



**Title:** Discussing Birth Options Following Cesarean Section in Nova Scotia:  
Vaginal Birth after Cesarean (VBAC) or Elective Repeat Cesarean Section

**THIS DOCUMENT IS FOR PROVIDER USE ONLY AND IS NOT INTENDED TO BE PASSED  
DIRECTLY TO PATIENTS OR THEIR FAMILIES.**

This document has been developed to support you in discussing birth options following cesarean section with your patients; it is not intended to be passed directly to patients or their families. These numbers represent individual cases and, as some are rare occurrences, we need to ensure the confidentiality of the individuals are protected.

## **Why consider VBAC?**

In the 5 years ending March 2012, the cesarean section rate in Nova Scotia was 26.8%. The most common indication was ‘previous cesarean section’ involving 8.8% of all women delivering, and accounting for 33.3% of all cesarean sections carried out during those years. Although the rates differ slightly from province to province, a similar situation exists across the country. The number of women planning a VBAC is declining. In Canada in 2004 to 2005, ‘elective repeat’ was recorded as the reason for cesarean section in 53.4% of women with a previous cesarean birth. That percentage rose from 35.2% in 1995 to 1996, an increase of 18.2%<sup>1,2</sup>

The Society of Obstetricians and Gynaecologists of Canada recommends that every pregnant woman with a history of cesarean section should be given options for labour and birth in her current pregnancy. The recommendation further states that, provided there are no contraindications to labour or vaginal birth, a trial of labour should be offered to all women with a previous transverse low-segment cesarean section.<sup>3</sup>

In Nova Scotia, from 2007 to 2012, 31.2% of women for whom VBAC was an option planned a trial of labour while nearly 70% (68.8%) chose an elective repeat cesarean section. A woman’s previous experience and expectations for labour and birth as well as the perspective of her health care provider factor into decisions about VBAC or elective repeat cesarean section. Much emphasis is placed on the known and perceived risks.

There is a greater risk of maternal and/or perinatal morbidity associated with cesarean section than with vaginal birth, although the difference is small. Potential morbidity includes postpartum hemorrhage, infection, venous thromboembolism (VTE), and neonatal respiratory distress.<sup>4,5</sup> For women who have had a previous cesarean section, the concern most frequently cited is uterine rupture, particularly among women who choose to labour. Women who choose to labour are also at risk for morbidity associated with cesarean section in labour. Cesarean section in labour is associated with the highest risk of complications for both mother and baby.<sup>6</sup>

Discussions with a woman about options for birth following cesarean section should include an exploration of her plans for family size and future pregnancies. Potential consequences of multiple cesarean sections are considerable, and include adhesions, ectopic pregnancy, placenta previa and placenta accreta.<sup>3</sup> Reports from the United States indicate that the incidence of placenta accreta has tripled since the 1980’s and complicates 3 per 1000 births.<sup>7</sup> This increase corresponds to the overall increase in cesarean section rate and a decrease in the number of VBACs.

This document is intended to assist health professionals in discussions with women with a history of cesarean section as they consider their options for birth.

## **Quantifying/Communicating Risk**

The following points should be considered when quantifying and communicating risk:<sup>8</sup>

- Remind women that virtually all treatments (and activities in life) are associated with some risk of possible harm i.e. pregnancy and birth, and life, are not risk-free.

- Avoid explaining risk in purely descriptive terms (such as ‘low risk’) as these terms reflect the speaker’s perspective.
- Use a consistent denominator – 40/1000 and 5/1000, rather than 1/25 and 1/200. Some patients may think a risk of 1/200 is greater than a risk of 1/25 because the number is larger.
- Whenever possible, use absolute numbers not relative risk. The absolute risk is the actual risk of a particular outcome, e.g. ‘the absolute risk of uterine rupture is 1/200 or 0.5%’. Relative risk gives the risk of an outcome in a group with a particular risk factor or characteristic compared to a group without the risk factor or characteristic. For example, women with a previous vaginal birth have a relative risk of uterine rupture of 1/5 (0.2) compared with women without a previous vaginal birth.

Potential confusion of relative risk can be illustrated by the statement that for women > age 50, mammography screening reduces their risk of dying from breast cancer by 25%. However, the absolute risk reduction is only 1/1000; 3/1000 screened with mammography will die of breast cancer whereas 4/1000 among those not screened will die.

