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Vaginal birth after caesarean section in Zimbabwe and the Netherlands
Spaans, W.A.

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Summary and Guidelines for Vaginal Birth after Caesarean Section
Summary

The aim of this thesis is to address the following questions:

1. Why have caesarean section rates increased?
2. What is the use and effectiveness of African maternity waiting homes, especially with respect to previous caesarean section?
3. Is a trial of labour after previous caesarean section safe for mother and child in rural Africa?
4. What are the risk factors at caesarean section which predict failure of a trial of labour in subsequent pregnancy?
5. Is a trial of labour after two or three previous caesarean sections safe for mother and child?

Until the second half of the 19th century, the chances of surviving a caesarean section were poor due to the fact that the uterus was not sutured. Closing of the uterine wound made caesarean birth less hazardous and the outcome further improved after the introduction of asepsis, the development of the lower segment caesarean section technique, advances in anaesthesia, introduction of intravenous fluid and blood replacement and the use of antibiotics. In Western countries, maternal mortality rates due to caesarean section decreased from about 70 per 100 to 1-13 per 100,000; in low-income countries, maternal mortality rate is still around 1 per 100. It is a matter of concern that caesarean section rates in the Western world and Latin America have reached rates ranging from 13% to 40%, while in sub-Saharan Africa rates are often far below 5%, which is too low to guarantee safe obstetric care. The success rate of vaginal birth after previous caesarean section (VBAC) varies between 45 and 80%. The risk of uterine rupture during VBAC is 0.2 -1.5%. This risk increases after more than one previous caesarean section (2 - 4%) and induction with prostaglandins (2.5%). In several studies, perinatal mortality was significantly higher after trial of labour than after elective repeat caesarean section, but not different from that of nulliparous women. The major contributors to the increase of caesarean section rates are the safety of the operation, fear for litigation, increasing age of women at the time of their first born, more often diagnosing dystocia and fetal distress, change in management of breech presentation and repeat caesarean section without trial of labour. However, concern for maternal and neonatal morbidity, especially among patients who have a failed TOL, is maybe overdrawn. Doctors easily accept
"evidence" against VBAC, because elective repeat caesarean section is a clear end point that satisfies both patient and doctor.

Mberengwa district, Zimbabwe, where two studies of this thesis were carried out, is a communal area of 3,753 km² with 183,000 inhabitants. Within the district there were five hospitals; four of them had maternity waiting homes (MWHs). To investigate the use and effectiveness of maternity waiting homes, data from home and hospital births were collected, during a two months period in 1994. From 1,041 births, 22% (n=228) occurred at home and 78% (813) in hospital. MWHs were used by 59% (n=616) of all women. Due to maternity waiting homes all women (n=39) with a previous caesarean section, except one, gave birth in hospital. MWHs improved the accessibility of obstetric care and were instrumental to the high percentage of hospital births. Lack of money to stay at a MWH was the main reason to give birth at home.

In Mberengwa district, outcome of labour was studied retrospectively in 281 women with a history of previous caesarean section, between 1991-93. After one previous caesarean section the VBAC rate was 55%; after more than one previous caesarean section or after previous dystocia, the VBAC rates were 11% and 18% respectively. During trial of labour, one woman with thyrotoxicosis died of haemorrhage due to uterine rupture. Her child died as well; this was the only perinatal death attributable to a trial of labour after previous caesarean section. Trial of labour after previous caesarean section was safe in our study in Mberengwa. Also other studies from Africa support this view.

Under the responsibility of independent midwives or general practitioners, around 30% of women in the Netherlands give birth at home. Maybe as a result, the caesarean section rate in the Netherlands of 13% is still low compared to that of other Western countries. Since 1945 several Dutch studies and theses have been advocating vaginal birth after caesarean section. Due to the fact that the perinatal database of the Netherlands (LVR) has no code for VBAC, there are no national VBAC rates available. In the Academic Medical Centre, hospital records of 214 women, whose first term pregnancy was terminated through a low transverse caesarean section between 1988 and 1999, were reviewed, in order to identify risk factors at caesarean section which are related to failure of a trial of labour in subsequent pregnancy. The TOL rate was 69%, with a success rate of 71%; the overall VBAC rate was 49%. A labour pattern during the index pregnancy, characterised by oxytocin use, contractions for more than 12 hours or cervical dilatation less than 1 cm/h, increased the risk of a failed TOL in subsequent labour. Dilatation less than 0.5 cm/h during subsequent labour or birth weight of the new-born in subsequent pregnancy of more than 4,000 gram were associated with failure
of TOL. At subsequent TOL a partograph can be a managerial tool for labour management, as is a partograph obtained at a woman's first labour.

Women with two or more previous caesarean sections, who gave birth during a 10 year period (1988-1997) at the Leiden University Medical Centre or at the Academic Medical Centre, were studied. There were 246 women included; 187 (76%) delivered by elective repeat caesarean section; 59 (24%) had a trial of labour, of whom 49 (83%) had a vaginal birth. Three uterine ruptures occurred; one was during a TOL, induced with prostaglandins and complicated by hysterectomy. There was no maternal mortality, and perinatal mortality was not related to the mode of delivery. A trial of labour following two or three previous caesarean sections seems a safe option, provided that spontaneous onset of labour is awaited.

Guidelines for vaginal birth after caesarean section

Rates of postpartum fever, wound infection, blood transfusion, hysterectomy, maternal discomfort and length of hospital stay are all lower with VBAC than with repeat caesarean section. In addition, infants born to women who deliver vaginally experience a lower rate of respiratory problems. Complications like uterine rupture, however, can occur during VBAC. The risk of uterine rupture increases with the number of previous caesarean sections. The following items are essential to the management of vaginal birth after caesarean section:

- Women with a previous uterine rupture, classical scar, placenta praevia or other obvious contra-indications to trial of labour, should be delivered by repeat caesarean section;
- From all women the previous operative report should be obtained as well as notes of the previous labour if applicable;
- A woman is counselled on the chances of success of a trial of labour. Depending on the indication of the previous caesarean section the success rate is between 50 - 80%. Previous CPD in combination with an expected birth weight of more than 4,500 gram or extreme obesity may decrease the success rate well below 50%;
- If medically indicated or requested by the woman, an elective repeat caesarean section should be performed after 39 weeks of pregnancy;
- Spontaneous onset of labour is preferred; induction with oxytocin increases the risk of uterine rupture up to slightly less than 1%, but after induction with prostaglandins, this
risk increases up to 2.5%. Therefore, there should be reluctance to induct with prostaglandins;

- Trial of labour should take place in an institution which can handle obstetric emergencies 24 hours a day;
- A partograph during trial of labour is mandatory; failure of progress can be a sign of disproportion, but otherwise augmentation of labour with oxytocin is allowed;
- Fetal monitoring can be done by intermittent auscultation or by electronic cardiotocography. Fetal distress can be a sign of uterine dehiscence or uterine rupture; an emergency repeat caesarean section should be considered instead of obtaining a fetal scalp blood sample;
- A repeat caesarean section should be considered if, despite adequate uterine contractions, there is no progress for more than two hours during the active phase of the first stage of a trial of labour;
- There are no set time limits when to terminate the second stage during a trial of labour, but fetal distress can be an early sign of uterine rupture;
- Instrumental delivery in itself does not increase the risk of uterine rupture.

In low income countries, trial of labour should be offered in preference to elective repeat caesarean section. The use of maternity waiting homes should be promoted if what is lacking is accessibility to health care institutions which can handle obstetric emergencies.