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Editorial

Reducing primary cesarean delivery: can we prevent current and future morbidity and mortality?

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The cesarean delivery rate reached an all-time high of 31.8% in 2007.[1] This was due to a primary cesarean delivery rate of more than 20% and a vaginal birth after cesarean (VBAC) rate of less than 10%. Interestingly, although we have seen the cesarean rate rise 50% since 1995, there has been no concomitant reduction in neonatal morbidity and mortality.[2] In fact, what has been seen is that the risk of maternal mortality has been on the rise.[3] Although the risk of maternal mortality is associated with maternal factors such as obesity and chronic medical conditions, it is also seen at higher rates in women undergoing a cesarean delivery.[4] Furthermore, the risks of maternal mortality and neonatal complications appear to be increased in the setting of placenta previa as well as accreta.[5,6] Thus, given the strong association between multiple cesarean deliveries and placenta previa and accreta,[7] it is not surprising that this rise is being seen.

In the current edition of the *Journal of Perinatology*, Galyean *et al*. examine how having a prior cesarean delivery impacts future pregnancy outcomes beyond abnormal placentation.[8] They found that having had a prior cesarean delivery increased the risk in the subsequent pregnancy of requiring a blood transfusion or being admitted to an intensive care unit for the mothers, and a longer length of stay as well as a greater likelihood of needing a ventilator for the neonates. For the mothers, this difference was primarily seen only in those who underwent a repeat cesarean delivery. Similarly for the neonates, these findings were only worse when born to a woman who did not undergo a trial of labor after cesarean.

Thus, some of the future morbidity may be mitigated by offering a trial of labor after cesarean, particularly one which results in a VBAC. In an elegant analysis, Grobman *et al*. showed that women with a 70% chance of a successful VBAC had better maternal and neonatal outcomes than women who underwent an elective repeat cesarean delivery.[9] Unfortunately, VBAC rates are at an all time low for the past 20 years and, as discussed by Dr Rybak in the current issue of the *Journal of Perinatology*, the availability of VBAC is diminishing due to a decreasing number of hospitals and providers willing to offer the option to women.[10] Thus, the burden of prevention of future adverse pregnancy outcomes falls to reducing the risk of cesarean delivery in the first pregnancy.

Such a reduction can be accomplished by dedication from each clinician to look for opportunities to reduce the cesarean delivery rate, proper incentives to clinicians who care for pregnant women, and health policy approaches such as tort reform. Clinicians can likely reduce primary cesareans by offering external cephalic version to women with a breech fetus,[11] extending the diagnosis of active phase arrest to at least 4 h,[12,13] using manual rotation of the fetal occiput in the setting of persistent occiput transverse or posterior positions,[14,15] and suppression of HSV lesions in women who are herpes simplex virus positive.[16] However, clinicians have little incentive to extend the diagnosis of active phase arrest, do external cephalic versions or attempt manual rotation because each of these involves the expense of clinical time without reimbursement. As opposed to many other areas of health care, clinicians caring for pregnant women are not rewarded economically for spending more time with a patient in labor and delivery. As the actual time spent during a cesarean delivery is greater than a vaginal delivery, the reimbursement has traditionally been greater. However, if one factors in the time spent during labor, most vaginal deliveries consume more clinician time. Perhaps if clinicians were reimbursed at a higher level for a vaginal delivery as compared with a cesarean delivery, such proper incentives might help turn the rising cesarean tide.

Although there need not always be immediate direct compensation to provide what is perceived as the best care, in this setting, the time cost of providing patient care to pregnant and laboring women is not the only issue. Unfortunately, the other perverse incentive placed on clinicians caring for pregnant women is the hostile medical-legal environment. Two recent studies both found associations between malpractice premiums and cesarean delivery.[17,18] It is a commonly understood dictum in medical-legal discussions that a clinician does not get sued for the cesarean performed 'too soon'. Unfortunately, it appears that the current practice environment encourages cesarean delivery early and often without much concern given to the effects on future pregnancies from the first cesarean.

Thus, reversing the trend seen over the past decade is going to be complex and require work on a variety of fronts. It will require research such as the work by Galyean *et al*. and commentary similar to that provided by Dr Rybak. It will involve patient and clinician education and thoughtful work by policymakers to establish the proper incentives to provide the best care. In the end,

without a reversal in this trend, it appears that the rates of both maternal and neonatal complications may continue to rise in the near future.

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