Case Report

Current Opinion in Gynecology and Obstetrics Spontaneous Vaginal Delivery after Three Previous Caesarean Sections: A Case Report

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Abstract

Women with one previous caesarean section have 0.05% risk of uterine rupture, with two caesarean sections the risk increase to 1.36%. We could not find data on the risk of uterine rupture after three caesarean sections. Elective caesarean section is therefore offered to these women by their clinical professionals to eliminate the risk. However, we report a case of spontaneous vaginal delivery with an intact uterine scar in a woman with a previous three caesarean sections to show the possibility of vaginal birth in patients with repeated caesarean section. A 32-year-old female in her 4th pregnancy with previous three caesarean section 1st two emergencies and 3rd elective (Gravida 4, para 3) presented to the delivery suite in spontaneous labour at 39 weeks and 3 days with vaginal bleeding. Emergency call gone off and patient was transferred immediately to theatre, during transfer she pushed down while she was on the wheel chair and the baby head found to be delivered vaginally. A live healthy baby girl weighing 2590 g was delivered. The patient had Postpartum bleeding of 500 ml and 2nd degree perineal and labial tears; the patient was discharged home fit and well on day one postpartum. Repeated caesarean section increases maternal mortality and morbidity. Vaginal birth after repeated previous caesarean sections could still be an option in selected cases as safe vaginal delivery has been reported.

Keywords: Vaginal birth after caesarean section, Repeated caesarean sections, Intact uterine scar

Abbreviations: BMI: Body Mass Index; CS: Caesarean Section; EDF: End Diastolic Flow; ERCS: Elective Repeat Caesarean Section; Hb: Haemoglobin; LMWH: Low Molecular Weight Heparin; LUS: Lower Uterine Segment; RCOG: Royal College of Obstetricians and Gynaecologists; VBAC: Vaginal Birth After Caesarean Section; VTE: Venous Thromboembolism

Introduction

The overall caesarean delivery rate in England in 2015-2016 was 25%; the majority was emergency (14.2%) rather than elective (10.8%) caesarean births [1]. The most common indications of caesarean section are failure to progress, suspected fetal compromise, breech presentation and previous caesarean section.

It is expected that the maternal and neonatal morbidity and mortality will increase as the number of caesarean

section increase including anaesthetic risks, bleeding, need for blood transfusion, adjacent organ damages, thromboembolism, neonatal respiratory distress syndrome, infections (endometritis, wound infections), maternal psychological problems and repeated caesarean section related risks (morbidly adherent placentae, uterine rupture, intra-abdominal adhesion).

There is a consensus endorsed by evidence-based systematic reviews [2,3] that planned vaginal birth after

caesarean section (VBAC) is a safe and appropriate mode of delivery for the majority of pregnant women with a single previous lower segment caesarean delivery. Such a strategy would limit the increase in caesarean delivery rate and maternal morbidity associated with multiple caesarean deliveries. However, there is no such agreement on VBAC after previous two or more caesarean sections.

The main risk of VBAC is uterine rupture; studies from the UK reported a VBAC uterine rupture risk of 0.5% [4]. Rates of uterine rupture differ according to whether VBAC labour is spontaneous (0.15-0.4%), induced (0.54-1.4%) or augmented (0.9-1.91%) [5]. And also the number of previous caesarean section (1.36% with two previous CS) [6]. Therefore, most obstetricians will offer elective repeat caesarean section to patient who had two previous caesarean sections and almost all would insist on elective repeat caesarean section after three previous caesarean sections.

We report here a case of successful spontaneous vaginal delivery with intact uterine scar in a woman with previous three caesarean sections in order to show the possibility of vaginal birth after repeated caesarean section and to call for establishment of criteria for VBAC in cases with at least double scarred uterus in view of the increasing risks of repeated caesarean sections, especially there are other reports of successful vaginal birth after two and three caesarean sections [7-10].

Case Presentation

A 32 year old female patient was under Obstetric consultant care in her 4th pregnancy due to previous three caesarean sections (Two emergencies and one elective CS). The first delivery was by emergency CS in 2002 for failure to progress in labour at 40 +10 weeks, a 4.11 kg baby was delivered, and the second delivery was again by emergency CS in 2004 for failure to progress at 8 cm during VBAC at 40 +5 days, baby delivered weighing 4.22 kg. The third delivery was by elective CS at 38 weeks in 2007 for a 4.28 kg baby, this was 10 years ago.

Patient BMI 25.6, VTE score 2 for parity & smoking 10-15/day (CO measurement at booking was 17), no medical history of note, no allergies, booking bloods were normal, O positive blood group and declined Down syndrome screening.

