An Audit of Induction of Labour Methods and Delivery Outcomes in 'Low-Risk' Multiparous Patients at Townsville University Hospital

Zoe Byrne, Jess Little, Kavitha Vangili

INTRODUCTION

Induction of labour (IOL) is performed in nearly 25% of pregnancies when the benefits of early delivery outweigh the risks of continuing pregnancy. While balloon catheters are considered a superior IOL method for nulliparous women, their efficacy in multiparous women remains unclear. Prior to 2021, intravaginal dinoprostone was the primary IOL method at Townsville University Hospital (TUH). Following a protocol change, cervical ripening balloon catheters (CRB) became the preferred method. This audit evaluates the impact of this shift on delivery outcomes in low-risk multiparous patients.

OBJECTIVE

Aim:

To determine whether the transition from dinoprostone to CRB as the primary IOL method in multiparous women has influenced delivery outcomes.

Primary Outcome:

- Mode of delivery (spontaneous vaginal birth, assisted vaginal birth, emergency caesarean section).

Secondary Outcomes:

- Labour duration
- Maternal and neonatal outcomes

Study Design:

A retrospective cohort study comparing two groups:

- Group 1 (2019 cohort): Induction using dinoprostone
- Group 2 (2023 cohort): Induction using CRB

PARTICIPANTS

Inclusion Criteria:

- Multiparous patients (≥18 years) with prior vaginal delivery
- Singleton, non-anomalous fetus
- ≥37 weeks gestation, vertex presentation, estimated fetal weight <4500g
- Defined as 'low-risk'

Exclusion Criteria:

- Prior caesarean section or complicated delivery
- High-risk pregnancy (e.g., pre-eclampsia, gestational diabetes, maternal medical conditions)
- BMI >35

Sample Size / Data Analysis

Data was collected from TUH records for eligible cases:

- Group 1 (2019, dinoprostone) vs. Group 2 (2023, CRB)
- Statistical analyses compared delivery outcomes, labour duration, and complications
- Significance threshold: $p < 0.05$

RESULTS

- Labour duration was significantly shorter in the CRB group (p=0.040)
- Higher caesarean section rate in the CRB group compared to dinoprostone (p=0.003)
- Lower likelihood of spontaneous vaginal birth with CRB

DISCUSSION

- Key findings raise further questions:
- Why are low-risk multiparous women experiencing higher caesarean rates with CRB?
- Does the reduced labour duration reflect quicker progression or expedited caesarean delivery?
- Were induction indications truly aligned with 'low-risk' criteria?

		IOL Method		
Method of Birth		Dinoprostone	CRB	Total
Caesarean lower segment	Observed	40	43	83
	% within column	20.10 %	34.96 %	25.78 %
Vaginal forceps	Observed	6	3	9
	% within column	3.02 %	2.44 %	2.80 %
Vaginal non-instrumental	Observed	137	60	197
	% within column	68.84 %	48.78 %	61.18 %
Vaginal vacuum	Observed	16	17	33
	% within column	8.04 %	13.82 %	10.25 %
Total	Observed	199	123	322
	% within column	100.00 %	100.00 %	100.00 %

CONCLUSION

While CRB shortens labour duration, it is associated with a higher caesarean section rate in multiparous women. These findings challenge current IOL protocols and warrant further investigation into the indications for induction and caesarean delivery in this population.

Future Directions

- Investigate the specific indications for caesarean section in both groups
- Examine secondary outcomes, including neonatal health and maternal satisfaction
- Consider revising IOL guidelines for multiparous patients

Compliance & Data Protection

- Approved by AQUIRE Townsville Hospital and Health Service Audit, Quality and Innovation Review Panel (THHSAQUIRE1771)
- Data confidentiality ensured; stored securely for five years before destruction

REFERENCES

•Beckmann, M. et al. (2019) 'Induction of labour using prostaglandin E2 as an inpatient versus balloon catheter as an outpatient: A multicentre randomised controlled trial', BJOG: An International Journal of Obstetrics & Gynaecology, 127(5), pp. 571–579. doi:10.1111/1471-0528.16030.

•Manly, E. et al. (2020) 'Comparing Foley catheter to prostaglandins for cervical ripening in multiparous women', Journal of Obstetrics and Gynaecology Canada, 42(7), pp. 853–860. doi:10.1016/j.jogc.2019.11.001.

•Sangram Singh, B., Joshi, K. and Pajai, S. (2023) 'Intra-cervical Foley balloon catheter versus prostaglandins for the induction of labour: A literature review', Cureus [Preprint]. doi:10.7759/cureus.33855.

•Lee YY, Roberts CL, Patterson JA, Simpson JM, Nicholl MC, Morris JM, et al. Unexplained variation in hospital caesarean section rates. Med J Aust. 2013;199(5):348-53. doi:10.5694/mja13.10279.