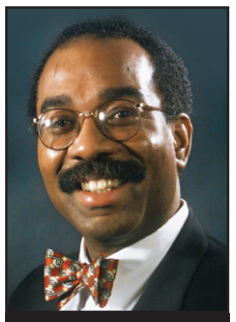
MASTER CLASS

VBAC: Should We or Shouldn't We?



BY E. ALBERT REECE, M.D., PH.D., M.B.A.

The surgical approach to infant delivery is not new. Indeed, a variety of approaches have been used to extract fetuses from the uterus when, for various reasons, a vaginal delivery is not possible.

The old notion that "once a cesarean section, always a cesarean section," moreover, has been a dogma that has existed in obstetrics and medicine for decades. Although this has worked well, many a time, for the convenience of the mother or the physician, it is also problematic. Over time, multiple repeat cesarean sections can pose a hazard, either because the scar becomes weak and at risk of rupture or because the surgical intervention becomes very challenging.

Concerns about possible rupture with repeat cesarean sections were particularly acute in the early years before it was appreciated that there was a difference between a vertical uterine incision and a transverse uterine incision. Following the realization that the lower uterine segment is less prone to active contraction and therefore less likely to rupture, transverse uterine incisions were encouraged in virtually all circumstances, and rupture of the uterus with repeat cesarean section became less of an issue.

In more recent times, reports of trials of labor following prior cesarean delivery resulting in successful vaginal delivery began to appear, and the notion of vaginal birth after cesarean (VBAC) took off, with a wave of success, across the country and indeed around the world. However, as the number of vaginal deliveries after cesarean sections increased, the rate of uterine rupture increased as well.

The rate of uterine rupture has remained low. Still, no matter when it occurs, uterine rupture is always a challenge—a challenge to the surgeon, a problem for the mother or baby, and unfortunately, sometimes a cause of litigation. Because of this complicating set of circumstances, the issue of advisability of VBAC has become a real medical dilemma.

Should we do them? Or should we not? If we should, when should we do them? Are there any guidelines? These are just some of the questions that have arisen over the years that we have had to grapple with. It is in this light that a Master Class to address these issues seemed appropriate. We have invited Dr. George A. Macones, an expert in maternal-fetal medicine who has studied VBAC for many years, to serve as our guest author.

Dr. Macones is the Mitchell and Elaine Yanow Professor and chair of the department of obstetrics and gynecology at Washington University in St. Louis. He recently was invited to speak at a National Institutes of Health consensus development conference on VBAC. In this column, he offers us some insight into why VBAC is a reasonable option for many women, how we can select candidates and counsel our patients, and what we can do to effectively manage our patients' attempts to achieve vaginal delivery after cesarean. ■

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Increasing the Odds for Success With VBAC

Vaginal birth after cesarean gained widespread acceptance in the 1980s after a National Institutes of Health Consensus Development Conference panel questioned the necessity of routine repeat cesarean deliveries and described situations in which a VBAC should be offered. Some insurers even mandated that physicians attempt a VBAC prior to a repeat cesarean delivery.

BY GEORGE A. MACONES, M.D.

Since 1996, however, the VBAC rate has dropped substantially while cesarean delivery rates have risen steadily. The overall cesarean delivery rate was approximately 32% when last measured in 2007, up from 21% in 1996. The VBAC rate was less than 10% in 2007, compared with 28% in 1996, according to the Centers for Disease Control and Prevention.

Indeed, pregnant women now have limited access to VBAC services, and many are not even offered the option of having a trial of labor after cesarean. Some hospitals have declined to provide VBAC services, and the most recent medical liability survey conducted by the American College of Obstetricians and Gynecologists showed that almost 20% of responding fellows stopped offering or performing VBACs between 2006 and 2008. (In the prior survey, completed in 2006, these numbers were even higher—upward of 26%.)

The exact causes of the decline in VBAC deliveries are unclear, but the shift likely involves a mix of concerns about the possibility of uterine rupture, patient preferences, medicolegal pressures, guidelines that call for the immediate availability of personnel to perform an emergency cesarean, and other clinical and nonclinical factors.

It is a complex and concerning trend—one considered important enough to the health of women in the United States for the NIH to recently convene another Consensus Development Conference panel on the topic. The panel was asked to examine the causes of VBAC decline as well as the available research on the benefits and harms of attempting a trial of labor after a patient has had a cesarean delivery.

