



postnote

October 2002 Number 184

CAESAREAN SECTIONS

One in five births in the UK are now by caesarean section (CS). Public debate has focussed attention on how medical staff and/or mothers decide on a CS birth. The impact of CS on maternal and child health, and the high cost of CS compared with vaginal birth, make this a public health issue. Policies are set at a local level, leading to a wide variation in practice. The Government has recently recognised a need for national standards and clinical guidelines in this area. This briefing examines reasons for the increase in the CS rate and implications for health policy.

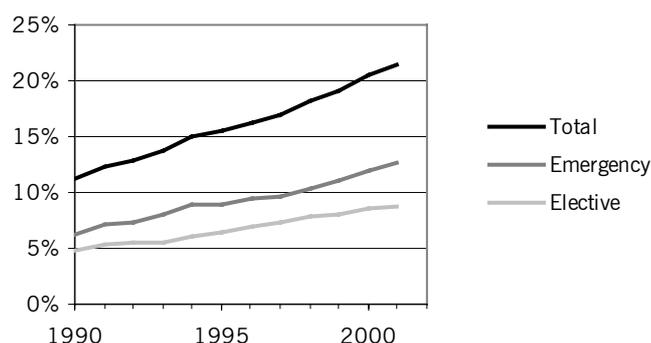
Caesarean section rates

A caesarean section (CS) is a surgical process where birth is through an incision in the wall of the uterus, rather than through the vagina. In the 1950s, 3% of births in England were by CS. By the early 1980s this had risen to 10% and in the 1990s rates started to climb rapidly, from 12% in 1990 to 21% in 2001 (see graph opposite)¹. These national figures mask local variations where the CS rate ranges from 10% to 30% between hospitals². The number of elective CS (where the decision to carry out CS is taken before labour starts) has risen more slowly than the number of emergency CS.

In 2000, the Department of Health (DH) commissioned an audit of births to obtain reliable and detailed information on CS³. The audit found that over 85% of CS were carried out for one of four primary reasons: repeat caesarean, presumed foetal distress, failure to progress and breech birth (see box on page 2).

Looking overseas, a lack of consistent data makes international comparisons difficult. However, the CS rate of 21% in England is broadly in line with other western European countries such as France and Germany. By comparison, rates in Scandinavian countries and the Netherlands are considerably lower at less than 15%. In some South and Central American countries, such as Brazil and Chile, rates are considerably higher at ~40%.

Caesarean sections as a % of all births in England



Source: Department of Health

Factors contributing to the rise in CS rates

The most common reason that women in England give birth by CS is because a previous birth was by CS. So, the overall CS rate is increased significantly by the increasing number of women who have a first, or primary, CS.

Medical factors

There are some possible medical explanations for the increase in first caesareans. For example:

- clinicians vary in the way they manage labour, which will affect the local CS rate (see box on page 2).
- the proportion of breech babies (3-4%) has not increased but there is now some evidence suggesting that an elective CS is safer for breech babies.
- the increasing use of in vitro fertilisation (IVF) has led to an increase in the number of multiple births, and these babies are usually delivered by CS. However, IVF accounts for only ~1% of births in England each year. Furthermore, the Human Fertilisation and Embryology Authority has decided that the number of embryos implanted during IVF should be reduced from three to two. This is likely to decrease the number of multiple births resulting from IVF.

- the proportion of older mothers has increased (in 1975, 6% of mothers were 35 or over; in 2000, 16% were 35 or over) and these women are more likely to have a CS. However, a similar demographic shift has been seen in Scandinavia and the Netherlands without a comparable increase in caesarean rates.
- some clinicians have speculated that there may have been a real increase in foetal distress and failure to progress although there is no evidence for this.
- developments in surgical techniques and medical care have made CS an increasingly safe operation.

National Sentinel Caesarean Section Audit

The National Sentinel Caesarean Section Audit was commissioned by the Department of Health³. It collected data on 99% of births that took place in England, Wales and Northern Ireland over a three month period in 2000.

Repeat caesareans contributed 29% to the overall CS rate. Of women who had previously had a CS, 33% had a vaginal birth. However, in clinical trials ~70% of women have been found to be able to have a successful vaginal birth after caesarean (VBAC). In the Audit, the VBAC rate varied from 6% to 64% between maternity units.

Presumed foetal distress contributed 22% to the overall CS rate. Continuous electronic foetal heart monitoring (EFM) was introduced to measure foetal distress; it was hoped this would reduce deaths during birth and the incidence of cerebral palsy. However, while the use of EFM has been directly associated with an increase in CS, it has not led to better health outcomes. Clinical guidelines produced by the National Institute for Clinical Excellence in 2001 state that EFM should not be used with women who have had low risk pregnancies; define how EFM should be interpreted; and state that where foetal distress is suspected this should be confirmed by foetal blood sampling before proceeding with CS. In the Audit, use of foetal blood sampling to confirm foetal distress varied from 11% to 100% between units.

