Method Identifies Risk Factors for Second C-Section

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The following factors are associated with an increased risk of emergency cesarean section in women who have had a previous cesarean section and are attempting vaginal birth: older maternal age, low maternal height, male gender of baby, labor induced by prostaglandin, not having had a previous vaginal birth, and later birth.

These are the key conclusions of a study that used a new method to predict the risk of failed vaginal birth after a cesarean section.

"There is, at present, no validated method that allows antepartum assessment of the risks of emergency cesarean section, and counseling of women is, at best, semiquantitative," wrote the investigators, who were led by Gordon C.S. Smith, M.B., of the department of obstetrics and gynecology at Cambridge University, United Kingdom. "In the present study, we provide a validated model that classifies over half this population as being low or high risk of emergency cesarean section, on the basis of thresholds suggested by a previous systematic review."

He and his associates studied 23,286 women in Scotland, each of whom had one prior cesarean delivery and who attempted vaginal birth at or after 40 weeks' gestation between 1985 and 2001 (PLoS Med. 2005;2[9]:e252). They randomly divided the women into group 1 (the model development group) and group 2 (the validation group).

In group 1, the investigators tested their method of determining risk of emergency cesarean section by examining various risk factors including the mother's age and height, the sex of the baby, gestational age, and whether and how the birth was induced. When they applied the model to the women in group 2, they predicted that 36% had a low risk of cesarean section and 16.5% had a high risk. When they compared their predictions with the actual outcomes, however, they found that the actual rate of cesarean section was 10.9% among low-risk women and 47.7% among high-risk women.

The British study found the risk of emergency cesarean section was increased by maternal factors such as older age, less height, and no previous delivery.

The risk of emergency cesarean section was increased by factors such as the mother being of older age and less height and not having given birth previously. Other factors include a male baby, labor induced by prostaglandin, and later birth.

The investigators also found that as the risk of cesarean section increased, so did the risk for uterine rupture. The observed incidence of uterine rupture among low-risk women was 2.0 per 1,000, compared with an incidence of 9.1 per 1,000 among high-risk women.

The investigators acknowledged certain limitations of the study, including concerns about how the model would apply to other populations. "However, we assessed the robustness of the predictors employed by selecting records for the development and validation groups on the basis of factors that might reflect variation in other populations," they wrote.

"We found the model was similarly predictive in and out of sample when these categorizations were performed by hospital throughput, socioeconomic deprivation category, and year of birth. This finding suggests that the maternal and obstetric characteristics used in the model are likely to be robust even when applied to populations with different obstetric practices." ■