development and the mode of delivery of their child than they were in earlier years. Ultrasound scanning is now almost universal in developed and in many developing countries; its ubiquity has given women an increasing sense of control of the pregnancy, and an increasing sense of a right to a healthy, 'perfect', child. Ultrasound and other means of fetal assessment have also provided clinicians with more accurate information about complications of pregnancy, and enabled them to determine with great accuracy when a compromised fetus should be delivered. Both these factors have contributed to a rise in births by caesarean section.

Other technological developments, in particular the improvements in the paediatric care of very small and premature newborn babies, and the elaborate techniques used in IVF to overcome problems of infertility, have also contributed to successful outcomes to pregnancy in women who in previous years could not have hoped to have liveborn healthy children. Women with chronic diseases such as diabetes and hypertension have also benefited from new discoveries in treatments for their conditions that have made successful pregnancy possible. In all these cases birth by caesarean section has often been seen, by doctors (and parents), as the route most likely to lead to a healthy mother and offspring. It is therefore inappropriate merely to criticise the increasing rate at which caesareans are provided, without taking into consideration the fact that the number of women suffering from numerous chronic conditions who are now able to give birth has been increasing as well.

The years of the second half of the 20th century also saw other dramatic developments and innovations in the field of women's reproductive health. Effective contraception, in the form of oral contraceptives and safer and more reliable intra-uterine devices, gave women much greater control over their fertility; the legalisation of abortion in many countries also increased this control. The arrival of these measures both co-incided with and was related to the second wave of feminist thought and writing that spread across most developed nations from the mid-1960s onwards. Women could now decide if and when they would bear children, and how many. The ability to control fertility meant for many women that more education, and entry into many professions, were now possible options. It also meant that women were having fewer children, but increasingly were expecting that those children would be healthy both physically and mentally. Moreover, the age at which women embark on childbearing

has risen, at least in the developed world. Older women are less fertile, more likely to require some form of assisted reproductive technology to conceive, more likely to be overweight or obese, and more likely to suffer chronic conditions such as diabetes and hypertension – all factors tending to push up caesarean rates.

The provision of technology in pregnancy and childbirth, however, was initially not accompanied by an involvement of pregnant women themselves in decisions about how and why that technology might be used. Increasingly, from the early 1980s onwards, the voice of women as consumers was heard – demanding a more natural approach to childbirth, a decrease in what was seen as the indiscriminate use of technology, and the ability to be involved themselves in making decisions about what might happen to them in pregnancy. Women (or at least a large proportion of them) wanted to have *choices* in childbirth, and they wanted to feel in *control* of this process of choice. They were supported in these demands by midwives, who had always played an indispensable role in the care of women in pregnancy and childbirth but had not always had that role acknowledged. They were supported also by increasing numbers of physicians.

At the same time, there appeared in the practice of medicine generally the concept of evidence-based medicine. Over the past three decades it has become accepted by all health professionals that medicine should be practised according to the 'best' available scientific principles and information. In theory, the 'best' such information is obtained by conducting blinded and randomised controlled trials. In practice, it has often been necessary to use what is seen as less reliable evidence. This has been particularly the case with surgical procedures and above all with caesarean section, an operation that involves two people and an enormous emotional component. Thus much practice of caesarean surgery has been based on traditional methods of trial-and-error, and common sense, as well as 'lower-level' evidence, Level II and III evidence. As well, the complex nature of caesarean surgery, with its physical, pathological, emotional, social and political aspects, has meant that while many good scientific studies of single issues involving the surgery have produced clearcut results, when these various strands are woven together there is not always a definite answer as to whether 'the evidence' indicates that a caesarean section is appropriate treatment for a particular woman. However, where solid Level I evidence exists, as from the

Term Breech Trial, that evidence points unequivocally in the direction of caesarean section.[2]

