Contemporary Trends in Perinatal Outcomes Following Instrumental Vaginal Births:

The Victorian Context

Georgia Dawson^{1,2,3}, Roshan Selvaratnam^{1,2}, Kirsten Palmer^{1,3,4}, Professor Euan Wallace⁵, Dr Miranda Davies-Tuck ^{2,3}, Adjunct Professor Tanya Farrell²

¹Department of Obstetrics & Gynaecology, School of Clinical Sciences Monash University, ²Safer Care Victoria, ³Hudson Institute of Medical Research, ⁴Department of Obstetrics & Gynaecology, Monash Health, ⁵Department of Health & Human Services

Background

Instrumental Vaginal Births (IVBs) refer to the use of forceps, vacuum, or both instruments during childbirth to expedite complicated second stage arrests¹. Indications include fetal distress, prolonged labour, or when maternal pushing efforts are contraindicated¹.

Currently in Victoria, approximately **15%** of all births are completed by IVBs, and this percentage appears to be rising².

Whilst IVBs are often utilised as an alternative to Caesarean Sections to avoid associated complications, IVBs can also result in morbidities for both mother and baby¹. Current literature on IVBs primarily focuses on maternal harms and are underpowered for rare fetal outcomes³.

Recent Victorian neonatal fatalities following IVBs have questioned the **safety of instrumental practice**. Further, fetal morbidity and mortality rates may be increasing and going

unrecognised across Victoria².

Aims



 To determine the rates of morbidity and mortality associated with Instrumental Vaginal Births between 2012-2019.



 To determine if the rates of morbidity and mortality, following IVBs between 2012-2019, differ by location of birth (metropolitan, regional, and rural settings)

Results

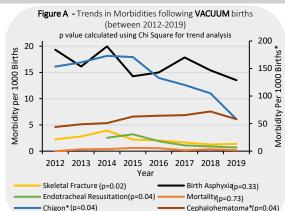


Figure B - Trends in Morbidities following FORCEPS births (between 2012-2019)

p value calculated using Chi Square for trend analysis

150

**

100

2012 2013 2014 2015 2016 2017 2018 2019

Year

NICU Admission (p=0.01)

Cephalohematoma (p=0.02)

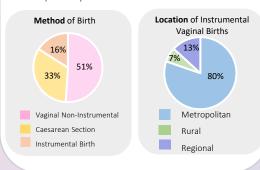
Mortality (p=0.07)

Facial Nerve Injury (p=0.02)

Scalp Bruising Forceps*(p=0.02)

Demographic Results

- Between 2012-2019, there were 389,785 total vaginal births from 387,663 women.
- Of total vaginal births, 91,116 were IVBs.
- 42,992 were forceps, 44,229 were vacuum, and 3,895 required sequential instruments.



Perinatal Data Collection: 2012-2019

Excluding Including

Terminations of Pregnancy. All births >28 weeks Gestation,

Methods

Retrospective Cohort Study Design using the Victorian

EXPOSURE VARIABLES Method of Birth

Method of Birth Year of Birth Indication for Instrument Location of Birth

Multiple births >3

OUTCOMES VARIABLES

Free Congenital Anomalies

Morbidity: Up to 30 different fetal morbidities were analysed by 1000 births including intracranial and extracranial injuries, facial nerve damage, scalp trauma, fractures, other nerve palsied, apgar scores, methods of resuscitation, and Neonatal Intensive Care Unit (NICU) and Special Care Nursery (SCN) admission.

Mortality: analysed by reported stillbirths and neonatal deaths.

Analysis was performed using Chi-Square statistics for trend (Aim 1).

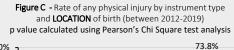
Statistically significant groups were calculated using Pearson's Chi-Square

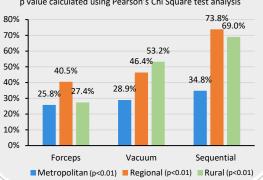
(Aim 2) and were considered significant if p < 0.05.

References

- 1. RCOG. Operative Vaginal Delivery Green–top Guideline No. 26. UK;
- CCOPMM. Victoria's mothers, babies and children 2019 report. SCV, Victorian Government 2021.
- Verma GL, Spalding JJ, Wilkinson MD, Hofmeyr GJ, Vannevel V, O'Mahony F. Instruments for assisted vaginal birth. Cochrane Database of Systematic Reviews. 2021(9).

Note: Not all morbidities analysed are included in Figure A and B due to poster size restrictions. Contact authors for further information.





Discussion

In Victoria between 2012-2019, rates of certain morbidities following vacuum birth decreased significantly. Contrastingly, rates of certain morbidities following forceps birth increased significantly. No significant trend changes in mortality were seen following either method of birth.



Babies born in rural and regional settings had the highest rates of physical morbidity among all types of instrumental births.

Rates of morbidity differed by instrument type and fetal harms may be increasing, particularly among forceps and those performed in regional and rural centers. Our results support ongoing analysis into the causes of increasing fetal morbidities, and discrepancies in care across locations.



