



Development and validation of a predictive model for vaginal birth after Caesarean section based on clinical and ultrasound factors

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Introduction: With increasing caesarean rates driven by repeat surgeries, predicting VBAC success is crucial. This study aimed to develop a reliable model using clinical and ultrasound factors available at the time of admission for delivery.

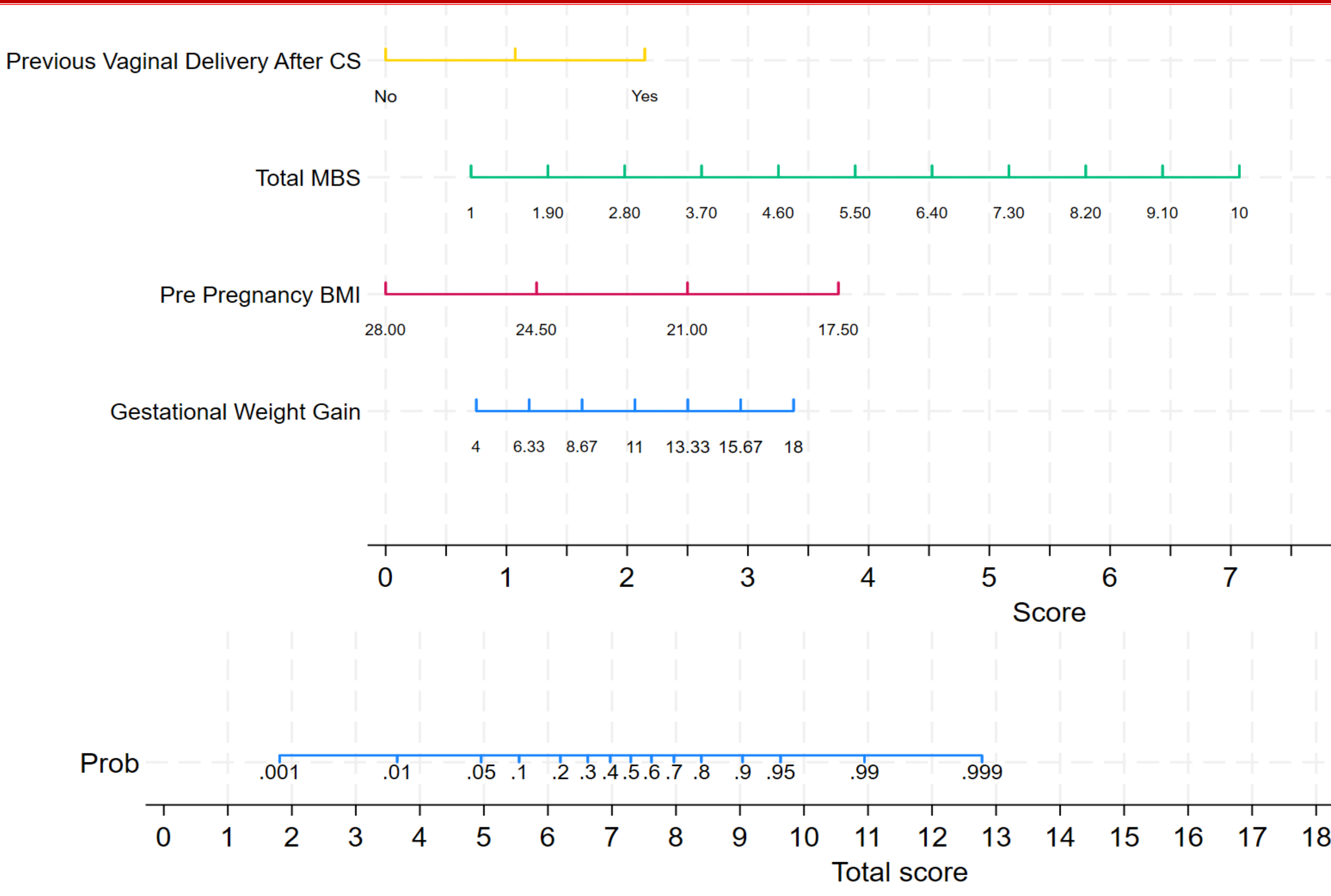
Methodology: This ambi-directional cohort study conducted in a tertiary care centre in India included 152 retrospective and 100 prospective TOLAC-eligible women with prior LSCS and term singleton cephalic pregnancy. Retrospective data was used to develop a predictive model using multivariable logistic regression. In the prospective phase, participants underwent scar thickness assessment at 36–38 weeks and were divided into spontaneous labour and induction groups based on Bishop’s score. Labour was managed as per institutional protocol.

Results: A multivariable logistic regression model using 13 variables ($p < 0.02$) identified four key predictors of VBAC success. The model showed good fit and high accuracy ($AUC = 0.88$). External validation confirmed model performance. Scar thickness was not significantly associated with VBAC outcome ($p = 0.794$).

Multivariate Logistic Regression: Predictors of Successful VBAC (Retrospective Cohort)

Variable	Odds Ratio	Stand ard Error	Z Score	P-value	95% Confide nce Interval
Gestational Weight Gain	1.27	0.14	2.12	0.034	1.02 – 1.58
Pre-Pregnancy BMI	0.64	0.12	-2.40	0.016	0.44 – 0.92
Total Modified Bishop’s Score (MBS)	2.44	0.46	4.76	<0.001	1.69 – 3.51
Previous Vaginal Delivery after CS	14.00	20.93	0.76	0.447	0.951 – 233.633

Nomogram for predicting the success rate of VBAC



Conclusion: Encouraging TOLAC through a reliable, population-specific prediction model can reduce CS rates. This study's nomogram, based on clinical factors, offers accurate, individualized VBAC success prediction to guide clinical decisions & patient counselling.