On the face of it, there is also an inherent contradiction in the simultaneous acceptance of both the need for evidence-based medicine, and the need for choice. This contradiction applies to the practice of medicine generally and the practice of caesarean section in particular. If 'the evidence' points incontrovertibly to one course of action then it would seem that the responsible physician should recommend that course, and only that course, to his or her patient. But principles of patient autonomy would appear to dictate the need for patients to choose from a number of options that might simply include that most supported by 'the evidence.' This is particularly so in the case of intervention in childbirth. I have made clear in Chapter 5 that, in obstetric and midwifery practice, both physicians and midwives have been selective in what they choose to research as well as what they choose to use in support of various position statements on how pregnancy and childbirth should be managed. They have also differed in their interpretations of the same 'evidence.' In Chapter 9 I have used the practice of VBAC, and the decision-making around it, to illustrate graphically how 'the evidence' derived from many well-designed scientific studies of VBAC can support both a woman's 'choice' of attempting VBAC, and her 'choice' of not doing so.

A further complication arises because the physician is practising, and the patient giving birth, in the real world, and in this world if the outcome of the pregnancy is not what is expected and hoped for by the woman and her partner, she can, and often does, have recourse to the law. This possibility is well understood by all practising obstetricians and has been shown to influence their beliefs about their recommendations to patients, and their decisions about intervention in pregnancy or labour designed to forestall an adverse outcome and subsequent legal proceedings. Obstetricians, being human, are also motivated by a desire to lead a normal lifestyle, with adequate time for rest, recreation and family life, all the while pursuing a successful career in obstetrics. This has been particularly the case as increasing numbers of women have entered the specialty and sought to combine their careers with motherhood and family life. All of these factors have impacted on the decisions

of obstetricians to recommend caesarean section to women under their care, and on the inclinations of women to accept or agree with these recommendations.

All these aspects of the medical, social and political history of the operation of caesarean section are reflected in many other areas of medical care, and this has been referred to throughout my text. The discovery of anaesthesia, and the understanding of germ theory and of the need for antisepsis, enabled the rapid development, in the second half of the 19th century, of all types of surgery; the introduction of intravenous therapies and blood transfusion techniques further increased the possibilities of surgical cures for common conditions and diseases. The 20th century has seen enormous growth in the application of technology to all medical specialties, with many positive results. The need for a sound scientific basis for all medical treatments, in the form of evidence-based medicine, is now accepted throughout the medical profession – though it continues to be an area for much debate. The role of the patient in decision-making around care is widely acknowledged, and the possibility of discrepancies between what 'the evidence' shows, and what individual 'patient choice' decides upon, exists in many areas apart from obstetrics. The resort of patients to litigation in the event of an unfavourable outcome to treatment is well recognised in other specialties especially orthopaedics and plastic surgery. However in most other areas of medicine, there are patients who are ill, or at least believe themselves to be so, and there are treatments available that may or may not be effective, and decisions are made on the basis of information about these treatments. There is nothing in other areas of medicine that corresponds to the role of natural vaginal birth when it is compared to caesarean birth. Caesarean section therefore, though resembling other forms of surgery or medical intervention in some respects, nevertheless occupies a unique place in modern medical practice.

It is clear that there continue to be fundamental differences between how physicians see pregnancy and birth, and how midwives do so. Though there is agreement on many points, and an increasing tendency in both professions to see the roles of each as complementary, much tension remains and frequently finds expression in the debate, in the general media as in the medical literature, about rates of caesarean section, about whether some or many operations are 'unnecessary', and if so what should be done about it. It is likely that this tension will continue, at least to some extent, for the

foreseeable future. Those in the 'natural' camp (mostly midwives, consumers, and some physicians) will continue to research, publish and read articles supporting their point of view; those in the 'interventionist' camp (mostly but not exclusively physicians, and including increasing numbers of consumers) will likewise tend towards material supporting their existing opinions. The 'interventionists' are often heard in the media because of the development of some new technology or the announcement of some new research finding; the 'naturalists' are equally vocal in their demands for a 'return' to more 'natural' birth. These two groups tend to occupy opposite ends of the spectrum of views on the management of pregnancy and childbirth. In between the two poles are many women (and men) who do not hold strong views, but who are never publicly heard from. Amongst these people (in fact the majority of the population) a decision about caesarean birth will be seen as purely a private matter between a woman, her partner and her doctor. If there are medical reasons, or medico-social reasons, which seem compelling to them, they will agree to, or even request, the surgery. The strict division of pregnant women into those in the 'natural' camp and those in the 'interventionist' or surgical arena is more apparent than real -particularly in the lay media. There will always be women who have strong medical indications for caesarean birth, women who have relative indications, women who request the surgery with few or no indications, and women who wish to avoid it at all costs. Blanket assertions about 'what women want' – from all parts of the spectrum – are misinformed.