In a draft statement titled, "Vaginal Birth After Cesarean: New Insights," released in March, the panel affirmed that a trial of labor is a reasonable option for many women with a prior cesarean delivery. It also urged that current VBAC guidelines be reconsidered and more research conducted.

Although guidelines are being revisited and research ensues, we owe it to the patients in our own practices to thoroughly consider what *is* known about the short- and long-term safety of VBAC, the selection of candidates, and the most reasonable approaches to intrapartum management.

Short-Term Safety of VBAC

In the past decade, there have been two large observational studies in the United States that have shed much light on the efficacy and safety of a trial of labor after cesarean. Both studies involved upwards of 20,000 women, and both showed rates of uterine rupture under 1%. This finding is significant, because some have suggested that uterine rupture is on the rise in the United States.

In one of these studies—a prospective cohort study conducted from 1999 through 2002 at 19 academic medical centers belonging to the National Institute of Child Health and Human Development Maternal-Fetal Medicine Units (MFMU) Network—there were 124 cases of uterine rupture among 17,898 women who underwent a trial of labor after cesarean, and no cases of uterine rupture among 15,801 women who underwent elective repeat cesarean delivery. The rate of uterine rupture was 0.7% for women with a prior low transverse incision, 2.0% for those with a prior low vertical incision, and 0.5% for those with an unknown type of prior incision. Overall, the rate of uterine rupture in this study was 0.7% (N. Engl. J. Med. 2004;351:2581-9).

The second study, which I led, revealed a rate of uterine rupture in women who attempted VBAC of 0.9%, compared with a rate of 0.004% in women who underwent elective repeat cesarean section. This study was a multicenter observational study in which records of approximately 25,000 women with a prior low-transverse cesarean section were reviewed (Am. J. Obstet. Gynecol. 2005;193:1656-62).

Just as uterine rupture is more common in women who have a VBAC attempt than in those who choose elective repeat cesarean section, so are adverse perinatal outcomes. The MFMU study found 12 cases of hypoxic ischemic encephalopathy (HIE) among the term infants whose mothers underwent trials of labor. Seven of the cases of HIE were associated with uterine rupture.

Perspective is important. Although uterine rupture and HIE—the complications of most concern—are higher among those who attempt VBAC, the absolute rates are quite low and are comparable to, if not lower than, the complication rates of most other obstetrical procedures we perform on a daily basis.

Considering that the risks of pregnancy and childbirth overall are often underappreciated, it is important to share these data with patients and explain that the risks of VBAC are similar in magnitude to complications observed with any vaginal delivery. Certainly, these large observational studies—which provide a broader, more representative look at outcomes than prior studies—provide short-term safety evidence that overall favors VBAC as a standard part of practice.

Key Points

Dr. Macones offered these take-home points:

- ► Rates of uterine rupture and hypoxic ischemic encephalopathy are higher in women who attempt VBAC, but the absolute rates are quite low and similar to the complication rates of most other obstetrical procedures we do.
- ► Prior vaginal delivery is the only clinically useful predictive factor for VBAC success.
- ► VBAC outcomes can be maximized by inducing labor only when necessary, avoiding the use of multiple induction agents, avoiding higher doses of oxytocin, and being aware of signs of possible rupture.
- ► The long-term impact of multiple repeat cesareans should be factored into decision making, as serious maternal morbidity increases with each repeat cesarean delivery.

Selecting Candidates

Patient selection is important, as most of the major complications in women who attempt a trial of labor occur in association with a failed VBAC attempt.

At least several investigators, myself included, have attempted to develop models or scoring systems to predict

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which women are most likely to be delivered vaginally with a VBAC attempt. Many of these models have incorporated factors that can be ascertained early in prenatal care as well as those that are not known until admission for delivery. Other models focus on factors available at the first prenatal visit, such as maternal age, prepregnancy body mass index, ethnicity, and prior vaginal delivery.

Unfortunately, these models have not been shown to accurately predict who is going to succeed and who is going to fail in a VBAC attempt.

Thus far, the one clinically useful predictive factor we have for VBAC success is prior vaginal delivery, whether it's a prior successful VBAC attempt or a vaginal delivery that predated a cesarean section. Indeed, numerous studies have supported the predictive value of a prior vaginal delivery.

