

Vaginal birth after caesarean section

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Abstract

Caesarean section (CS) has evolved from a procedure with considerable morbidity and mortality risks into one that is safe enough to be considered as a matter of maternal choice in high resource countries. Improvements in operative techniques, anaesthesia, intensive care, blood transfusion services and availability of antibiotics have all contributed to improved safety of the procedure for pregnant women. Rates of CS are rising all over the world and so are the rates of vaginal birth after caesarean (VBAC). Attempting a VBAC is a safe and appropriate choice that must be offered to most women who have had a prior caesarean delivery. Approximately 70–75% of women who attempt VBAC will have a successful vaginal delivery. However VBAC is associated with risks for both mother and the baby. The possibility of uterine rupture in labour ranges from 3 to 7 per 1000 pregnancies while the risk of perinatal death or severe morbidity should uterine rupture occur is higher with trial of vaginal delivery than with repeat caesarean delivery. These risks and the associated medico-legal sequelae have resulted in revised national and international guidelines with focus on antenatal counselling, individualised risk assessment as well as stringent facility and personnel requirements to conduct VBAC.

Keywords VBAC; vaginal; caesarean; birth; rupture

Introduction

The last few decades have witnessed a rise in the rates of caesarean sections (CS) globally. In the UK, around 15% of the obstetric population have experienced prior caesarean delivery. This trend is likely to be accentuated as women tend to delay childbearing, opt for smaller family size, experience higher body mass index and request caesarean deliveries (primary or repeat) as the preferred mode of delivery. A previous CS is one of the commonest indications for an elective repeat caesarean section (ERCS) in multiparous women accounting for almost 1/3rd of all cases of caesareans performed. In parallel with this trend, the number of vaginal births after caesarean sections (VBACs) has also been rising. While VBAC is safe and successful in majority of women with a singleton term pregnancy and cephalic presentation who have had a single previous lower segment caesarean delivery, it is associated with significant risks to both mother and the baby. Women with previous CS should be offered both ERCS and VBAC as options for delivery after thorough clinical assessment and antenatal counselling. The final decision should be arrived at only after considering woman's individual circumstances and the woman's decision should be respected.

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Benefits of VBAC

VBAC is associated with benefits (Table 1) such as avoidance of major abdominal surgery, short recovery period, higher likelihood of future vaginal birth and reduced risk of transient neonatal respiratory morbidity. Although VBAC is expected to reduce costs by avoidance of major surgery, this depends on the rates of successful VBAC rates for individual obstetric units. Studies have also shown that the average expected cost of failed VBAC is higher than either vaginal delivery or elective CS. If the chance of a successful VBAC is at least 74% then the cost/benefit ratio favours a trial of vaginal delivery.

Risks associated with planned VBAC

The most important risk associated with a planned VBAC is uterine rupture (0.5%) and the associated maternal morbidity and fetal morbidity/mortality (Table 1). Other significant risks associated with planned VBAC include – operative injury at emergency CS, increased risk of blood transfusion and endometritis, 10–15% chance of instrumental delivery associated with perineal tear/episiotomy, risk of antepartum stillbirth beyond 39 weeks (0.1%) while awaiting onset of labour.

Uterine dehiscence and rupture

Uterine dehiscence is defined as disruption of the uterine muscle with intact uterine serosa. Uterine rupture is defined as a disruption of the uterine muscle extending to and involving the uterine serosa or disruption of the uterine muscle with extension to the bladder or broad ligament. The risk of uterine rupture with VBAC is about 0.3–0.7% as compared to nearly zero with elective repeat CS. However, it has been estimated that in order to avoid one symptomatic uterine rupture, 370 elective CS deliveries would have to be performed. Although a rare outcome, uterine rupture is associated with significant maternal and perinatal morbidity and perinatal mortality. The chance for a poor infant outcome depends on a number of factors including the extent of rupture and umbilical cord compression, whether the placenta and/or fetus had extruded into the maternal abdomen, and the time from diagnosis to delivery. Approximately 6% of uterine ruptures will result in perinatal death and estimates for the risk of HIE with long-term disability range from 0.5 to 19%.

Generally with lower uterine transverse scar – scar dehiscence, rather than rupture, is more likely. The risk of uterine rupture is lower in women who have had a prior vaginal delivery as compared to those who have not had one. There is limited evidence that women who had experienced both intrapartum and postpartum fever in their prior caesarean birth are at increased risk of uterine rupture in their subsequent planned VBAC labour (Odds Ratio (OR) 4.02, 95% Confidence Interval (CI) 1.04–15.5). There is conflicting evidence on whether single-layer compared with double-layer uterine closure at CS may increase the risk of uterine rupture in subsequent planned VBAC. The current recommended practice is a two-layer closure of the uterine incision.

