OBSTETRICS

# Strength of preference for vaginal birth as a predictor of delivery mode among women who attempt a vaginal delivery

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**OBJECTIVE:** We sought to assess the relationship between strength of preference for vaginal birth and likelihood of vaginal delivery among women attempting this delivery mode.

**STUDY DESIGN:** We conducted a longitudinal study of mode of delivery preferences among women who were <36 weeks' pregnant. Participants completed a sociodemographic and clinical questionnaire and were asked if they preferred vaginal or cesarean delivery. Participants who preferred vaginal delivery completed a standard gamble exercise to assess the strength of this preference on a 0-to-1 scale (higher scores indicate stronger preference for vaginal delivery); those preferring cesarean delivery were assigned a value of 0. Data on clinical characteristics and delivery mode were obtained via telephone interview or chart review. Logistic regression was used to identify predictors of delivery mode among women who attempted a vaginal delivery.

**RESULTS:** Of 210 participants, 156 attempted a vaginal delivery. Their mean and median vaginal delivery preference scores were 0.70 (SD 0.31) and 0.75 (interquartile range, 0.50—0.99), respectively. In multivariate analyses, women with a prior cesarean delivery (adjusted odds ratio [aOR], 0.08; 95% confidence interval [CI], 0.02—0.39) or who delivered an infant ≥4000 g (aOR, 0.04; 95% CI, 0.01—0.28) had significantly lower odds of having a vaginal delivery. After controlling for potential confounders, participants with a stronger preference for vaginal delivery were at significantly higher odds of having a vaginal delivery (aOR, 1.54; 95% CI, 1.01—2.34 for every 0.2 increase on the 0-to-1 scale).

**CONCLUSION:** Among women who attempt a vaginal delivery, the strength of preference for vaginal birth is predictive of the delivery mode ultimately undergone.

**Key words:** delivery mode, patient preferences

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The cesarean delivery rate in the United States reached an all-time high of 32.9% in 2009, representing an increase of >53% since 1996.[1] Changes in clinical characteristics and provider practice patterns, heightened concern regarding the medicolegal environment, and patient preferences have all been suggested as factors that may be contributing to this rising rate.[2-4] Examination of the specific indications for cesarean delivery reveal that they occur across a broad spectrum of clinical scenarios,[5] ranging from those in which vaginal delivery is contraindicated (eg, complete placenta previa) to those in which it is performed based entirely on the patient's preference (eg, cesarean delivery on maternal request). Between these 2 extremes are many clinical situations where a patient may be eligible for a vaginal delivery but chooses to undergo a scheduled cesarean delivery, such as elective repeat cesarean delivery, or where a patient attempts a vaginal delivery but ultimately has a cesarean due to diagnoses made during labor, such as arrest disorders or nonreassuring fetal heart rate tracing.[6,7] The process of shared decision making between patient and provider varies in each of these scenarios: in the case of women who are eligible for a trial of labor after cesarean or elective repeat cesarean delivery, elicitation of patient preference in discussions regarding approach to delivery has been specifically advocated by professional guidelines,[6] while in the case of cesarean delivery during labor, a

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recommendation for cesarean is generally initiated based on the provider's assessment of the clinical situation, which leads to a discussion of the risks, benefits, and alternatives with the patient during the process of informed consent. While the process and priority placed on patient preference may vary, in either situation, the patient retains the ultimate decision-making power as they retain the right to decline a cesarean delivery even when recommended by their provider.