Failure to progress in labour contributed 20% to the CS rate. Any labour that appears to be progressing slowly could fall into this category. This could be linked to weak contractions or a lack of cervical dilation. In cases of suspected failure to progress, drugs such as oxytocin can be given that increase the strength of contractions. Again the Audit found wide variation in practice with oxytocin use prior to CS varying from 47% to 100% between units.

Breech births, where the baby's bottom would be born first, contributed 16% to the CS rate. 88% of breech babies were delivered by CS. This proportion may increase further with the recent publication of the Term Breech Trial, a high profile (though not uncontested) study that found elective CS reduced deaths of breech babies significantly. It is possible to turn breech babies round into a head down position, but the Audit found that this was offered to only 33% of women.

Other indications for a CS included **maternal age** (for mothers aged under 20 the CS rate was 13% compared to 33% for those aged 40-50), **multiple births** (59% of twins and 92% of triplets were delivered by CS), **low birthweight** (for babies weighing less than 2500g the CS rate was 39%) and **maternal choice** (the primary reason for 7% of caesareans was maternal request - this ranged from 2 to 27% between units and accounted for 1.5% of all births).

63% of all CS were emergency and 37% elective. Most **elective CS** were accounted for by repeat CS, breech presentation and maternal request; and most **emergency CS** by presumed foetal distress and failure to progress.

Non-medical factors

Culture and organisation

In some situations there is no alternative but for a birth to be by CS. However, in most cases, the decision to go for a CS is a finely balanced judgement made by clinical teams and the mother. The culture within a maternity unit and the way in which the staffing of the maternity service is managed has considerable influence on the CS rate, leading to a wide variation in rates between hospitals (see box below). For example, lower CS rates are seen where women are given one to one care through labour by the same person; where consultants are involved with decisions to carry out CS; and where there is a hospital culture that takes pride in low CS rates.

Maternal choice

Following the choice by several celebrity mothers to give birth by CS, media attention has promulgated the notion that these women are 'too posh to push' and that the rise in CS rates can be attributed to women's lifestyle choices. NHS obstetricians report that they agree to around half of requests for CS in the absence of medical need, accounting for 1.5% of all births.

Women's reasons for choosing CS are complex, as shown by the situation in Brazil (see box, page 3). In the UK, it has been suggested that many women who request CS have a genuine fear of labour. Counselling can overcome these anxieties, although there is concern that moving beyond the provision of information to counselling represents a paternalistic approach, persuading patients of what is right for them. On the other hand, some argue that because of the risks associated with the operation, it is unethical to carry out CS where it could be avoided.

Variation in CS rates between hospitals

The CS rate at the Royal Shrewsbury Hospital Trust is one of the lowest in the country at 10%. This is the result of a long-term policy of treating pregnancy and labour as normal processes leading to a vaginal birth, unless there are clear indications otherwise. 25% of births take place at home or in low-risk units managed by midwives. The local population is familiar with this approach to birth. Protocols for managing labour have been in place for 8 years and are adopted by all staff. These are evidence based: local statistics show that vaginal births for breech babies at Shrewsbury are safe and this is therefore normal practice; the final decision to carry out CS must be made by a consultant as less experienced obstetricians are more likely to opt for CS; and women with previous CS are encouraged to have a vaginal birth as evidence shows that most are able to do so. Women have little freedom to express a preference for CS within this structure.

Neighbouring North Staffordshire Hospital NHS Trust has an above average CS rate at 24%. Obstetricians make individual decisions about when to carry out CS. This allows them to respond flexibly to the needs of individual patients. Where a woman expresses a preference for an elective CS the reasons are explored and alternatives (e.g. pain relief) discussed. The woman is given information about the known relative risks of CS and vaginal birth and makes the final choice. On the basis of available evidence, few women choose VBAC or vaginal birth for breech babies. The hospital is concerned that its overall CS rates are too high and regularly audits and discusses them.

CS rates in private hospitals are often higher than in the NHS (e.g. 44% at the Portland Hospital in London), although health insurance companies such as BUPA and PPP cover only CS that are carried out for medical reasons. As only 0.5% of births take place in the private sector this has little impact on national statistics. The high CS rates for private sector hospitals reflect an international trend.