Signs of uterine scar rupture

Although majority of cases of uterine rupture occur during labour, women with a classic uterine scar are at a risk of uterine rupture prior to onset of labour.

Benefits and risks associated with planned vaginal birth after caesarean (VBAC) vs. planned elective repeat caesarean section (ERCS)

VBAC

Benefits

- Avoidance of major abdominal surgery
- Short hospital stay
- Increased likelihood of future vaginal birth
- Reduced (1%) risk of transient respiratory morbidity
- Reduced risks in future pregnancies resulting from multiple caesarean deliveries such as morbidly adherent placenta, bladder/bowel injury and hysterectomy
- Reduced maternal mortality

Risks

- Uterine rupture (0.5%)
- 24–28% chance of emergency caesarean
- Operative injury at emergency CS
- Increased risk of blood transfusion and endometritis
- 10–15% chance of instrumental delivery & perineal tear/episiotomy
- Higher risk of blood transfusion (1.7%) and endometritis (2.9%)
- 10 per 10,000 prospective risk of antepartum stillbirth beyond 39 weeks whilst awaiting spontaneous labour
- 8 per 10,000 (0.08%) risk of hypoxic ischaemic encephalopathy (HIE)
- 4 per 10,000 (0.04%) risk of delivery-related perinatal death

ERCS

Benefits

- Able to plan to known delivery date
- Less risk of blood transfusion (1%) & endometritis (1.8%)
- Extremely low risk of uterine scar rupture (<0.02%)
- Protects pelvic floor, reduction of urinary incontinence
- Option for sterilization if fertility complete
- Avoids 10 per 10,000 risk of stillbirth beyond 39 weeks

Risks

- 0.1–2% risk of surgical complications
- Longer recovery
- Future pregnancies: likely to require caesarean delivery,
- Increased risk of placenta praevia/accreta and adhesions with successive caesarean deliveries
- Infections, ileus, need for postoperative ventilation, intensive care unit admission, venous thromboembolism, significant peri-operative haemorrhage and anaesthetic complications
- Increased risk of maternal death (13 per 100,000 vs. 4 per 100,000) compared with planned VBAC
- Higher incidence of neonatal respiratory morbidity (2–3% with planned VBAC and 3–4% with ERCS)

Table 1

Signs of uterine rupture are:

- Fetal heart rate changes (one of the earliest),
- Suprapubic pain between contractions despite epidural analgesia,
- Acute tenderness on palpations of lower uterine segment,
- Maternal tachycardia,
- Intrapartum vaginal bleeding or haematuria,
- Chest pain or shoulder tip pain or sudden onset of shortness of breath, and
- Sudden cessation of uterine contractions.

Abdominal palpation may detect malpresentation and fetal parts may be easily palpable. Vaginal examination may reveal that the presenting part has moved up from the pelvic cavity into the abdomen. Eventually maternal shock and collapse will occur. The diagnosis is ultimately confirmed at emergency CS or postpartum laparotomy. Routine use of intrauterine pressure catheters for the early detection of uterine scar rupture is not recommended as it has been found to be of little value. Early diagnosis of uterine scar rupture followed by expeditious laparotomy and resuscitation is essential to reduce the associated morbidity and mortality in the mother and infant.

Benefits and risks associated with elective caesarean section

Women who request an ERCS also need to consider the risks and benefits of the procedure especially considering any future pregnancy plans (Table 1).

Benefits

Advantages of planned ERCS include the convenience of planning delivery date, lower risk of blood transfusion and endometritis, extremely low risk of uterine scar rupture (<0.02%), possible protection of pelvic floor function and lower risk of urinary incontinence in future. There is extremely low risk of delivery-related perinatal death or hypoxic ischaemic encephalopathy (HIE). Delivery at 39 weeks also avoids 1 per 1000 risk of stillbirth beyond 39 weeks. A sterilisation procedure can be offered at the time of CS for women who feel they have completed their family.

Maternal risks

The morbidity risks from CS are higher than from successful vaginal delivery. Both operating time and operative morbidity have been shown to be higher at elective repeat than elective primary CS. The risk of placenta praevia and morbid adherent placenta also increases with the number of previous CS in a woman. The risk of pathologically adherent placenta in placenta praevia with no previous CS is about 1% but this risk can increase up to 30% or higher if there has been more than one previous CS and low lying placenta. Placenta accreta was present in 0.24%, 0.31%, 0.57%, 2.13%, 2.33% and 6.74% of women undergoing their first, second, third, fourth, fifth, and sixth or more caesarean births, respectively. With this comes the potential risk of having to perform a caesarean hysterectomy with the

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