

# Validation of a prediction model for vaginal delivery after a caesarean section in a regional Victorian population

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## Introduction

To assist women and clinicians decide on whether to attempt a Trial of Labour After Caesarean section (TOLAC) objectively, several prediction tools have been developed.<sup>1,2</sup>

The Tessmer-Tuck et al.<sup>2</sup> prenatal prediction tool provides a simple nomogram that can be implemented at the first prenatal visit.

External validation of this prediction model by Tessmer-Tuck et al.<sup>2</sup> in a regional Australian population would be useful for further counselling and support of patients wanting a TOLAC, and may also highlight locally important predictors.

## Method

A retrospective cohort study of patients that attempted a TOLAC at Barwon Health between 1<sup>st</sup> July 2012 and 30<sup>th</sup> June 2015 was conducted. Information was collected from electronic medical records.

## Results

A total of 244 patients were included in our study. Of these, 126 (51.6%) had a successful vaginal birth and 118 (48.4%) had a repeat caesarean section.

For comparison with previous studies we categorised maternal age as <30 or ≥30, BMI <30 or ≥30 and greatest previous dilatation ≥4cm.

We evaluated the variables in the Tessmer-Tuck model and compared the odds ratios and confidence intervals generated within the local data set. We did not include race/ethnicity in our model as our population was largely homogenous.

**Table 2: Odds ratios using factors reported by the Tessmer-Tuck model**

| Feature                    | Study population     | Tessmer-Tuck model  |
|----------------------------|----------------------|---------------------|
| Maternal age <30           | 0.77<br>(0.41-1.44)  | 0.94<br>(0.90-0.98) |
| BMI <30                    | 0.63<br>(0.30-1.32)  | 0.94<br>(0.91-0.98) |
| Any prior vaginal delivery | 1.31<br>(0.48-1.32)  | 2.62<br>(1.39-4.93) |
| Prior VBAC                 | 5.19<br>(1.91-14.09) | 2.73<br>(2.21-3.36) |
| Recurring indication       | 0.52<br>(0.29-0.96)  | 0.53<br>(0.48-0.60) |

Values represent OR (CI) unless otherwise stated

Using binary logistic regression, in our final model, VBAC success was independently associated with previous dilatation ≥4cm (p<0.05), prior successful VBAC (p<0.005) and no recurrent indication (p<0.005).

## Conclusions

Although we did not find statistically significant results for maternal age or BMI in our cohort from regional Australia, there was consistency in our results when compared with those of Tessmer-Tuck et al. We found that the following factors were significant explanatory variables of a successful TOLAC: previous dilatation ≥4cm, prior successful VBAC, and failure to progress as the indication for previous caesarean section.

## References

- Grobman WA, Lai Y, Landon MB, Spong CY, Leveno KJ, Rouse DJ, et al. Does information available at admission for delivery improve prediction of vaginal birth after cesarean? *Am J Perinatol.* 2009;26:693-701.
- Tessmer-Tuck JA, El-Nashar SA, Racek AR, Lohse CM, Famuide AO, Wick MJ. Predicting vaginal birth after caesarean section: A cohort study. *Gynaecologic and obstetric investigation.*