

Preserving the VBAC alternative: 8 pearls

Most women opting for a trial of labor have good outcomes, and those at risk for adverse results are becoming better defined—yet VBAC’s future is uncertain. The authors sum up the guidance we can glean from key studies.

Is vaginal birth after cesarean an endangered procedure? Most women who attempt a trial of labor after cesarean have good outcomes, and those at high risk for adverse events, who should be excluded, are becoming increasingly better defined. Yet many physicians eschew this option altogether because of serious concerns about the safety of trial of labor after cesarean.¹

■ *Dr. Shipp is assistant professor of obstetrics, gynecology and reproductive biology, Harvard Medical School, and associate Ob/Gyn, Brigham and Women’s Hospital, Boston, Mass. Dr. Repke is professor and chair, department of obstetrics and gynecology, Penn State College of Medicine–Milton S. Hershey Medical Center, Hershey, Pa. He also serves on the OBG MANAGEMENT Board of Editors.*

If VBAC is to play a role in obstetrical management in the 21st century, we will need to improve our ability to distinguish these 2 populations:

- women with a low risk for complications and a high likelihood of a successful trial of labor, and
- women at high risk for adverse outcomes.

Of many reports documenting risk factors for the most feared complication, uterine rupture, none are from randomized controlled studies of trial of labor after cesarean versus elective repeat cesarean (and such reports are unlikely to be forthcoming). Therefore, we must depend on less rigorous-

WHAT THE EVIDENCE SHOWS

- The repeat cesarean rate varies by prior indication for cesarean: lowest for breech; highest for failure to progress.
- Induced labor has a higher rate of repeat cesarean than spontaneous labor.
- Maternal obesity and fetal macrosomia lower the success rate.
- Induction with oxytocin is associated with an increased risk of uterine rupture, but oxytocin can be used judiciously for augmentation of labor.
- Prostaglandins should not be used for cervical ripening or induction.
- Having more than 1 prior cesarean increases risk of uterine rupture.
- Interdelivery intervals of up to 18 months and maybe even 24 months are associated with an increased risk for uterine rupture. Women should be discouraged from becoming pregnant for at least 9 months, and possibly up to 15 months, after cesarean, if they are contemplating a trial of labor after cesarean for their next delivery.
- Uterine rupture is 5 times less likely in women who have had a vaginal delivery either before or after a prior cesarean delivery.

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ly obtained information. Nonetheless, we do have a wealth of data to guide us.

The 8 “pearls” in this article summarize what we know from the available data on vaginal birth after cesarean.

Pearl 1

VBAC rate varies by prior indication

The overall rate of successful vaginal delivery for all women attempting trial of labor after cesarean varies from approximately 60% to 80%.

We showed, however, that the repeat cesarean rate varies by prior indication for cesarean. The rate for those whose prior cesarean was due to breech presentation was 13.9%, which approximated the cesarean rate among nulliparas during the study period (13.5%). The highest rate of repeat cesarean, 37.3%, was for those whose prior cesarean was for failure to progress.²

Pearl 2

Repeat cesarean rate is higher with induced labor

Failed induction is a risk for all gravidas having labor induced, regardless of any prior cesarean deliveries. It is especially common among women with an unripe cervix.

Among women with a prior cesarean, labor induction has an approximately 10% increased rate of repeat cesarean, compared with those undergoing spontaneous labor.³

Pearl 3

Successful VBAC rate is lower with maternal obesity or fetal macrosomia

Recent evidence suggests that both maternal and fetal weights influence the success of trial of labor after cesarean.

Maternal obesity is associated with a decreased success rate for trial of labor after prior cesarean delivery, but the magnitude of this risk is not well characterized: A success rate of 13% for morbidly obese women has been documented⁴; more recently, however, a

Scoring system is needed to predict risk

The factors most important for counseling a woman about obstetrical management after a prior cesarean are her likelihood of success from trial of labor, and the risks and benefits of both trial of labor and an elective repeat cesarean.

