# Informed Consent for a Vaginal Birth After Previous Cesarean Delivery

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M.L. is a gravida 2, para 1 being seen for an initial prenatal visit. She is requesting midwifery care and wants to have a vaginal birth after cesarean (VBAC). Her previous pregnancy was uncomplicated. She had a cesarean delivery for failure to progress at 8 cm with a fetus in a persistent occiput posterior (OP) position 3 years ago. Her son was born with Apgar scores of 8 and 9. He weighed 7 lb. 9 oz at birth. M.L. did not have any signs of infection during the postpartum period and she went home with her son on postpartum day 4.

## INTRODUCTION

For most of the 20th century, ''Once a cesarean, always a cesarean'' was the standard obstetric practice. Vaginal birth after cesarean (VBAC) was deemed an appropriate option in 1980 following a conference that was cosponsored by the US National Institute of Child Health and Human Development (NICHD) and the National Center for Health Care Technology.[1] The conference coincided with the publication of clinical research that demonstrated the safety of VBAC.[2–4] Subsequently, the number of women in the United States who had a successful VBAC increased from 3.4 per 100 women in 1980 to a peak rate of 28.3 per 100 women in 1996.[5] However, in the mid-1990s, the number of women attempting a trial of labor after cesarean (TOLAC) began decreasing and has continued to do so over the past decade. In 2006, the number of women who had a successful VBAC was less than 10 per 100 women with a previous cesarean, and the overall cesarean delivery rate reached an all time high of 31.1%.[6]

What happened in the 1990s to lead to a rapid turnaround in the number of women and providers interested and willing to undergo a TOLAC? It seems that the change was driven by a series of events that began with the wide and rapid acceptance and encouragement by providers for all women to undergo a TOLAC after relatively small amounts of published research regarding safety. This widespread use of a TOLAC was accompanied by an increasing number of uterine ruptures which, in a resource-poor setting without in-house obstetricians and anesthesiologists, may lead to poor neonatal and even maternal outcomes.[7] These adverse outcomes became the focus of medicolegal cases directed against both the providers and the hospitals.[8] Because lower-volume hospitals could not afford to pay obstetricians and anesthesiologists to stay in-house and received little economic incentive to encourage TOLAC, many began to forbid their providers from offering a TOLAC to their obstetric patients. Unfortunately, this lack of access has incentivized women interested in a TOLAC to seek alternative ways to achieve a VBAC. For example, I have cared for women who had a failed TOLAC at home, or managed an induction of labor in a woman with a previous cesarean delivery because my institution offers TOLAC but is located several hours away from her home community whose hospitals do not. Considering this turn of events, it is in the best interests of both women and their providers that both are well informed regarding the risks and benefits of a TOLAC. Further, it is likely to be of benefit to these women for providers to use organizational means to encourage hospitals to provide the opportunity to use TOLAC as an alternative to elective repeat cesarean.

First, one must determine if M.L. is a candidate for a VBAC. There are a few contraindications for a VBAC, and these are listed in Table 1.[9] Of note, the most controversial of these is two previous cesarean deliveries without a previous vaginal birth. As with most contraindications, this should be viewed as simply a higher-risk situation that deserves careful counseling and a clear delineation of risks and benefits. The specific risks of two previous cesarean deliveries will be further discussed below. M.L. does not have any of these conditions; therefore, she should be counseled about the risks, benefits, and alternative treatments regarding a TOLAC. The components for a thorough informed consent are well known: diagnosis, purpose of treatment, risks and benefits of proposed treatment, alternative treatments, risks and benefits of the alternative treatments, and, finally, the risks and benefits of not receiving the recommended treatment. What does a woman who desires a TOLAC need to know?

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**Table 1.** Relative Contraindications for Vaginal Birth after Cesarean Delivery (VBAC)

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|---|
| Previous classical or T-shaped incision or extensive transfundal uterine surgery |
| Previous uterine rupture |
| Medical or obstetric complication that precludes vaginal birth |
| Inability to perform emergency cesarean delivery because of unavailable surgeon, anesthesia, sufficient staff, or facility[a] |
| Two previous uterine scars and no vaginal births |

Adapted from the American College of Obstetricians and Gynecologists.[9]

[a]This criteria for what constitutes "immediately available" must be institutionally specific. The Northern New England Perinatal Quality Improvement Project has guidelines for community hospitals that define patient selection criteria and staff preparedness for specific patients.[25]

Informed consent for any woman who desires a TOLAC must address four specific questions: 1) what is her chance of having a successful VBAC?; 2) what is the risk that she will have a uterine rupture if she does attempt a VBAC?; 3) what is the chance of harm or death to her baby if the uterus ruptures?; and 4) what are the risks of undergoing a repeat cesarean delivery? Numerous studies in the last several years have looked at factors that affect success and uterine rupture rates.[10–14] The results of this body of work can be used to individualize the answers to these questions. Of note, the results of these studies can be presented in two ways: absolute risk and relative risk. Absolute risk is the actual risk of a particular outcome—for example, the absolute risk of a uterine rupture in an unselected population is 1 in 200 (0.5%). Relative risk gives the risk of an outcome in one group with a risk factor compared to another risk without the risk factor. For example, women with a previous vaginal birth have a relative risk of one-fifth (0.2) for uterine rupture compared to women without a previous vaginal birth. One can then take the relative risk and multiply it by the baseline absolute risk to estimate the absolute risk in the low- or high-risk group. For example, it appears that women with a previous vaginal birth have a $0.2 \times 0.5\%$ or 1 in 1000 (0.1%) risk of a uterine rupture. Care has been taken throughout the text and tables below to use both absolute and relative risk when discussing the risk factors below.