Litigation

The rise in CS is sometimes attributed to clinicians' fear of litigation. Between 1995 and 2001, some 80-90% of the 2,821 claims in obstetrics and gynaecology were related to damage caused to the baby at birth, most commonly cerebral palsy (CP). CP affects around 1 in 400 children: 10% of cases are thought to be caused at birth, some of which will have been caused by clinical misjudgement or negligence. Claims for incidents leading to CP are very expensive for the NHS because the settlements must provide education and care for life. The NHS Litigation Authority handles all claims and individual clinicians are not financially liable. However, if clinical negligence is proved this could lead to disciplinary action and the litigation process may be stressful for the individuals concerned.

Why has the CS rate gone up?

Evidence now suggests that CS may be safer for breech births. However, of the other three major indications for CS (failure to progress, foetal distress, repeat caesarean) there is no evidence to suggest that the increase in CS has led to better outcomes for mothers or babies. Despite this, the CS rate continues to rise.

The variation in CS rates between obstetricians and between maternity units shows that there are many other factors than straightforward informed choice at play. Research carried out in Brazil (see box below) illustrates that the influences on decisions about CS are many and complex. In the UK, it is not possible to separate out isolated factors that have led to the rise in CS rates. A combination of the clinical, cultural and organisational factors outlined above are thought to have all contributed.

Caesarean sections in Brazil

In 1970, 20% of births in Brazil were by CS and this has now risen to ~40%. In the private sector, where one quarter of births take place, CS rates are over 80%. It has been suggested that Brazilian women choose CS for reasons including the respect with which technology is held in Brazilian society; the facility for sterilisation to be carried out simultaneously; and a desire to avoid any risk of loss of vaginal tone, which they (or their partners) believe could affect their sex lives. However, recent research has found that the obstetrician's influence over a woman's decision has been underestimated. Elective CS are timetabled to suit the obstetrician and earn the same income as a vaginal birth with less time commitment. With wealthier women encouraged to have CS by their obstetricians, poorer women who rely on public healthcare come to see access to CS as indication of high quality care and actively seek such intervention for themselves.

Policy considerations

Evidence on safety

There is a growing range of evidence showing adverse long-term effects of CS for mothers (see box on page 4). For babies, CS can be safer in some circumstances (such as breech) but there is no evidence that this applies generally. Babies are at a higher risk of respiratory disease where they do not experience labour contractions at birth. This risk increases progressively the earlier before the full 40 weeks gestation that CS is carried out.

In the National Sentinel Caesarean Section Audit, nearly all mothers said that their first priority was a birth that was the safest and least stressful for their baby, followed by their own safety. Perceptions about the relative safety of vaginal and CS births were not explored. Most obstetricians agreed that elective CS was not the safest option for the mother but were divided over whether it was safer for the baby. There appears to be a need for a better understanding of the relative risks associated with vaginal and CS births to support decision-making. The existing evidence is of variable quality and has not been drawn together to make it easy for mothers and clinicians to evaluate the relative risks of the various options or for clinicians to develop their practice to reduce risks.

Choice

At the moment, women are likely to receive different responses to requests for CS at different maternity units. DH has yet to consider if it is possible, or desirable, to define situations where women can demand CS. The key questions are whether an elective CS is likely to be safer for the mother and for the baby than a vaginal birth and whether a woman should be allowed to choose a method of birth that may not be in her best interest and of no benefit to her baby. The answer is unlikely to be determined simply on the basis of ethics and evidence, but is also a question of resources and cost effectiveness.

Cost effectiveness

A CS costs hospitals an average £1,701 while a vaginal delivery costs an average £749. The Audit Commission has estimated that a 1% rise in CS rates costs the NHS an extra £5million/year⁴. Some have suggested that, where women choose CS for non-clinical reasons, they should be charged the difference. However, any costs associated with long-term complications are potentially more significant and there is concern that the long-term effects of CS on mothers are not fully taken account of when decisions about CS are made.

Data

Reliable national statistics are important if current practice is to be evaluated and policies developed for the future. However, the national statistics published by DH in 2000-01 covered only 67% of births. The one-off audit of CS in 2000 aimed to fill this knowledge gap but there are no plans to repeat such an exercise³. The problem lies with the format in which statistics are collected by hospitals and collated centrally. DH is investigating how to collate maternity records that are submitted in a non-standard format.