The future of caesarean section

What are the prospects for caesarean section? Does it seem likely that the caesarean rate will plateau? Or rise even further? Can obstetricians themselves bring about a fall in caesarean rates?

What is the 'correct' caesarean rate? One definition of this can be given in purely theoretical terms. With a 'correct' caesarean section rate all mothers and babies at risk of death or serious harm from pregnancy or childbirth would be saved from dying or being damaged by the operation, and all those not at risk would have vaginal births. It sounds simple. But as I believe I have shown in my discussion and arguments to date, in the present state of obstetric knowledge, and with current concepts of choice in

childbirth, with the need to practise evidence-based medicine, and with the possibility of litigation for less-than-perfect outcomes, it is not simple. Many factors play a role in the decision for surgery in every single case of caesarean section performed in Australia.

In 1995, a recommendation from the US Department of Health and Human Services set a goal of reducing the caesarean rate across America to 15% by the year 2000.[1] This figure has since been often quoted (though obviously was never reached in the US). But on looking more closely at the recommendation it becomes clear that this is a purely arbitrary figure, with no basis in the scientific study of the reasons why caesareans are currently being performed. It seems to have been chosen because it was mid-way between the rate at the middle of the last century (7%) and the rate at the time it was selected (around 25%).[2] Nowhere in the associated documents is there any direction as to which particular caesareans should not be done. It should also be evident to non-physicians as well as to those with medical training and experience that a 'correct' rate, or even a 'desirable' rate, will be very much determined by the population under consideration and the medical facilities available.

Can obstetricians reduce caesarean rates? I will now look closely at the various reasons caesareans are currently performed in Australia, and at whether the numbers of these can conceivably be reduced by doctors.

Medical indications

Out of every 100 babies, about 4% will be breech presentations. We have already seen that the combination of the findings of a randomised controlled scientific trial (the Term Breech Trial), and obstetricians' concerns about potential litigation for a damaged baby, means that currently almost all these babies are born by elective caesarean section. Are we likely to discover a method of telling which ones are at risk of vaginal birth becoming dangerous, and which are not? To date, all efforts in this direction have been unsuccessful – estimations of the size and weight of the baby are just that, estimations, and there are many other factors involved in vaginal births, including the strength of the contractions and the shape of the woman's pelvis, which can also only be estimated before the event. So anticipating that a baby may have a

safe vaginal arrival will remain simply an informed guess for the foreseeable future. Nor is any way of increasing the success rate of external cephalic version, or any other method of converting the baby into a head-first position, on the horizon. The practice of caesarean for breech presentation seems here to stay.

Similarly, there is unlikely to be any change in the recommendation for caesarean for the present major indications for the operation such as severe pre-eclampsia or antepartum haemorrhage. A breakthrough in our knowledge of the causes of pre-eclampsia, and with it a definite cure for the condition, so that the pregnancy could continue and labour start spontaneously at term, would certainly make a difference. However, despite intense study of the condition over the past 150 years, during which time knowledge of pre-eclampsia has greatly increased, its basic cause is still unknown. The treatment – lowering the blood pressure and delivering the baby, often by caesarean section – is essentially unchanged. Similarly, antepartum haemorrhage is likely to continue to be an indication for caesarean. If fewer first caesareans are done then there will be a slight decrease in the need for subsequent caesarean for placenta praevia, but only slight. Bleeding from abruption of the placenta can be expected to occur at the same rate it currently does. Cord prolapse will continue to happen. Diabetes and hypertension are actually on the increase in our population, as is overweight and obesity. The fact that women are tending to postpone pregnancy until they are older than in previous years means that there are increasing rates of these conditions complicating pregnancies and predisposing to caesarean births. All these very definite medical indications for caesarean delivery account for another 12-15% of all births.

