

Vaginal birth after caesarean section: Seeing the bigger picture

By Judy Slome Cohain

Abstract

Recent research has recommended that vaginal births after caesarean section (VBAC) should not be carried out in birth centres. The authors of that study did not quantify the effects of their recommendations on maternal and fetal mortality in future pregnancies. The current US repeat caesarean section (CS) rate of 90% and the UK repeat CS rate of 67% present us with the fact that for women who will have more than two pregnancies, the increased mortality experienced in downstream pregnancies due to repeat CS negates the advantages of attempting the first VBAC in hospital rather than a birth centre. Of those women with two CS scars attempting VBAC in hospital, 3.7% experience uterine rupture, and 20% of these, hysterectomy. The risk of third trimester unexplained stillbirth is increased by 1 per 1000 after one CS birth. No one has yet researched the rate of increase in stillbirths after two or more caesarean sections. If no further pregnancies occur after the VBAC, hospital VBACs have an advantage over birth centre VBACs. However, when further pregnancies are considered, this 1/1000 advantage has to be set against the increase of 1/1000 unexplained stillbirths after CS, and increased maternal morbidity and mortality due to uterine rupture, hysterectomy and placental praevia and accretas.

The results of the US study, *Vaginal Birth After Caesarean in Birth Centres* (Lieberman et al, 2004), made the following blanket statement: 'Vaginal births after c-section are riskier in a birth centre than in the hospital.' This conclusion did not take into consideration women who will have further pregnancies after their attempted vaginal birth after caesarean section (VBAC). One of the authors of the study, Judith Rooks, explicitly wrote:

'The authors of the National Study of Vaginal Birth after Caesarean in Birth Centres did not attempt to quantify the effects of our recommendations on perinatal mortality in future pregnancies.' (Personal communication from Judith Rooks)

There are two major studies of VBAC outcomes in hospitals which also neglect to consider future reproduction

and long term considerations. (Lydon-Rochelle et al, 2004; Smith et al, 2002) and a very recent study, which found that:

'...for women who desire multiple children after a single caesarean, a strategy encouraging VBAC will result in fewer cumulative hysterectomies than an elective repeat caesarean strategy.' (Pare et al, 2006)

For women who are planning to have more children after their VBAC, having their VBAC in a birth centre or a setting where the successful VBAC rate is the same as birth centres (87%), will result in better outcomes in terms of maternal and infant mortality and morbidity than delivering in hospital due to the lower repeat caesarean section rate.

Mortality and morbidity

The birth centre study involved a total of 1453 women. One hundred women in the study had two or more previous caesarean sections and experienced a perinatal mortality rate of 2% or 20/1000. Women with two previous caesarean sections are high-risk and should not deliver in birth centres or out-of-hospital.

The remaining 1353 women, who attempted a VBAC in US birth centres, had one previous caesarean. These women were compared to 20848 women with one previous caesarean who attempted VBAC in four different hospital-based studies.

The perinatal mortality rate for the women with one uterine scar who attempted VBAC in childbirth centres was 1/500 whereas the perinatal mortality rate for women with one scar, delivering in the hospitals used for comparison was 1/1000.

The US national hospital repeat caesarean section rate in 1995 was 72% (Goer, 1999). This is more than five times the 13% repeat caesarean section rate found among the births studied in US childbirth centres from 1990–2000 (Lieberman et al, 2004). According to the *National Sentinel Caesarean Section Report*, the UK repeat caesarean section rate in 2000 was 67% and the range between units is wide: from 36% to 94% (RCOG, 2001).

Simply stated, if the women who delivered in birth centres after one caesarean had all delivered in hospital, many more of them would have had two caesareans instead of one. If and when the women who had two caesarean sections become pregnant again, those women will have 1/500 chance of third trimester stillbirth instead of the 1/1000 for those who had a vaginal birth. Smith found the increased risk became apparent only after 34 weeks gestation and the largest increased risk of stillbirths was from 39 weeks gestation on. (Smith et al,

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2003)

Accurate data reporting on stillbirths is lacking in most countries. A study in the *Lancet* found 'under-reporting a major challenge' and stated: 'improving stillbirth data is the first step towards making stillbirths count in public-health action.' (Stanton et al, 2006) A recent American study of stillbirths after 20 weeks found an association between caesarean history and subsequent stillbirth in black women (Salihu et al, 2006). No one has researched the unexplained stillbirth rate after two or more caesareans. This increased mortality evens the risk between VBAC in hospital and VBAC in birth centres for women who get pregnant again.

Uterine rupture

But this is only one drawback of having had a repeat caesarean section for women who get pregnant again. Research is still determining the increase in the rate of uterine rupture in women with two caesarean scars. However, it is clear that instead of the 0.5% to 0.9% uterine rupture rate for women with one caesarean scar, women with two caesarean scars experience somewhere around 4% uterine rupture. (Caughey et al, 1999; Macones GA, 2005) Uterine rupture results in hysterectomy for 20% of these women (Caughey et al, 1999).