Developing policy

Approaches to policy development

There is a general consensus amongst clinicians that a high CS rate is undesirable. One way to respond to this would be to set targets for a reduced CS rate. In 1985, the World Health Organisation (WHO), prompted by concern over rising CS rates, stated that there were no additional health benefits associated with a CS rate over 10-15%. This range was based on the CS rates in those countries with the lowest mortality rates. At the time, the CS rate in the UK was 10%. However, few countries now have CS rates below 15% and, were WHO to repeat the exercise now, it would arrive at a rather higher range. This highlights the difficulty of setting valid and useful targets. Nevertheless, the United States set targets in 1991 to reduce the primary CS rate to 15% and to increase the VBAC rate to 40% by 2000. Progress was made towards these targets until 1996 when, for reasons that are unclear, the trend reversed. By 2001, CS rates were the highest ever reported in the US at 24%.

The Royal College of Midwives (RCM) is concerned that a high CS rate does not represent best quality care. RCM are looking to DH and the National Institute for Clinical Excellence (NICE) to define best care standards and clinical practice, with the expectation that this will lead to a reduction in CS. DH has decided that the wide variation in practice that has resulted from local decision making on CS is unacceptable and sees a need for national policy across England, as described below⁵.

Caesareans: health implications for the mother

Maternal illness

Women will be in discomfort following surgery (which can make caring for a new baby difficult); some will suffer wound infection. In the longer term, CS can reduce fertility and cause problems during subsequent pregnancies - e.g. a risk of uterine rupture during future labours and problems with the placenta leading to haemorrhage and emergency hysterectomy. An increased risk of complications not related to pregnancy has also been reported, ranging from gall bladder disease to appendicitis. All of these risks are small but greater than those associated with vaginal birth.

Urinary incontinence is common following vaginal and CS births, affecting 20-40% of women in the short term. It is thought that the hormonal changes during pregnancy cause incontinence, rather than labour. Some women suffer faecal incontinence following vaginal birth. This is more likely to arise where episiotomy is carried out. So, while CS may protect against faecal incontinence it does not protect against urinary incontinence.

The impact of CS on psychological factors such as post-natal depression and mother-baby bonding is poorly understood. Physiological changes and abdominal pain following the operation can make it difficult to establish breastfeeding.

Maternal deaths

The absolute risk of death in childbirth is small. In 1997-99, there were 2 million births in the UK, of which 400,000 were by CS. 69 women died at or shortly after giving birth and 40 of these deaths were after CS, giving a fatality rate for CS around 5 times greater than vaginal birth⁶. It cannot necessarily be concluded that CS is more dangerous than vaginal birth because pre-existing conditions may have influenced the decision to carry out CS and the outcome.

National Service Framework

National Service Frameworks (NSF) were introduced by DH to reduce variations in care through setting national standards. The NSF for Children, which will be issued in stages through 2003, will include maternity services. It will set national standards, provide support for, and evaluate, their implementation. The national standards will be based on clinical evidence and on cost-effectiveness. DH is likely to consider whether targets should be set for CS rates or measures put in place that explicitly aim to reduce the CS rate; whether women should be allowed to opt for CS; and how NHS Trusts should organise their maternity services. DH has already said that the NSF will require maternity units to offer one-to-one care for all women throughout labour and launched a strategy for the recruitment of additional midwives. This has been presented as a quality of care issue, but may also reduce CS rates.

National Institute for Clinical Excellence

NICE has been commissioned to produce clinical guidelines on CS for publication in 2004. The guidelines will be based on an evaluation of available research evidence and will define the steps that clinicians should take when managing births and making decisions about when to use CS. NICE clinical guidelines are intended to support the implementation of NSF and these documents are expected to be closely linked.

Overview

The CS rate has risen through a combination of medical, cultural and organisational factors. Although the effects of CS on babies are unclear, the long-term impact on mothers' health affects quality of life and is potentially expensive for the NHS. The introduction of national guidelines and standards are intended to reduce the variation in practice between maternity units and to help clinicians and mothers to make decisions based on evidence about when CS is appropriate.

Endnotes

- 1 *NHS maternity statistics, England: 1998-99 to 2000-01*. Department of Health. In 2000, the CS rate in Wales was 24%, N. Ireland 23.9% and Scotland 21%.
- 2 CS rates, adjusted for maternal age and social deprivation, are available for individual hospitals from home.drfooster.co.uk. MPs can access constituency data via www.healthinparliament.org.uk.
- 3 *The National Sentinel Caesarean Section Audit Report*. RCOG Clinical Effectiveness Support Unit. 2001.
- 4 *First class delivery. Improving maternity services in England and Wales*. Audit Commission. 1997.
- 5 Advisory guidelines on the use of CS in Scotland were published in 2001. *Report and recommendations to the Scottish Executive Health Dept*. Expert Advisory Group on CS in Scotland. 2001.
- 6 *Why mothers die 1997-1999. Confidential Enquiries into Maternal Deaths in the United Kingdom*. RCOG. 2001.

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