In 2005, for instance, the MFMU reported that a previous vaginal delivery was the most significant predictor of VBAC delivery success in a cohort of 29,661 women with a history of one prior cesarean delivery. Women with a prior vaginal birth had a VBAC delivery success rate of 86.6%, compared with 60.9% in women without a prior vaginal delivery (Am. J. Obstet. Gynecol. 2005; 193:1016-23).

A secondary analysis of our large, retrospective observational study on maternal complications with VBAC (discussed above) similarly showed that VBAC candidates with a prior vaginal birth were significantly more successful in achieving vaginal delivery than women with no prior vaginal delivery. The success rate was 89.9%, compared with 67% (Am. J. Obstet. Gynecol. 2006; 195:1143-7).

Women with a history of vaginal delivery also appear to have lower rates of major complications, making a VBAC attempt safer in these patients than a planned repeat cesarean section (whether the attempt is successful or not). In our observational study, a prior vaginal delivery was associated with significant reductions in major morbidity.

Clearly, not all women with a history of cesarean delivery are the same, and women with a prior vaginal delivery should be counseled about their more favorable benefit-risk ratio.

Overall, the vaginal delivery rate after a trial of labor is high in women who have had prior cesareans. In our large observational study, the vaginal delivery rate among those women who attempted VBAC was 75.5%. Furthermore, in the draft of its consensus development conference statement, the NIH panel reported that there is a "high grade of evidence" showing that a trial of labor is successful in nearly 75% of cases.

Even in the least favorable groups—among women who might appear to have unfavorable risk profiles for VBAC attempts—the success rate for VBAC is consistently higher than 50%.

Intrapartum Management

We can make a relatively safe and reasonable process even safer by carefully and conservatively managing the intrapartum period in women attempting VBAC.

Here are several tips for managing a trial of labor after cesarean:

► **Induce labor only when absolutely necessary.** Research from both large observational studies on a trial of labor after cesarean has shown that the risk of uterine rupture is two- to threefold higher in women who have their labor induced than in women who are delivered spontaneously. We should therefore refrain from inducing labor unless we have solid medical reasons to do so.

► **Try to avoid the use of multiple induction agents.** If you're considering induction for a VBAC candidate who has an unfavorable cervical exam, reconsider it. Research has also shown that women who require multiple agents for induction have the highest rates of uterine rupture—rates that are almost four- to fivefold higher than those for women who labor spontaneously.

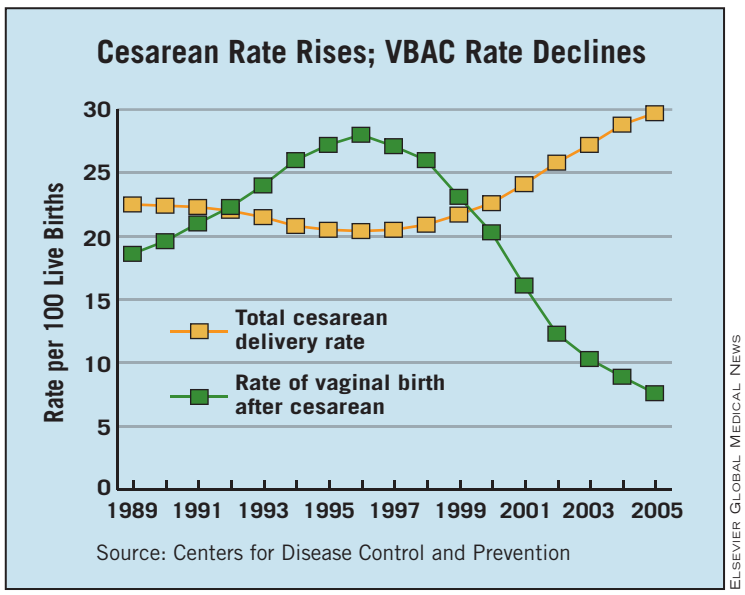
► **Avoid higher doses of oxytocin.** There does not appear to be an increased risk of rupture with oxytocin augmentation of spontaneous labor—unless the dose is in excess of 20 mU/min. An analysis by Dr. A.G. Cahill (Am. J. Obstet. Gynecol. 2007;197:495.e1-5), for example, found a dose-response relationship of maximum oxytocin administration and uterine rupture. Some institutions have already decided not to go above this amount in women attempting VBAC.

If your institution allows higher levels, be extra vigilant as the dosage increases.