Caesareans done in labour for fetal distress are the most potentially amenable to having their numbers reduced in the near future. The ability to use some method of *continuous* measurement in labour for women whose babies are known to be at risk of getting too little oxygen does seem to have the possibility of reducing the numbers of caesareans done for 'fetal distress' that after the event appear to have been unnecessary. Research in this field is proceeding at an exciting rate. But exactly when such tools will be universally available to us is not known at present.

There is also some potential for reducing the number of caesareans done for 'failure to progress' by being meticulous in inducing labour only for medical reasons, allowing some women who can safely do so to continue longer in labour, providing personal support and pain relief such as epidural if requested, and using Syntocinon to increase the strength of contractions when these appear to be ineffective. Such actions need to be balanced against the need for agreement of women themselves, and against the possibility that genuine fetal distress may occur and operative vaginal delivery using forceps or the vacuum extractor be attempted when caesarean would have been safer.

Most Australian hospitals undertake audits of all caesarean sections done in their institutions to ensure that indications for procedures are genuine and to try to lower caesarean rates. One such project began in 2003 in a large regional Australian hospital.[3] It sought to examine carefully the reasons for every caesarean within a week of it being performed, and to audit all decision-making leading to caesarean section. At that time it began the caesarean rate in the hospital was close to 30%. The hospital admitted public patients only and had a policy of not performing caesareans simply on maternal request. The hospital does however care for a large number of indigenous women with poor health and previous medical problems including heart disease, diabetes and infections, which necessitate some intervention in pregnancy. All staff participated in the project, which was an uncomplicated audit and not in any way critical of how women had been managed during their pregnancies. Four questions were used in the study:

- If failure to progress was the indication for the caesarean was a partogram used?
- If breech presentation was the reason for caesarean was ECV (spell out) offered first?
- If fetal distress was the reason what did the CTG show and was scalp blood sampling performed?
- If the caesarean was an elective repeat procedure (because of a previous caesarean) was an attempt at VBAC appropriate and if so was it offered?

With careful examination of all these factors, it was found that the caesarean rate dropped from 30% to 26%. With greater consideration of whether 'fetal distress' or

'failure to progress' were really present, and with greater input from more senior doctors, it was possible to reduce the number of caesareans slightly. However, despite continuing with the audit physicians at this hospital found that the caesarean rate soon crept back up to 29%, and other centres have described similar experiences. A large teaching hospital in the Netherlands reported an audit of reasons for caesareans in 2005-2006 in which it was decided that around 7% of operations could have been avoided (7% of all caesareans, not 7% of all births).[4] During the audit period the overall caesarean rate fell from close to 24% to 19%. Similar findings have been reported from numerous hospitals elsewhere in Europe, the United Kingdom and Canada, however by the time the audit period ended the rate had often risen again.[5] It is clear from all these studies that although the rate can be lowered somewhat the decrease is of minor extent and may not be permanent. There is also the possibility that some of the women for whom caesarean section was not performed, and their babies, may in fact have benefited from it. If a decrease in caesarean rates is accompanied by an increase in the complications of vaginal birth then the best interests of mothers and babies are not being served.

The Guidelines on Caesarean Section published by the UK National Institute of Clinical Excellence (NICE Guidelines) in conjunction with the RCOG make several clear recommendations to obstetricians as to how to reduce the likelihood of caesarean section in their practices.[6] They include:

- Offering ECV to women with a breech presentation, unless there is a medical reason not to do so.
- Informing women that having support during labour, particularly from other women, reduces the likelihood of caesarean section.
- Using a partogram during labour so that it can be clearly seen whether labour is really slowing down or not.
- Involving consultant obstetricians in the decision for caesarean section, and seeking second opinions in the case of elective caesareans.
- Using fetal scalp blood sampling in cases where CTG shows an abnormal fetal heart trace, unless there are medical reasons not to do so.

However even rigorously applying these guidelines will only make a modest difference to caesarean rates. Not all women with breech presentation will agree to ECV, for understandable reasons, and its success rate is not high; scalp blood sampling is not always available and only reflects the situation at a particular point in the labour; inducing labour is not always followed by vaginal birth. The NICE guidelines cover the same possible areas of practice as those in the studies described above: there is obviously a consensus among obstetricians as to where decreases may safely be made in caesarean rates, but their application in practice is not always successful at bringing about lowered rates.

