



Caesarean section: Techniques and complications

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Summary One-fifth of deliveries in England and Wales are now undertaken by Caesarean section. The procedure itself has changed little over the years, although evidence-based refinements have resulted in reduced morbidity, and further research continues in trying to adapt techniques to improve safety further. Good surgical training is, of course, paramount, especially as many emergency procedures are undertaken by doctors in training. This operation constitutes a major surgical procedure and, as such, is associated with a number of surgical complications. However, the current safety of Caesarean section means that a proportion of women are electing to have their babies delivered in this manner without any other indication. The National Institute for Clinical Excellence guidance on Caesarean section has helped to bring together data to allow more accurate counselling on risks and benefits, although difficulties in counselling remain.

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Introduction

Caesarean section has been practised over centuries, but only relatively recently has it become such a safe procedure that women are requesting it be used to deliver their baby in the absence of any other indication. This has created much controversy amongst health professionals involved in childbirth and the public. In this climate, the National Institute for Clinical Excellence (NICE) produced guidelines on the procedure in April 2004.

This paper looks specifically at the techniques of Caesarean section and its complications.

History

Numerous references to Caesarean section appear in ancient scripts. However, early history of this procedure is of dubious accuracy. Indeed, the commonly held belief that Julius Caesar himself was delivered this way is unlikely to be true. In many cultures, the removal of the fetus abdominally had more religious significance than medical meaning as it was considered to be appropriate for the fetus to be buried separately from the mother.

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The mother and fetus almost inevitably died. The uterus in these times was rarely, if ever, closed. Systematic improvements in technique in the 19th century led to less maternal and fetal mortality, and the thresholds for undertaking the procedure lessened. In the late 20th century, the fetus became the primary patient in labour, with increasing numbers of Caesarean sections performed on grounds of fetal health. It is now used to effect 21% of deliveries in England.

Preparation

Traditionally, Caesarean sections have been divided into elective and emergency procedures. However, this fails to identify the degree of urgency required in undertaking the operation. In order to enable clear communication between healthcare professionals, four categories of urgency have been recommended by National Confidential Enquiry into Patient Outcome and Death (NCEPOD), and endorsed by the Royal College of Obstetricians and Gynaecologists and the Royal College of Anaesthetists. These are as follows:

- an immediate threat to the life of the woman or fetus;
- maternal or fetal compromise that is not immediately life threatening;
- no maternal or fetal compromise but early delivery required; and
- delivery timed to suit woman and staff.

In the National Sentinel Caesarean Section Audit published in 2001, misclassification was uncommon using this system and it should be adopted in all maternity units.

For the planned procedure, there is adequate time to give information regarding the procedure including risks and benefits. If there are associated medical or surgical conditions, expert opinion can be sought from other specialists. This includes referral to anaesthetic colleagues where difficulties are anticipated with regional or general anaesthesia.

In more urgent cases, informed consent can be difficult and the information given often requires adaptation to the clinical scenario. For example, explaining the risk of fetal laceration at Caesarean section is entirely appropriate where the mother has requested the procedure, but seems inappropriate if she is being taken to theatre because of a low fetal scalp pH. Nonetheless, the mother must understand the essentials of the procedure,

and this is helped enormously by antenatal education and literature. It is also vital that the mother is visited on the ward postpartum, ideally by the operating surgeon, and a further explanation given and questions answered.

Techniques

General principles

Good practice includes asepsis, minimal and gentle tissue handling, good haemostasis, eradication of dead space, avoiding excess suture material and re-approximation of layers without strangulation of tissue.

Cleanliness

The maternity operating theatre is often open to a large body of people (obstetricians, midwives, anaesthetists, neonatologists, theatre nurses and ancillary staff, let alone the patient and her partner) who are moving between different areas, e.g. delivery suite, neonatal unit, etc. This should not excuse good hygiene. Surgeons should change into fresh theatre clothes if they have been sleeping and eating in their current clothes whilst on call, or have just come from undertaking an instrumental delivery on the labour suite. Ideally, enough notice should be given to neonatologists to allow them to change into theatre attire before entering. Limitations should be put on the numbers of students in theatre (there can sometimes be students on obstetric, anaesthetic and paediatric attachments, as well as midwifery and nursing students, all wanting access to an interesting delivery). Usually, careful planning will allow them all exposure to procedures without compromising good hygiene in the interests of the patient's safety.

Preoperative preparation

Positioning of patient

A lateral tilt of around 15° is important to avoid supine hypotension and reduced placental perfusion. Arm boards are useful to allow the anaesthetist access to intravenous lines.

Catheterization

An indwelling catheter is usually inserted in theatre under aseptic precautions. Regional anaesthesia predisposes to urinary retention.

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