► **Be leery of intrauterine pressure catheters.** Old data had suggested that intrauterine pressure catheters could be useful for predicting uterine rupture during trials of labor after cesarean. However, these data have not been supported by further research. I do not recommend the routine use of these catheters to try to predict uterine rupture in women attempting VBAC.

► **Be aware of signs of possible rupture.** Clinical suspicion should be high in women who have unusual pain when epidural anesthesia is already in place and in women who need frequent epidural dosing during a VBAC trial.

Research has shown that both conditions are markers for possible impending uterine rupture during VBAC attempts. An analysis of 504 women who had epidural anesthetic during attempted VBAC, for instance, showed that women who had a uterine rupture received more epidural doses on average, especially during the final 90 minutes of labor, than women who did not have a uterine rupture (Am. J. Obstet. Gynecol. 2010;202: 355.e1-5).



► **Keep patients informed.** Keeping your patient informed and comfortable with her options for delivery after cesarean section involves counseling throughout the course of prenatal care and could even include the use of an actual informed consent form for a trial of labor, which can help facilitate thorough discussions about the risks and benefits of attempting VBAC. Informed consent should extend into labor, however. Patients can be told that it is acceptable to inquire about stopping a trial of labor at any point. Giving patients the opportunity to "opt out" can be a good thing; it gives them more control over what's happening.

Consequences of Not Doing VBACs

There is a danger to too easily dismissing VBAC. Although most research has focused on uterine rupture and the index pregnancy, there is also research that clearly shows that serious maternal morbidity increases progressively with each repeat cesarean delivery. With multiple cesareans, each delivery becomes more complicated and carries more risk. The effect on maternal health can be profound.

A prospective observational study of approximately 30,000 women who had cesarean delivery without labor showed that the risks of cystotomy, bowel injury, ureteral injury, hysterectomy, and the need for postoperative ventilation, intensive care unit admission, and significant blood transfusion all were significantly increased with increasing numbers of cesarean deliveries (Obstet. Gynecol. 2006;107:1226-32).

Even more concerning is the risk of abnormal placentation. In this study, placenta accreta occurred in 0.24%, 0.31%, 0.57%, 2.13%, 2.33%, and 6.74% of women who were undergoing their first, second, third, fourth, fifth, and sixth or more cesarean deliveries. In women with placenta previa, the risk for placenta accreta rose progressively with each cesarean delivery—3.3% with the first cesarean, 11% with the second, 40% with the third, 61% with the fifth, and up to 67% with the fifth and sixth cesareans.

Because the rates of abnormal placentation are rising in the United States, it is extremely important that we consider not only the short-term complications of VBAC, such as uterine rupture, but also the long-term consequences of multiple repeat cesarean deliveries.

This part of the overall safety profile of VBAC is discussed in the NIH's draft consensus conference statement. The statement points out that women who have had VBAC have reduced abnormalities of placental growth and position in subsequent pregnancies, and that the incidence of placenta previa significantly increases in women with each additional cesarean delivery.

In counseling about elective repeat cesarean delivery versus a trial of labor, I often talk with women about the number of children they intend to have. If a woman has had a prior cesarean delivery and desires a large family, I am very inclined to strongly encourage her to pursue a trial of labor. ■

DR. MACONES *said he has no disclosures relevant to this article. E-mail him at obnews@elsevier.com.*

Boxed Warning: PTU Preferred for Patients in Early Pregnancy

Severe liver injuries have been associated with use of the antithyroid drug propylthiouracil, and the Food and Drug Administration has added a boxed warning to the product's label conveying this risk, the agency announced.

The warning for propylthiouracil (PTU) says that there have been reports of severe liver injury and acute liver failure—including fatalities—in adults and children who've been treated with the drug.

The warning also includes a statement concerning preferential prescribing of the drug for patients in early pregnancy. The warning notes that because birth defects have been associated with use of the antithyroid drug methimazole during the first trimester, "propylthiouracil may be the treatment of choice during and just before the first trimester of pregnancy."

Information about PTU use during early pregnancy was based on a review of postmarketing data on PTU and methimazole. The review indicated that reports of congenital malformations were about threefold greater with methimazole than PTU, and there was a "distinct and consistent" pattern of congenital malformations associated with methimazole but not PTU.

—Elizabeth Mechcatie

Serious adverse events associated with PTU should be reported to the FDA at www.fda.gov/medwatch.