- Offer outcomes in both positive and negative forms, e.g. the chance of side effects and the chance of remaining free of side effects.

Points for discussion to promote informed consent for a woman with a history of cesarean section should include:

- Is VBAC an option for her?
- What is her chance of having a successful VBAC?
- What is the risk of uterine rupture?
- What is the chance of death or serious harm at birth for a woman with a previous cesarean section or her baby?

### **Is VBAC an option for her?**

A VBAC is an option for all women with a previous transverse low-segment cesarean section provided there are no contraindications to a trial of labour.

Contraindications to a trial of labour include:

- Previous classical or inverted ‘T’ uterine scar
- Previous hysterotomy or myomectomy
- Previous uterine rupture
- Contraindications to labour e.g. placenta previa, malpresentation (including breech)

### **What is her chance of having a successful VBAC?**

A range of success rates has been reported in the literature, from 50% to 85%.<sup>9</sup> In Nova Scotia from 2003 to 2013, 790/1000 (79%) of women with a previous cesarean section who underwent a trial of

labour had a successful vaginal birth and 210/1000 (21%) of women who attempted a VBAC required a cesarean section during labour.

That means that 79 out of 100 women who attempted a VBAC delivered vaginally.

The 21% cesarean section rate among women attempting a VBAC compares to the rate of 20.3% for nulliparous women who required a cesarean section during labour.

A number of factors influence VBAC success:

- **A history of vaginal birth** prior to or, in particular, following a previous cesarean section. More than 80% of women with a prior vaginal birth, and more than 90% with previous VBAC deliver vaginally following a trial of labour.<sup>9</sup>
- **The indication for the previous cesarean section.** If the indication was breech presentation, for example, and it is not present in the current pregnancy, the chance of having a vaginal birth is higher than if the indication had been dystocia or failure to progress.
- **Maternal and fetal characteristics.** *Vaginal birth* is more likely with a greater spontaneous effacement and dilation of the cervix and a high Bishop score at the time of admission for labour or rupture of the membranes. *Cesarean section* is more likely (for women attempting a VBAC and for *all* women) with advanced maternal age, obesity, or fetal macrosomia i.e. estimated fetal weight > 4kg.
- **Labour onset.** The odds of having a successful VBAC are greater when labour is spontaneous. These factors and their effect on the likelihood of a successful VBAC are summarized in the following table:

Increased chance of VBAC success	Decreased chance of VBAC success
Previous vaginal birth	More than 1 previous C/S
Previous VBAC	Dystocia as indication for previous C/S
Spontaneous labour	Macrosomia
Bishop's score $\geq 6$	Induction of labour
Normal body weight	Maternal age > age 40
	Obesity

**What is the risk of uterine rupture?\***

Although the risk of uterine rupture is increased in women with labour following a previous cesarean section, the absolute risk is very low.

Uterine rupture refers to a complete separation involving the entire uterine wall. It differs from uterine dehiscence in which there is an incomplete uterine scar separation and intact serosa.

The overall incidence of uterine rupture among women attempting a VBAC after one transverse lower segment incision is estimated to be 2/1000 (0.2%) to 15/1000 (1.5%).<sup>3</sup> An estimated incidence among women undergoing an elective repeat cesarean section without labour is 0.26/1000 (.026%).<sup>9</sup>

**\*In 10 years (ending March 2013) in Nova Scotia, the incidence of uterine rupture among women attempting a VBAC was 1.7/1000 or 0.17%. The incidence among women who chose an elective repeat cesarean section was 0.4/1000 or 0.04%.**

Induction of labour is associated with a higher risk of uterine rupture during a VBAC attempt when compared to spontaneous labour, although the absolute risk remains low. The risk of uterine rupture is dependent on the method of induction:<sup>9</sup>

- Oxytocin - 11/1000 (1.1%)
- Prostaglandin E<sub>2</sub> (PGE<sub>2</sub>) - 20/1000 (2%)
- Misoprostol (PGE<sub>1</sub>) - 60/1000 (6%)

