lowing outcome rates among more than 5000 women who attempted vaginal birth after having undergone 2 cesareans: success, 71%; uterine rupture, 1.4%; hysterectomy, 0.6%; blood transfusion, 2%; and perinatal injury/death, 0.1%, or 1 per 1000. Compared to women who underwent an elective third (second repeat) cesarean delivery, those who attempted vaginal birth after 2 cesarean deliveries were no more likely to undergo hysterectomy, receive a blood transfusion, or experience febrile morbidity. Neonatal outcome data were limited, but did not differ between the trial of labor or elective repeat cesarean groups (BJOG 2010;117:5).

In the abstracted study of Cahill et al, 89 women with 3 or more prior cesareans underwent a trial of labor. Of these, 58% labored spontaneously, 32% were induced, and 10% augmented. One-third of these women had previously delivered vaginally, and their rate of successful vaginal birth after cesarean (VBAC) was 91% versus a rate of 74% among the two-thirds who had not previously delivered vaginally. There were no uterine ruptures among the 89 women who underwent a trial of labor; 1 woman was carrying twins. However, even although there were no observed uterine ruptures, the upper bound of the 95% confidence interval for this 0% rate is 4%. Indeed, Miller et al reported a uterine rupture rate of 1.2% among 241 women who underwent a trial of labor after 3 or more cesareans. The vaginal delivery rate among these women was 79% (Obstet Gynecol 1994;84:255).

None of the data we have about VBAC come from randomized clinical trials, and thus all of it is subject to bias. That said, the available data allow for some reasonable inferences. First, the number of prior cesareans does not markedly effect the probability of success of the vaginal birth trial. Second, women with only 1 prior cesarean are at lower risk of uterine rupture if they undergo a trial of labor than women with 2 or more cesareans. Even so, the absolute risk of uterine rupture with a trial of labor is very low and below 2% in women with 3 prior cesareans. And third, given the escalating morbidity of multiple repeat cesarean deliveries, our current low rate of attempted VBAC, especially in women with a history of only one prior low transverse cesarean who are planning to have more than one child, is not in the best interests of the women.—DJR)

Effect of a Collector Bag for Measurement of Postpartum Blood Loss After Vaginal Delivery: Cluster Randomised Trial in 13 European Countries

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ABSTRACT

Delay in the diagnosis and initial treatment of postpartum hemorrhage may occur as result of visual underestimation of blood loss. A number of studies have reported that visual estimates of postpartum blood loss are often inaccurate. To

address this problem, the use of a collector bag has been proposed to provide an objective and more accurate measurement of blood loss than visual assessment. If effective, when excessive blood loss is observed, a more rapid response by a caregiver would be triggered. Currently, the bag is used routinely in many maternity wards in European countries despite lack of evidence for its efficacy.

This cluster randomized controlled trial investigated the effectiveness of a transparent plastic collector bag in reducing the incidence of severe postpartum hemorrhage after vaginal delivery by providing an accurate measurement of postpartum blood loss. The trial was conducted at 78 maternity units in 13 European countries between 2006 and 2007. The participants—25,381 women who had a vaginal delivery—were randomized to systematic use of a collector bag (intervention group, n = 11,037) or to continued visual assessment of postpartum blood loss (control group, n = 14,344). The primary study outcome was the incidence of severe postpartum hemorrhage defined as a composite of all women who experienced one or more of the following: blood transfusion, intravenous plasma expansion, surgical procedure or arterial embolization, treatment with recombinant factor VII, or death.

There was no statistical difference between the groups in the incidence of severe postpartum hemorrhage (intervention group: 1.71%, 189/11,037 vs. control group: 2.06%, 295/14, 344) using either individual level analysis or cluster level analysis. In individual level analysis (with data adjusted for maternal age, prophylactic uterotonics used in the third stage, mode of delivery, and birth weight), the adjusted odds ratio was 0.82, with a 95% confidence interval of 0.26 to 2.53, $P = 0.7$. In cluster level analysis, following adjustment for the baseline rate of severe postpartum hemorrhage, the adjusted weighted mean difference was 0.16%, with a 95% confidence interval of −0.69% to 1.02%, $P = 0.7$.

These findings indicate that the systematic use of a collector bag after vaginal delivery does not reduce the rate of severe postpartum hemorrhage compared to visual estimation.

EDITORIAL COMMENT

(In developed countries, where most women deliver with ready access to blood products, estimation of blood loss after delivery, although important, is not as critical as in developing world settings. In the latter, failure to appreciate the magnitude of a postpartum hemorrhage may mean that irreversible hemorrhagic shock occurs before the patient can be transferred to a facility equipped to appropriately manage the bleeding.