## CHANCE OF HAVING A SUCCESSFUL VAGINAL BIRTH AFTER CESAREAN

The probability of a woman achieving a vaginal birth in the setting of a TOLAC depends on a variety of risk factors. In particular, the previous indication for the previous cesarean delivery and whether or not she had a previous vaginal birth both affect the probability of a successful TOLAC. Many of the other factors that increase or decrease the probability of TOLAC success are similar to predicting the risk of a cesarean delivery for all women and are presented in Table 2.

### Indications for Previous Cesarean Delivery

Several studies have examined indications for the previous cesarean delivery as a predictor of outcome in a subsequent trial of labor.[15–17] In all studies, cephalopelvic disproportion (CPD) had the lowest VBAC success rate (60–65%). Fetal distress (i.e., nonreassuring fetal testing) had the second lowest rates of VBAC (69–73%). Nonrecurrent indications, such as breech presentation, herpes, and placenta previa, were associated with the highest rates of success (77–89%). Failure to progress, CPD, or dystocia as indications for previous cesarean delivery are also associated with a higher proportion of women who chose not to attempt a TOLAC. In a metaanalysis of the existing studies conducted before 1990, Rosen et al.[18] found that women whose previous cesarean delivery was performed for CPD were twice as likely to have an unsuccessful trial of labor.[18]

### Previous Vaginal Birth

Patients with a previous vaginal birth have higher rates of successful VBAC compared to patients without a previous vaginal birth. Furthermore, women with a successful VBAC have a higher success rate in a subsequent trial of labor compared to women whose vaginal birth was before cesarean delivery. In an unadjusted comparison, patients with one previous vaginal birth had an 89% VBAC success rate compared to a 70% success rate in patients without a previous vaginal birth.[11] In comparisons controlling for confounding factors, odds ratios of 0.3 to 0.5 for rate of cesarean delivery are found when comparing patients with a previous vaginal birth to those without previous vaginal birth.[13,19–21] Among patients with a previous VBAC, the success rate is 93% compared to 85% in patients with a vaginal birth before their cesarean delivery but no previous VBAC.[19]

## RISK OF UTERINE RUPTURE

The overall rate of uterine rupture in women who attempt VBAC-TOL is 0.5% to 1% and depends on the individual's baseline risk.[22] A number of factors can affect this risk, including those listed in Table 3. Several factors that deserve discussion include two or more previous cesarean deliveries, induction of labor, the use of prostaglandins, and previous vaginal births. Women who have experienced two or more previous cesarean deliveries have a two- to fourfold increased risk of a uterine rupture.

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**Table 2.** Predictors of Vaginal Birth after Cesarean Delivery Success or Failure

| Increased Chance of Success | Decreased Chance of Success |
|---|---|
| Previous vaginal birth[21] | Increased interpregnancy weight gain[34,35] |
| Previous vaginal birth after cesarean[15,21] | Maternal obesity[35,36] |
| Spontaneous labor[20] | Short maternal stature[36] |
| Favorable cervix[20] | Macrosomia[12,19] |
| Nonrecurring indication (breech presentation, placenta previa, or genital herpes lesions at time of birth)[12] | Increased maternal age (>40 yrs of age)[20,37] |
| Preterm birth[33] | Gestational age ≥40 weeks[38] |
| | Induction of labor[20,24] |
| | Recurring indication (cephalopelvic disproportion, failed second stage of labor)[20] |
| | Preconceptional or gestational diabetes mellitus[39] |
| | Latina or African American race/ethnicity[40] |

If one assumes a baseline risk of 0.5%, then these women have a 1% to 2% risk of a uterine rupture. However, whether such a woman wishes to proceed with a trial of labor depends on whether she has other concomitant risks and what risk she is willing to bear. For example, if this woman also had previous vaginal births, her risk is reduced three- to fivefold; therefore, her overall risk of uterine rupture would actually be reduced compared to the baseline chance (0.5–1%) that this outcome will occur.

Induction of labor and, in particular, prostaglandin use are associated with an increased risk of uterine rupture.[23,24] While induction with oxytocin alone is only associated with a twofold increased risk of uterine rupture, prostaglandin induction is associated with a three- to fivefold increased risk of uterine rupture, which has led to most clinicians not using these medications for induction of labor in women who have had a previous cesarean.

