

Development and Validation of a Prognostic Nomogram for Severe Postpartum Haemorrhage After Caesarean Delivery: A Two-Centre Retrospective Study

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Abstract

Abstract Objective: To develop and validate a nomogram to predict severe postpartum haemorrhage (PPH) following caesarean delivery. **Design:** Two-centre retrospective cohort study. **Setting:** Third Affiliated Hospital of Guangzhou Medical University and the Dongguan Maternal and Child Health Care Hospital. **Population:** Cesarean delivery patients from the Third Affiliated Hospital of Guangzhou Medical University were divided into a development cohort (n=11,037) and an internal validation cohort (n=4,673). Cesarean delivery patients from the Dongguan Maternal and Child Health Care Hospital (n=13,775) were enrolled in the external validation cohort. **Methods:** The nomogram was based on independent risk factors for severe PPH obtained by multivariate logistic regression. We evaluated the discrimination and calibration of the nomogram in the development and validation cohorts. The area under the receiver operating characteristic curve, the Hosmer-Lemeshow test, and calibration plots were used to assess the nomogram. **Main outcome measures:** Postpartum haemorrhage. **Results:** Severe PPH occurred in 4.5%, 4.3%, and 2.0% of the patients in the development, internal validation, and external validation cohorts, respectively. The nomogram used data including previous caesarean delivery, low pre-pregnancy weight, placenta previa, and placenta accreta spectrum disorders. The area under the curves of the nomogram in the internal and external validation cohorts were 0.915 (95% confidence interval, 0.893–0.938) and 0.799 (95% confidence interval, 0.764–0.834), respectively. Consistency between the predicted and actual probabilities was observed in both validation cohorts. **Conclusions:** The nomogram displayed good calibration and discrimination; thus, it can be used for screening and timely intervention by clinicians, thereby reducing severe PPH incidence.

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