Visual estimation of blood loss is notoriously unreliable, especially at the extremes, where the tendency is to assume that the loss is more normal than it actually is (Razvi K, et al. Aust N Z J Obstet Gynaecol 1996;36:152; Stafford I, et al. Am J Obstet Gynecol 2008;199:519.e1–e7). Thus, alternate means of assessing postpartum blood loss have been evaluated.

In a pilot study in resource-poor Tanzania, conventional birth attendants were taught to measure postpartum hemorrhage after home birth using Kangas (colored rectangular cotton garments which are all of the same size and are owned by all women in East Africa). A kanga was placed under the mother's buttocks after delivery. Based on prior work, it was known that if she soaked 2 kangas with blood, her blood loss was slightly greater than 500 mL. This degree of blood loss was used to trigger hospital referral in 1 region, and administration of 1000 mg of rectal misoprostol in another. In both regions, a 2-kanga threshold was new. Previously it had been 4. The authors of this preliminary report postulated that women in both groups benefitted by this new systematic approach—the nonmisoprostol group by earlier referral than usual, and the misoprostol group by earlier treatment and a much lower need for referral for ongoing hemorrhage, 2% versus 19% (Prata N, et al. Int J Gynaecol Obstet 2005;90:51).

In another pilot trial conducted at a district hospital in India, 123 women undergoing vaginal delivery were randomly allocated to estimation of blood loss by visual inspection, or to estimation using a specially designed collecting drape with a calibrated collection pouch. In the first 10 patients in the latter group, photospectrometry, a highly reliable but labor intensive and clinically impractical method of blood loss estimation, was used as a gold standard estimate of blood loss. In this trial, estimates of blood loss in the visually assessed group were 33% less than in the drape-assessed group, 203 versus 302 mL, and there was good correlation between pho-

tospectrometry and drape estimation. Even so, in both pilot trials, blood loss was probably underestimated in general, as more than one-third of women delivered vaginally will lose more than 500 mL (Pritchard JA, et al. Am J Obstet Gynecol 1962;84:1271).

In the abstracted study of Zhang et al, use of a collector bag to estimate blood loss after vaginal delivery was not effective in reducing the composite outcome of severe postpartum hemorrhage. The authors hypothesized "that having a more accurate of assessment of postpartum blood loss is not by itself sufficient to change behaviors of care givers and improve the management of postpartum hemorrhage." But recognizing that a mother has bled or is bleeding too much after delivery is a necessary precondition to doing something about it. In developed and, especially, in developing countries, there should be continued investigation of both better methods to detect postpartum hemorrhage, and better ways of dealing with it after it is recognized.—DJR)

Body Composition, Smoking, and Spontaneous Dizygotic Twinning

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ABSTRACT

Unlike monozygotic (MZ) twinning, dizygotic (DZ) twinning is influenced by genetic, maternal, and environmental factors. As a result, there are regional and time-dependent differences in its incidence. Established risk factors such as fertility treatments and maternal age do not explain all variation in DZ twinning, and additional factors likely to be involved may include body composition and smoking. In some studies, increasing height and body mass index (BMI) seems to be associated with increased risk of spontaneous DZ twinning, whereas some (but not all) studies report significantly higher multiple birth rates among mothers who smoke.

This retrospective cohort study evaluated body composition and smoking before the twin pregnancy among mothers with spontaneous DZ twins; because the rate of MZ twinning is fixed throughout the world, women with MZ twins served as controls. The participants were 19,357 mothers who completed a postal questionnaire as part of the Netherlands Twins Registry, which provided the survey data. The average time between the postal survey and the birth of the twins was 10.4 years. The final study sample was comprised 8515 mothers of spontaneous DZ twins and 5663 mothers of spontaneous MZ twins. Binary logistic regression was used to determine the odds of having spontaneous DZ twins compared to the odds of having MZ twins, after adjusting for independent variables including height, BMI, and smoking before pregnancy, as well as age, gravidity, and educational attainment.

Mothers in the tallest quartile for height were 1.6 times more likely than mothers in the shortest height quartile to have DZ twins rather than MZ twins (odds ratio [OR] = 1.6; 95% confidence interval [CI] = 1.5–1.8). Compared to mothers with a normal BMI, overweight or obese mothers were 1.3 times more likely to have DZ twins (OR = 1.3; 95% CI = 1.1–1.4). Twin mothers who had smoked before the twin pregnancy also had an increased likelihood of being a DZ twin mother (OR = 1.4; 95% CI = 1.3–1.5 for smoker vs. nonsmoker). Maternal age and gravidity were associated with spontaneous DZ twinning, but educational attainment was not.