Uterine rupture is not the only additional morbidity and mortality of two caesarean scars. It is not clear exactly what the increase in placenta praevia and the placenta growing into the uterus (placenta accreta, placenta increta, and placenta percreta) is after two caesarean scars, but it is significantly higher after caesarean section. (Gould et al, 1999) There is an increasing risk of obstetric hysterectomy following previous caesarean section due to massive postpartum haemorrhage with abnormal placentation as the single most common cause (Ibid.) Caesarean section has also been associated with subfertility (Macones et al, 2005).

Comparison of study populations

The conclusions drawn by the childbirth centre study rest on the assumptions that no further pregnancies happen after the VBAC and that the study populations were matched. When further pregnancies are considered, the combined increased risks of unexplained stillbirth, morbidity and mortality due to uterine rupture, and hysterectomy due to placental implantation problems in pregnancies following two caesareans are greater than the 1/1000 increased risk of neonatal death for VBACs in birth centres.

Further thought should be given to whether the two groups that were compared in the birth centre study are similar enough to bear comparison. In the hospital group, 3265 women delivered at Brigham and Women's Hospital, of Harvard Medical School, which had a laudable 13.5% caesarean rate for first births compared to the 30% US caesarean rate for first births. There were no neonatal deaths reported among the 3265 low-risk women attempting VBAC at Brigham and Women's Hospital. Of the women in the comparison group, 15515 delivered in Scotland. The Harvard and the Scottish populations were used not because they were matched to the population in the US birth centres, but rather because that was the available data on VBAC births. It is unknown how many women in the birth centre study had

access to large teaching hospitals like Brigham and Women's Hospital in Boston or hospital conditions such as those in Scotland. Hospitals vary widely in their VBAC outcomes. The risk of neonatal death due to uterine rupture while attempting VBAC was found to be 3.4 times greater in hospitals (in Scotland) with less than 3000 births per year (1 per 1300) than in hospitals with more than 3000 births per year (1 per 4700) (Smith GC, 2004).

Lieberman's (2004) conclusions ignore the rationale and motivation behind the establishment of out-of-hospital birth

Table 1. Increased maternal risks with elective caesarean section compared to VBAC (MCA, 2004)

- Maternal death
- Hysterectomy
- Thromboembolism
- Surgical injury/anaesthesia injury
- Bowel obstruction and/or bladder injury due to adhesions
- Longer postpartum stay in hospital
- Hospital readmission
- More severe and longer lasting postpartum pain

Table 2. Increased risks for the baby with elective caesarean section compared to VBAC (MCA, 2004)

- Cut by scalpel (usually in the face) during the surgery
- Breathing problems
- Intensive care admission
- Breast feeding failure which results in increased allergies

Table 3. Long term increased maternal risks after elective caesarean section vs VBAC (MCA, 2004)

- Increased involuntary and voluntary infertility
- Ectopic pregnancy
- Placenta praevia
- Placenta accreta
- Placenta praevia/Placenta accreta in combination
- Placental abruption
- Uterine scar rupture

Table 4. Long term increased risks to baby of future pregnancies after elective caesarean vs VBAC (MCA, 2004)

- Increased stillbirth
- Increased prematurity and low birth weight
- Increased congenital malformations
- Increased central nervous system injuries

Table 5. Long term increased maternal risks that further increase after several elective caesarean sections

- Hemorrhage, blood transfusion and hysterectomy
- Bladder injury (surgery more difficult because of adhesions)
- Placenta praevia, placenta accreta, combination of both.

centres. Birth centres were established to remove the institutionalized setting for women who fear giving birth in hospitals. The women who pathologically fear giving birth in hospitals are logically the ones who seek out alternatives to hospitals. These women, at least theoretically, have better outcomes outside of the hospital, where their labours can progress unhindered by the anxiety which hospitals cause them. The medical literature lacks statistical data on the number of women whose labour stops shortly after arrival to hospital. This is the clinical display of 'fear of giving birth in hospital' syndrome. In theory, some of the women who had good outcomes in birth centres may have had disastrous outcomes in the hospital as a consequence of their fear. For example, when labour does not progress in the hospital, it is generally treated with labour augmentation. Labour induction and augmentation after a caesarean section are known to greatly increase the occurrence of uterine rupture and neonatal mortality.

Singh's (2004) UK study found a 33% VBAC rate. He writes:

'The answer to the rising caesarean rates seems to lie in reducing the primary caesarean section rates, rigorous auditing of the unit's caesarean rates and a change in the attitude of doctors, midwives and patients towards vaginal birth after caesarean. The last might prove to be the most difficult target to achieve.'

What would have been the outcomes of the 1353 VBAC births in the childbirth centres if they had delivered in near-by hospitals? We don't know. The data we have for out-of-hospital VBAC outcomes is inadequate. The conclusion made by the study does not apply to all women and therefore the study should not be a justification for decreasing VBAC rates.

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Key Points

- Recommendations that vaginal births after caesarean section (VBAC) should not be carried out in birth centres (Lieberman et al, 2004), do not take into account the risks of morbidity and mortality in future pregnancies.
- The dangers of unexplained stillbirth, uterine rupture, hysterectomy and placental praevia and accretas in future pregnancies are not considered when recommendations against out of hospital VBACs are made.
- For women who will have two pregnancies following a caesarean, the increased mortality associated with repeat CS experienced in downstream pregnancies negates the advantages of attempting the first VBAC in hospital rather than a birth centre.