The patient had the routine antenatal care and serial growth scans for heavy smoking and the plan was to

deliver by elective caesarean section at 39 weeks + sterilisation if all well. However, the growth scans at 34 week revealed SFGA baby. At 36 week scan the baby was found to be 2179 g which was still plotted on 10th centile on the grow chart with normal liquor volume and EDF. Therefore, she was offered CS by 37 weeks as per RCOG reference and the rationale behind this plan was explained to the patient. The patient declined this offer as she felt not prepared for early delivery and also declined sterilisation.

The patient did not present to the unit she was booked to, this might have been an indication that she was not keen on elective repeat caesarean section, she did not mention clearly that she wanted vaginal birth until she presented to our delivery suite at 39+ 3 weeks in spontaneous labour with vaginal bleeding of around 500 ml, Emergency call gone off and patient was transferred immediately to theatre for assessment and delivery by CS. During transfer she pushed down while on the wheel chair and the baby head found to be delivered vaginally. A live healthy baby girl weighing 2590 grams was delivered with good cord gases of venous PH 7.292 and base excess -0.5 unfortunately the arterial gases were clotted.

Active management of 3rd stage of labour was done and the patient had Postpartum bleeding of 500 ml and 2nd degree perineal & labial tears. Misoprostol 1000 mcg PR and Syntocinon infusion was given, repair of the tears done and urinary catheter & vaginal pack sited to help with haemostasis. The uterus was well contracted and no active bleeding. The patient was transferred to the postnatal ward for observation and discharged home the next day fit and well with repeat Hb of 114 g/l and on LMWH for VTE prophylaxis.

Discussion

Spontaneous vaginal birth is associated with better outcomes for both mother and baby than instrumental or caesarean birth [11]. Over the past century; rates of birth by caesarean section have risen across the world as rates of spontaneous vaginal birth have fallen. These higher rates are due partly to an expanding list of indications, shifting demographics and reduced overall parity. However, they are also due to changes in health systems and clinician preference. One of the most common indications is previous caesarean section.

If a woman has previously given birth by caesarean section, she enters her next pregnancy with a scar on her uterus from the previous surgery. This has implications

throughout pregnancy, including increased risk of miscarriage, scar ectopic pregnancy and preterm birth. There is also a risk of scar rupture, which is highest during labour.

Repeated caesarean section increases the maternal mortality and morbidity. The risks include, haemorrhage, infection, bladder or ureteric injury, emergency hysterectomy, admission to intensive care unit (highly dependent on reason for caesarean section), thromboembolic disease and death. In addition to the risks on future pregnancies; increased risk of uterine rupture during subsequent pregnancies/deliveries, antepartum stillbirth, placenta praevia and placenta accreta. The fetal risks are mainly lacerations and respiratory distress syndrome [12].

A systematic review [2] reported that women with one, two, or three or more previous caesarean deliveries has a 1%, 1.7% or 2.8% risk respectively of placenta praevia in subsequent pregnancies. Placenta accreta occurs in 11-14% of women with placenta praevia and one previous caesarean delivery and in 23-40% of women with placenta praevia and two previous caesarean deliveries. In women with placenta praevia and five or more previous caesarean deliveries, the incidence of placenta accreta is up to 67%.

Current UK guidance [4] recommends that a woman with previous caesarean section to be offered a choice between a planned repeat elective caesarean section and a planned vaginal birth after caesarean section (VBAC) provided she does not have an absolute contraindication. VBAC is contraindicated in women with previous uterine rupture, classical caesarean scar and in women who have an absolute indication for a caesarean section irrespective of the presence or absence of a scar (e.g., major placenta praevia).

Successful VBAC has the fewest complications and offers the benefits associated with vaginal birth as well as a reduction in risk for future pregnancies. The overall success rate of planned VBAC after one caesarean section is 72-75%. Previous vaginal delivery, particularly previous VBAC, is the single best predictor of successful VBAC and is associated with a planned VBAC success rate of 85-90%. Previous vaginal delivery is also independently associated with a reduced risk of uterine rupture [4].

Other factors that increase the success rate of VBAC include spontaneous onset of labour, vertex presentation, fetal head engagement or a lower station,

higher admission Bishop Score, greater maternal height, maternal age less than 40 years, BMI less than 30, gestation of less than 40 weeks and infant birth weight less than 4 kg. Successful VBAC is more likely among women with previous caesarean for fetal mal presentation (84%) compared with women with previous caesarean for either labour dystocia (64%) or fetal distress (73%) indications. Younger women and those of white ethnicity experienced the highest success rate, in contrast to women of black ethnicity who experienced a lower success rate. Those who had an emergency caesarean delivery in their first birth also had a lower VBAC success rate, in particular those who experienced a failed induction of labour. Induction of labour, no previous vaginal delivery, BMI greater than 30 and previous caesarean for labour dystocia are associated with an increased risk of unsuccessful VBAC. If all of these factors are present, successful VBAC is achieved in only 40% of cases [4].