The findings noted in this article call for a scoring system that will more precisely define the risk for an individual patient contemplating trial of labor after prior cesarean.

Over the past 3 decades, multiple studies have attempted to predict the success of trial of labor after cesarean. Flamm and Geiger¹⁹ reported a 10-fold predicted difference in the rate of cesarean based on a scoring system incorporating:

- maternal age,
- prior vaginal delivery,
- prior indication for cesarean, and
- the intrapartum assessment of cervical dilation and effacement.

Others have used additional variables including:

- estimated fetal weight,
- gestational age,
- prepregnancy body mass index,
- maternal weight gain, and
- induction of labor.²⁰⁻²³

With further investigation and better identification of those at highest and lowest risk, we will be better able to counsel each patient on her individual risks for a uterine rupture during a trial of labor after prior cesarean delivery.

success rate of 57% was reported.⁵ These studies are limited by their small numbers.

Fetal macrosomia. For pregnancies with fetuses weighing greater than 4,000 g, the literature notes VBAC success rates of 40% to 60%.^{6,7}

Pearl 4 **Risk of rupture is greater with oxytocin induction**

Women with a prior cesarean delivery face an increased risk of uterine rupture with labor induction.^{8,9} Zelop et al⁸ demonstrated that labor induction with oxytocin is associated with a 4- to 5-fold increased risk of uterine rupture compared to spontaneous labor.

Lydon-Rochelle et al⁹ reported an increased risk of uterine rupture for those in spontaneous labor and those induced without prostaglandins, compared with women opting for elective repeat cesarean. The odds ratios for patients with spontaneous labor (3.3; 95% confidence interval [CI] 1.8-6.0) and for those with labor induced without prostaglandins (4.9; 95% CI 2.4-9.7) were not statistically significantly different.

Recent trials have suggested that induction of labor is not associated with uterine rupture, though these studies are limited by relatively low numbers of patients. Delaney and Young¹⁰ reported rates of uterine rupture of 0.7% for those with induced labor as compared to 0.3% for those with spontaneous labor ($P = 0.1$). By combining these studies, we see a statistically significant increased rate of uterine rupture approximately twice that of those in spontaneous labor.¹¹

Oxytocin can be used judiciously for augmentation of labor for women with prior cesarean delivery, as it is not associated with an increased risk for uterine rupture in these cases.⁸

Pearl 5 **Prostaglandins should not be used for cervical ripening or induction**

For patients with a prior cesarean delivery, prostaglandins used for cervical ripening are associated with a significantly higher rate of

‘Once a cesarean, always a cesarean’? Shifting views on the role of VBAC

At the beginning of the 20th century, Cragin wrote a dictum that is still invoked: “Once a cesarean, always a cesarean.”²⁴

Not often mentioned, however, is that he went on to discuss a patient who had 3 successful vaginal births after cesarean “without difficulty.”²⁴

For much of the 20th century, vaginal birth after cesarean (VBAC) was the exception rather than the rule. Then, 25 years ago, the National Institutes of Health advocated a trial of labor for women who had a prior cesarean delivery. During this time, VBAC was greatly encouraged, and the rate of trials of labor after cesarean began to increase.²⁵ Thus, 15 years ago, the cesarean delivery rate in the United States began to fall after an unprecedented rise during the previous decades.

A few years later, however, this trend ceased and the cesarean delivery rate once

again began to rise. This switch can be attributed to both an increase in primary cesarean deliveries and a decrease in the VBAC rate.²⁶ It coincides with published data on uterine rupture associated with a trial of labor after cesarean: Two case series published in 1991 together documented 20 uterine ruptures with 4 perinatal deaths, 4 neonates with neurological impairment, and 3 women who underwent hysterectomy due to the event.^{27,28}

Further study is needed to more precisely identify those women at high risk for uterine rupture and low risk of success of a trial of labor, and also—perhaps more importantly—those women with a very low risk of uterine rupture and a high likelihood of success with a trial of labor. Perhaps such additional research will help reverse the current malpractice climate, which is influencing the move by many physicians away from VBAC.

