

Probability of severe postpartum hemorrhage in repeat cesarean deliveries: a multicenter retrospective study in China

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Abstract

Objective: The aim of this study was to determine the factors predicting the probability of severe postpartum hemorrhage in women undergoing repeat cesarean delivery. **Design:** This multicenter, retrospective cohort study based on data from 11 public tertiary hospitals within 7 provinces of China. **Setting:** 11 public tertiary hospitals within 7 provinces of China. **Population:** 11074 eligible pregnant women who had a history of cesarean delivery and undergo cesarean delivery again after 28 weeks of gestation. **Methods:** The cohort was divided into the development and validation sets. The all-variables model and the multivariable logistic regression model (simple model) were fitted to estimate the probability of severe postpartum hemorrhage. **Results:** Six independent risk factors of severe postpartum hemorrhage in the simple model were selected from 40 clinical information features including a history of endometrial injury, complications with placenta previa or placenta accreta, lower gestational age at delivery, pelvic adhesion, and previous uterine incision status. Our final simple model showed excellent discrimination and calibration, with areas under the ROC curve of more than 0.90 in the validation set. **Conclusions:** Predictive tools based on patient clinical characteristics can be used to accurately estimate the probability of severe postpartum hemorrhage in patients undergoing repeat cesarean delivery. **Funding** National Key R&D Program of China (No. 2016YFC1000405 and 2017YFC1001402) and the National Natural Science Foundation (No. 81830045, 81671533 and 81571518). **Keywords** repeat

cesarean deliveries; severe postpartum hemorrhage; placenta previa; placenta accrete; pelvic adhesion; prediction; obstetrics

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