Repeat caesareans make up about 10% of all Australian births, and reducing these would have an impact on the overall caesarean rate. If more women attempted VBAC there would be more vaginal births, certainly, but there would also be many failed attempts and more complications from emergency caesareans done in labour.

As far as caesarean on request is concerned, this appears to be a phenomenon that is here to stay, and which overlaps with many minor reasons as the indication for increasing numbers of operations. Is it true that women requesting caesarean are being "selfish", as their critics have alleged? On the contrary, women making this decision would say that they see themselves as making a reasonable and informed reproductive choice, and while they might spend a few days longer in hospital after a surgical birth, and cost a bit more to the health services now, they will not need the surgery and other treatments for prolapse and incontinence that women who have had vaginal births will be going through in later life. So allowing women choice in childbirth, which all are agreed is important, means that it must also be accepted that some women, well informed and thoughtful, will make a choice for caesarean section when medical indications are either not present or are relatively minor. The obstetrician who denies a woman the caesarean she requests, especially in private practice, will be very conscious that if a serious complication arises, he or she may be held to be at fault. Moreover, attempting to deny these women the birth method they choose may be seen as taking an 'authoritarian' approach towards choice in childbirth.

The desire for a perfect child is not going to change. Women and their partners will continue to expect the best possible pregnancy outcome, and this will continue to

influence both their acceptance of technology in pregnancy and during birth, and the concern of their doctors about the possibility of litigation. Understandably, having achieved the degree of control of reproduction that they now have, women will not be prepared to relinquish that control. Indeed, attempts by obstetricians to limit the practice of caesarean on request, and to make more paternalistsic decisions in the areas of fetal distress and failure to progress, may be interpreted by some women as a return to the paternalism of the 1960s and 70s. As Richard and Dorothy Wertz have remarked: "Two dominant values shared by women and doctors alike thus shape most of today's births: the desire for the perfect child and the growing belief in unlimited freedom of choice."[7] To this comment should be added that overwhelmingly studies of women and childbirth demonstrate the tremendous desire of women during pregnancy and childbirth to feel *in control* of what is happening to them, and involved in decision-making; there is a strong belief that the decision taken should result in the best possible outcome for the child.

Although 'evidence' will continue to accumulate, many more studies being added every week to the already vast archive of knowledge about childbirth in general and caesarean section in particular, this is unlikely to bring about great change in the practice of caesarean surgery. While there are occasional very original and important breakthroughs in knowledge, most published research advances understanding very little. Findings are diffuse enough and studies sufficiently varied in their conclusions to enable practitioners from every position on the spectrum of opinion to locate 'evidence' which supports their point of view. There are undoubtedly useful scientific discoveries to be made, and I have mentioned a few, but there is no rigid and 'absolute' truth to be revealed about the practice of caesarean section.

Given all these factors, I would predict that the caesarean section rate in Australia will remain at a minimum level of 25%, in public practice at least, until there are breakthroughs in the treatment of pre-eclampsia and in the more accurate diagnosis, and possible treatment, of fetal distress. In the private sector the rate is likely to be higher since caesarean on maternal request is more common there, although it may also rise as a phenomenon in the public sector if consumer demand becomes stronger.[8,9]

Conclusion

In conclusion, I would emphasise once more one of the main messages of my research into the subject of caesarean section as currently practised in Australia and other developed coluntries: the importance of women being well informed early in pregnancy about all the possible reasons why they may have to make a decision about caesarean section as a method of birth for themselves. Caesarean section is not 'natural' birth, but when more than a third of Australian women are giving birth in the operating theatre, it must be said that it has become a *normal* birth method. Certainly all those involved in the provision of care for pregnant and birthing women should seek to (safely) lower the caesarean rate whenever possible in practice in this country. But it is equally important that women are also fully understanding of caesarean birth, so that they can if the need arises feel *involved* in decision making, in control and understanding of what is happening to their bodies, and ultimately can enjoy a satisfactory birth experience. Australian women have demonstrated that they do wish, when they can, to have 'choice' in childbirth as well as the 'perfect child.' Healthy happy mothers and babies are Australia's investment for the future.

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