A VBAC score [13] has been used by some authors to predict the success of women attempting VBAC. The retrospective VBAC score was created by examining five features: admission Bishop Score, age, previous caesarean delivery indication, body mass index (BMI) and previous vaginal birth. The higher the VBAC score, the higher the success rate; the success rate of women with a VBAC score of more than 16 was greater than 85%, in contrast to those with a VBAC score of 10 who had a 49% success rate. The use of specific population-based models to predict VBAC success needs further data, although initial results are promising.

The main risk of vaginal delivery after caesarean section is uterine rupture. The risk of uterine rupture in an unscarred uterus is extremely rare at 2 per 10 000 (0.02%) deliveries and this risk is mainly confined to multiparous women in labour. The risk of uterine rupture in planned VBAC is approximately 20-50 per 10 000 (0.2-0.5%) and in Elective repeat caesarean section the risk is 2 per 10 000 (0.02%) [4].

The risk of uterine rupture increases by 2-3 folds in induced and/or augmented labour compared with spontaneous VBAC labour. Induction of labour using mechanical methods (amniotomy or Foley catheter) is associated with a lower risk of scar rupture compared with induction using prostaglandins. Other factors that potentially increase the risk of uterine rupture; short inter-delivery interval (less than 12 months since last delivery), post-date pregnancy, maternal age of 40 years or more,

obesity, lower pre labour Bishop Score, macrosomia and decreased ultrasonographic lower segment myometrial thickness [6].

A recent meta-analysis [14] has suggested that measurement of lower uterine segment (LUS) thickness antenatally in women with a previous caesarean delivery could be used to predict the occurrence of a uterine defect (scar dehiscence or scar rupture) in women undergoing VBAC. According to the study, a myometrial thickness (the minimum thickness overlying the amniotic cavity at the level of the uterine scar) cut-off of 2.1-4.0 mm provided a strong negative predictive value for the occurrence of a uterine defect during VBAC, whereas a myometrial thickness cut-off between 0.6 and 2.0 mm provided a strong positive predictive value for the occurrence of a uterine defect. However, the study could not define an ideal LUS thickness cut-off value usable in clinical practice. This meta-analysis provides support for the use of antenatal LUS measurements in the prediction of a uterine defect in women undergoing VBAC; however, clinical applicability needs be assessed in prospective observational studies using a standardised method of measurement.

Whilst it is common practice to offer elective caesarean section following two or more caesarean sections, most studies indicate no greater maternal or fetal risks compared with women with one previous caesarean section. A multivariate analysis [5] showed that there was no significant difference in the rates of uterine rupture in VBAC with two or more previous caesarean births (9/975, 92/10 000) compared with a single previous caesarean birth (115/16 915, 68/10 000). These findings concur with other observational studies, which, overall, have shown similar rates of VBAC success with two previous caesarean births (VBAC success rates of 62-75%) and single prior caesarean birth.

Another systematic review [15] has suggested that, women with two previous caesarean deliveries have nearly the same success rate (71.1%) but higher uterine rupture rate (1.36%) and the comparable maternal morbidity to the repeat caesarean delivery option. The rates of hysterectomy (56/10 000 compared with 19/10 000) and transfusion (1.99% compared with 1.21%) were increased in women undergoing VBAC after two previous caesarean births compared with one previous caesarean birth. Therefore, provided that the woman has been fully informed by a senior obstetrician of the increased risks and a comprehensive individualised risk analysis has

been undertaken of the indication for and the nature of the previous caesarean deliveries, then planned VBAC may be supported in women with two or more previous lower segment caesarean deliveries.

Although the information on trials of labour after three previous caesarean sections is sparse, this case report suggests that the option of vaginal delivery should not be ignored in the appropriate pregnant women who have had previous three caesarean sections especially in women seeking multiple future pregnancies in order to reduce the increased caesarean section rate, morbidity and mortality related to repeated caesarean section as well as to shorten the duration of hospital stay and lower the costs. Our lady was keen to have vaginal birth. However, this was not offered to her. Therefore she did not attend to her hospital and transferred to another hospital when she was in labour. Ideally, discussion should be individualised to the woman's medical circumstances and consider her individual chance of VBAC success and future reproductive preferences.

Conclusion

Although trial of scar carries maternal and fetal risks in women with previous three caesarean sections, this case report confirms the fact that safe vaginal delivery is possible in well selected cases. Therefore, implementation of clear criteria for trial of at least a double scarred uterus should be established given that the risk of morbidity and mortality increases with the increasing number of caesarean sections.

Declarations

Ethics approval and consent to participate

The authors give their consent to participate.

Consent for publication

The authors have obtained patient written consent for publication.

Availability of data and material

The authors confirms the availability of data and materials

Conflict of interests

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