Women with a prior vaginal delivery were 5 times less likely to suffer uterine rupture than those with no prior vaginal deliveries.

uterine rupture compared with repeat cesarean, and with either spontaneous labor or induction with oxytocin alone.⁹

Lydon-Rochelle et al⁹ demonstrated a 15.6 relative risk (95% CI 8.1-30.0) for uterine rupture among women having labor induced with prostaglandins, compared with those undergoing elective repeat cesarean.

Because much literature has documented an increased risk of uterine rupture with misoprostol use in women with a prior uterine scar, the American College of Obstetricians and Gynecologists Committee on Obstetric Practice advises against using this agent during trial of labor after cesarean.¹²

Pearl 6 More than 1 prior cesarean increases risk of rupture

The presence of multiple prior cesarean scars places a woman at greater risk for uterine rupture during trial of labor. This risk is likely 3 to 5 times higher than for patients with only 1 prior cesarean delivery.¹³

Pearl 7 Risk of rupture is increased with interdelivery interval of up to 18-24 months

Women who have undergone a cesarean delivery and are contemplating a future trial of labor should be discouraged from becoming pregnant for at least 9 months, possibly up to 15 months.

Interdelivery interval has been shown to be an important contributor to the risk for

uterine rupture during trial of labor after cesarean.¹²⁻¹⁴ Esposito et al¹⁴ were the first to note an increased risk of uterine scar failure—including both symptomatic uterine ruptures and asymptomatic uterine scar dehiscences—for those with an interpregnancy interval of less than 6 months.

We showed an increased risk for uterine rupture with an odds ratio of 3.0 (95% CI 1.2-7.2) for those with interdelivery intervals of up to 18 months compared with those who had interdelivery intervals of 19 months or longer.¹⁵ More recently, Bujold et al¹⁶ confirmed these findings: They found the odds ratio for uterine rupture to be 2.7 (95% CI 1.1- 6.5) for those with an interdelivery interval of up to 24 months.

In a smaller study, Huang et al¹⁷ suggested that the success of trial of labor after cesarean may also be lower for those with interdelivery intervals of up to 18 months.

Pearl 8

A vaginal delivery before or after prior cesarean lowers risk of rupture

Patients with a prior vaginal delivery are at significantly lower risk for uterine rupture than those without.

We published a study evaluating women with 1 prior cesarean delivery and either a preceding vaginal delivery or a previous VBAC. Our data suggest that women with a prior vaginal delivery were 5 times less likely to experience uterine rupture than those with no prior vaginal deliveries, either before or after the prior cesarean (odds ratio 0.2; 95% CI 0.04-0.8).¹⁸

Summary and recommendations

To continue to use vaginal birth after cesarean as an obstetrical practice, we must be better able to identify patients at high and low risk for complications from this procedure, and those who have the greatest chance for success. Women with a nonrecurring indication for the prior cesarean (eg, breech) have

the best chance for success. Those with recurring indications for the prior cesarean (eg, failure to progress, morbidly obese women, those with macrosomic fetuses, and those with short interdelivery intervals) may have lower success rates.

Patients contemplating a future trial of labor should consider avoiding pregnancy for at least 9 to 15 months after cesarean delivery.

How can we reduce the risk of uterine rupture in women who are considering a trial of labor after prior cesarean delivery?

- We should not give these women prostaglandins for cervical ripening.
- We must consider allowing a trial of labor for those in spontaneous labor, and be more hesitant about inducing the labor in these patients.
- Women with multiple prior cesareans may also benefit from avoiding a trial of labor.
- Having patients avoid pregnancy for at least 9 months, and maybe up to 15 months, after a cesarean delivery could also assist with decreasing our rate of uterine rupture.
- Keep in mind that those with prior vaginal delivery have a much lower rate of uterine rupture.

These findings call for some type of scoring system to more precisely define the risk for an individual patient who is contemplating a trial of labor after prior cesarean delivery. ■

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