Continued from previous page

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.

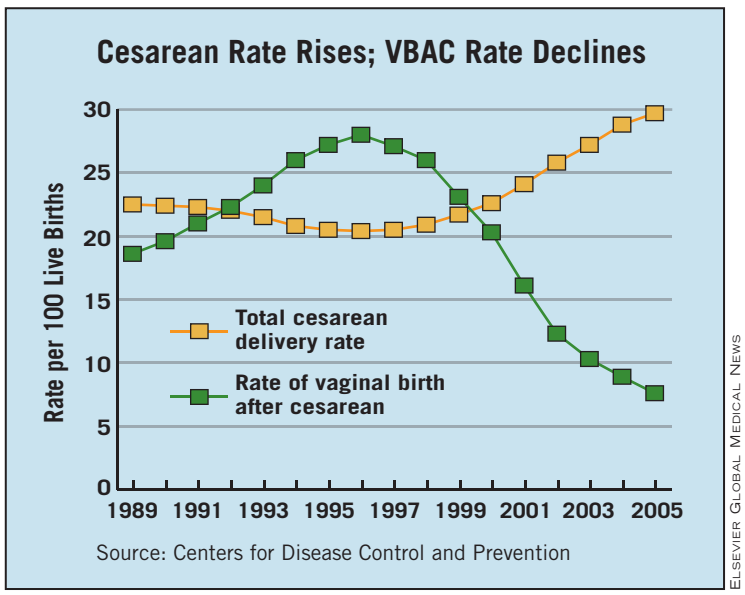
► **Avoid higher doses of oxytocin.** There does not appear to be an increased risk of rupture with oxytocin augmentation of spontaneous labor—unless the dose is in excess of 20 mU/min. An analysis by Dr. A.G. Cahill (Am. J. Obstet. Gynecol. 2007;197:495.e1-5), for example, found a dose-response relationship 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.