The SOGC does not recommend the use of PGE<sub>2</sub> and PGE<sub>1</sub> for cervical ripening and/or induction for women attempting VBAC because of the increased risk of uterine rupture when these medications are used.<sup>10</sup>

ACOG (the American College of Obstetricians and Gynecologists) recommends against the use of PGE<sub>1</sub> and advises caution with use of PGE<sub>2</sub>.<sup>11</sup> RCOG (the Royal College of Obstetricians and Gynecologists) advises caution and consultation when considering use of either product for women attempting a VBAC.<sup>12</sup>

Obesity, unfavourable cervix at the time of admission for labour or rupture of membranes, interpregnancy interval of  $\leq 18$  months and macrosomia are additional risk factors for uterine rupture in women with a previous cesarean section, although the absolute risk of each factor is unknown.<sup>6</sup>

### **What is the chance of death or serious harm at birth for a woman who has had a previous cesarean section?**

Reported adverse outcomes (associated with uterine rupture) include hysterectomy, blood transfusion(s), maternal and/or perinatal death, and perinatal asphyxia and/or hypoxemic ischemic encephalopathy (HIE). A review of the literature published in 2003 examined over 140,000 VBAC attempts and reported that 0.9/1000 women who attempted a VBAC required a hysterectomy as a result of uterine rupture. 1.8/1000 women required a blood transfusion.<sup>13</sup> In 10 years (ending March 2013) in Nova Scotia 1.3/1000 (.13%) of women who planned a VBAC underwent a hysterectomy compared to 0.9/1000 (.09%) who chose an elective repeat cesarean section. The proportion of women who received a blood transfusion was 7.2/1000 (.72%) of women who planned a VBAC and 5.4/1000 (.54%) who chose an elective repeat cesarean section while similar proportions of mothers who planned a repeat cesarean section or a VBAC had an infection after birth.

Over 14 years ending 2010, the maternal mortality rate in Canada (excluding Quebec) was .09/1000; in Nova Scotia, the maternal mortality rate was .056/1000;<sup>14</sup> there were no deaths attributed to uterine rupture.

### **What is the chance of her baby having a breathing problem (defined as any respiratory distress including transient tachypnea of the newborn)?**

From 2003-2013, 32.4/1000 of babies whose mothers chose a VBAC had a breathing problem while 48.0/1000 of babies had a breathing problem for those women who chose a repeat cesarean section.

**What is the chance of death or serious harm for her baby at birth?**

In 10 years (ending March 2013) in Nova Scotia, the rate of perinatal asphyxia among term infants whose mothers planned a VBAC was the same as the rate among term infants whose mothers chose an elective repeat cesarean section; 0.4/1000 (.04%) in both groups.

**Summary**

Although pregnancy and birth are normal life events, all activities related to childbirth carry some level of maternal and fetal risk, including VBAC, cesarean section, operative vaginal birth, induced labour and even spontaneous labour. For women with a previous cesarean section, the risk of morbidity is lowest if her next baby is born vaginally and highest if she requires a cesarean section in labour, although the difference in risk between these groups is small.

One important point to emphasize to a woman contemplating VBAC or repeat elective cesarean section is that the likelihood of achieving a vaginal birth is approximately 79%. That means that, for her, the chance of vaginal birth is about the same as for any nulliparous woman who presents for labour and birth.

**In Nova Scotia, for every 1000 women who planned a VBAC:**

32.4/1000* had a baby with a breathing problem
0.4/1000* had a baby that was diagnosed with perinatal asphyxia or died during or after birth
10.5/1000** had an infection after birth
7.2/1000* received a blood transfusion
1.7/1000* had a uterine rupture and had a cesarean section
1.3/1000* required a hysterectomy

**In Nova Scotia, for every 1000 women who planned a repeat cesarean section:**

48.0/1000* had a baby with a breathing problem
0.4 /1000* had a baby that was diagnosed with perinatal asphyxia or died during or after birth
10.3 /1000** had an infection after birth
5.4 /1000* received a blood transfusion
0.4 /1000* had a uterine rupture and had a cesarean section
0.9/1000* required a hysterectomy following birth

 Common

 Uncommon

 Rare

\*Nova Scotia Atlee Perinatal Database 2003/04 – 2012/13

\*\*Nova Scotia Atlee Perinatal Database 1993/94 – 2012/13

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