While the role of patient preferences may be clearly characterized in the situation of a cesarean delivery on maternal request, understanding the impact of patient preference on decision making during labor is more challenging. Despite recent attempts at standardization, the clinical assessment of the need for cesarean delivery during labor remains subjective, and there are many situations in which one could argue that either proceeding with an ongoing attempt at a vaginal delivery or performing a cesarean delivery is appropriate.[5,8-11] In these contexts, although the provider initiates the discussion as the clinician decision-maker, the extent to which patient preferences contribute to the decision-making process is less certain.[5,12] Limited evidence suggests that patient choice may drive the decision for cesarean during labor more frequently than previously realized[13] and recent studies have demonstrated that, in certain populations, a stated preference for vaginal delivery may be predictive of whether a woman has a vaginal or cesarean delivery.[14,15] Less is known, however, about how the strength of this preference may influence the ultimate mode of delivery. The aim of this analysis was to further examine the complex relationship between patient preferences and delivery mode in a diverse population of pregnant women who attempted a vaginal birth.

## Materials and Methods

We conducted a secondary analysis of data obtained during the course of a longitudinal study entitled "Mode of Delivery Preferences among a Diverse Population of Pregnant Women," which took place from 2008 through 2012. The primary goal of that study was to assess women's preferences for vaginal vs cesarean delivery in the context of prior cesarean delivery, twin gestation, breech presentation, and absent traditional medical indication for cesarean delivery. Patients receiving prenatal care at the University of California, San Francisco, or who had participated in one of our prior studies and had expressed an interest in participating in future studies, were sent a letter of invitation to participate in this study, with an opt-in/opt-out card. Those who opted in or who did not return the card were contacted by research staff to assess eligibility and interest in participation. To address the goals of the overall study, patients who were carrying a twin pregnancy, had a history of a cesarean delivery, or who had a fetus in breech presentation were oversampled during the latter stages of study recruitment. Patients carrying twins were additionally recruited from the inpatient obstetrics service, the University of California, San Francisco Prenatal Diagnostic Center, as well as through online postings.

English-speaking women at <36 weeks' gestation were eligible for enrollment in the study, which included an in-person meeting with a trained study interviewer at 26-36 weeks' gestation and a telephone interview at 8-10 weeks' postpartum. All participants signed written informed consent that included participation in both interviews and permission to have their medical record reviewed.

The face-to-face interview began with a sociodemographic and attitudinal questionnaire that included items related to race/ethnicity, education, income, reproductive and delivery history, and characteristics of the woman's current pregnancy. After providing this information, participants were asked, "if you could choose, which type of delivery would you want to have?" with response options of "definitely a vaginal birth," "probably a vaginal birth," "probably a cesarean delivery," and "definitely a cesarean delivery." They were then given the opportunity to elaborate on the reasons for this preference, which was recorded in a free text format as part of the questionnaire.

Participants who indicated that they would "definitely" or "probably" prefer a cesarean delivery if they could choose either delivery mode were assigned a vaginal preference score of 0. Participants who indicated that they would "definitely" or "probably" prefer a vaginal delivery completed a series of exercises using ELICIT, a computerized tool developed by our group[16] to assess patient preferences, or utilities.

We used the standard gamble as our preference metric.[17] This method measures the strength of an individual's preference for a specific outcome based on the chance of an undesired outcome (vs the ideal outcome) she would take to avoid an intermediately ranked outcome. Utility values range from 0-1, with higher values indicating a willingness to accept a higher probability of the undesired outcome occurring, and thus a stronger preference for the ideal outcome.

In our study, participants who indicated that they would prefer vaginal birth were asked to choose between the certainty of a planned cesarean delivery (the intermediately ranked outcome) or an alternative with a specified probability of an attempted vaginal delivery ending in a cesarean delivery (the undesired outcome) and the complementary probability of an uncomplicated vaginal delivery (the ideal outcome). The probability of the undesired outcome was then varied until the participant was indifferent between the 2 alternatives. The utility value is calculated at this indifference point. For this study, the utility value was equal to the probability that the attempted vaginal birth would end in a cesarean at which the woman would opt for the planned cesarean delivery. For example, a woman with a very strong preference for a vaginal delivery might indicate that she would opt to attempt a vaginal delivery even if the likelihood that this attempt would end in a cesarean delivery was as high as 95%; her utility for a vaginal delivery would be 0.95. On the other hand, a woman with a weaker preference for