## CHANCE OF HARM TO THE FETUS WHEN THE UTERUS RUPTURES

The probability of fetal or neonatal injury likely depends on the clinical setting in which a TOLAC is being attempted. This includes, but is not limited to, the immediate availability of clinicians (surgeons and anesthetists) to provide an emergent cesarean delivery. In the data from the maternal–fetal medicine units (MFMU) network study, the risk of hypoxic ischemic encephalopathy (HIE) was 6%, and the risk of neonatal death was 2% after uterine rupture.[8] In a large systematic review published in 2003, the risk of perinatal death was reported as 0.2 to 1.1 per 1000 TOLACs, and the risk of a neonatal acidemia was 1 to 2 per 1000 TOLACs.[7] Assuming a baseline uterine rupture rate of approximately 0.5%, the lower value of 2 per 10,000 would be similar to the MFMU findings of a perinatal death of 2% in the setting of uterine rupture, or 1 per 10,000 TOLACs. Of note, in the 2003 review, perinatal death rates were seven times higher in lower-volume settings.[7] Therefore, counseling regarding these outcomes should involve a discussion of the practice setting and how quickly an emergent cesarean delivery could be performed if a uterine rupture occurred. The Northern New England Perinatal Quality Improvement Project has proposed specific selection criteria for conducting VBACs in community hospitals.[25] Specifically, their VBAC guidelines document categorizes women into low-, medium-, and high-risk; provides a definition of ''immediately available''; and includes recommendations for both prenatal and intrapartum management.

## RISK OF A REPEAT CESAREAN DELIVERY

When clinicians counsel regarding a TOLAC, there is often an unspoken undercurrent that a repeat cesarean delivery is essentially without risk; however, this is not true. The repeat cesarean delivery carries risk to both the mother and the neonate. Further, there are risks to future pregnancies, particular for placenta previa, accreta, and the need for puerperal hysterectomy.[26] From a maternal perspective, it is widely held that even with elective cesareans, the risk of maternal mortality is higher than a vaginal birth and higher than a trial of labor in nulliparous women, depending on the a priori risk of achieving vaginal birth. Recently, Clark et al.[27] found that this risk is 1.1 per 100,000 repeat cesareans.[27] Another recent paper found no difference in maternal mortality in the setting of a planned cesarean, but did find higher rates of maternal morbidity.[28]

In studies of cesarean delivery compared to vaginal birth, at a population level, the risk of neonatal mortality has been found to be higher.[29] However, such studies fail to examine the risk caused by an elective cesarean before labor, as compared to the risk during labor, which

**Table 3.** Predictors of Uterine Rupture

| Increased Rate of Uterine Rupture | Decreased Rate of Uterine Rupture |
|---|---|
| Classical hysterotomy[9] | Spontaneous labor[23,24] |
| Two or more cesarean deliveries[41,42] | Previous vaginal birth[47] |
| Single-layer closure[43] | Longer interpregnancy interval[45,46] |
| Induction of labor[23,24] | Preterm birth[34] |
| Use of prostaglandins[23,24] | |
| Short interpregnancy interval[44,45] | |
| Infection at previous cesarean delivery[46] | |

could lead to a repeat cesarean, VBAC, or uterine rupture. In a study from the United Kingdom, Smith et al.[30] found an increased risk of perinatal mortality from a TOLAC as compared to an elective repeat cesarean (12.9 per 10,000 vs. 1.1 per 10,000), but the generalizability from such a study to practice patterns in the United States is challenging.[30] So, on balance, it appears that the maternal risks of morbidity and mortality are higher with a repeat cesarean, while the absolute risk of neonatal mortality is higher with a TOLAC, with the absolute risks of either being small. Either of these risks is dependent on the chances of a successful VBAC and the chances of a uterine rupture. In addition to mortality, respiratory morbidity has been found to be higher with cesarean delivery.[31] Because it is higher particularly in neonates born before 39 weeks of gestation, verifying dating and either delaying delivery to 39 weeks of gestation or documenting fetal lung maturity is important in the setting of repeat cesarean delivery.[32]

## CONCLUSION

The key in facilitating a woman's decision with respect to undergoing a TOLAC is proper counseling regarding her chances of success, a uterine rupture, and injury to herself or fetus if she experiences a uterine rupture. However, another factor should be considered. Because multiple cesareans increase a woman's risk for future pregnancy complications, in particular placenta previa and accreta,[27] one should also elucidate future pregnancy plans. In the case of M.L., because of her previous cesarean for failure to progress, her chances of a successful VBAC are a bit lower than average, about 60%. One might encourage her that if she goes into labor and the fetus is not in persistent occiput posterior position, the chance of success might be higher, but no published data are that specific. Her risk of a uterine rupture given no previous infection and an interpregnancy interval longer than 18 months is 1 in 200 (0.5%). Of note, her risks may change depending on how she presents in her subsequent labor. For example, if she needs to be induced for some reason, the chance of success decreases and the risk of a uterine rupture increases. Alternatively, if she goes into preterm labor, the chances of success increase and the risk of uterine rupture decreases. Therefore, women should be recounseled when they present in labor, particularly if any of their risk factors change. After a prolonged discussion of these risks and benefits, ensuring the appropriate information has been communicated and understood, the clinician then needs to help the woman incorporate her own preferences regarding the potential outcomes of a TOLAC to come to a decision that is appropriate for her.

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