

Is it safe to perform sequential instrumental delivery?

Matteo Di Carlofelice¹, Jacqui Holland¹, Thangeswaran Rudra^{1,2}.

¹Department of Obstetrics & Gynaecology, Royal Brisbane & Women's Hospital, Queensland ²University of Queensland.



Objective

Instrumental deliveries reportedly account for 12.6% of births in Australia¹. Sequential instrumental deliveries have been shown to increase maternal and neonatal morbidity compared to a single instrument². This study aimed to investigate maternal and neonatal outcomes of sequential instrumental delivery in a quaternary centre.

Design

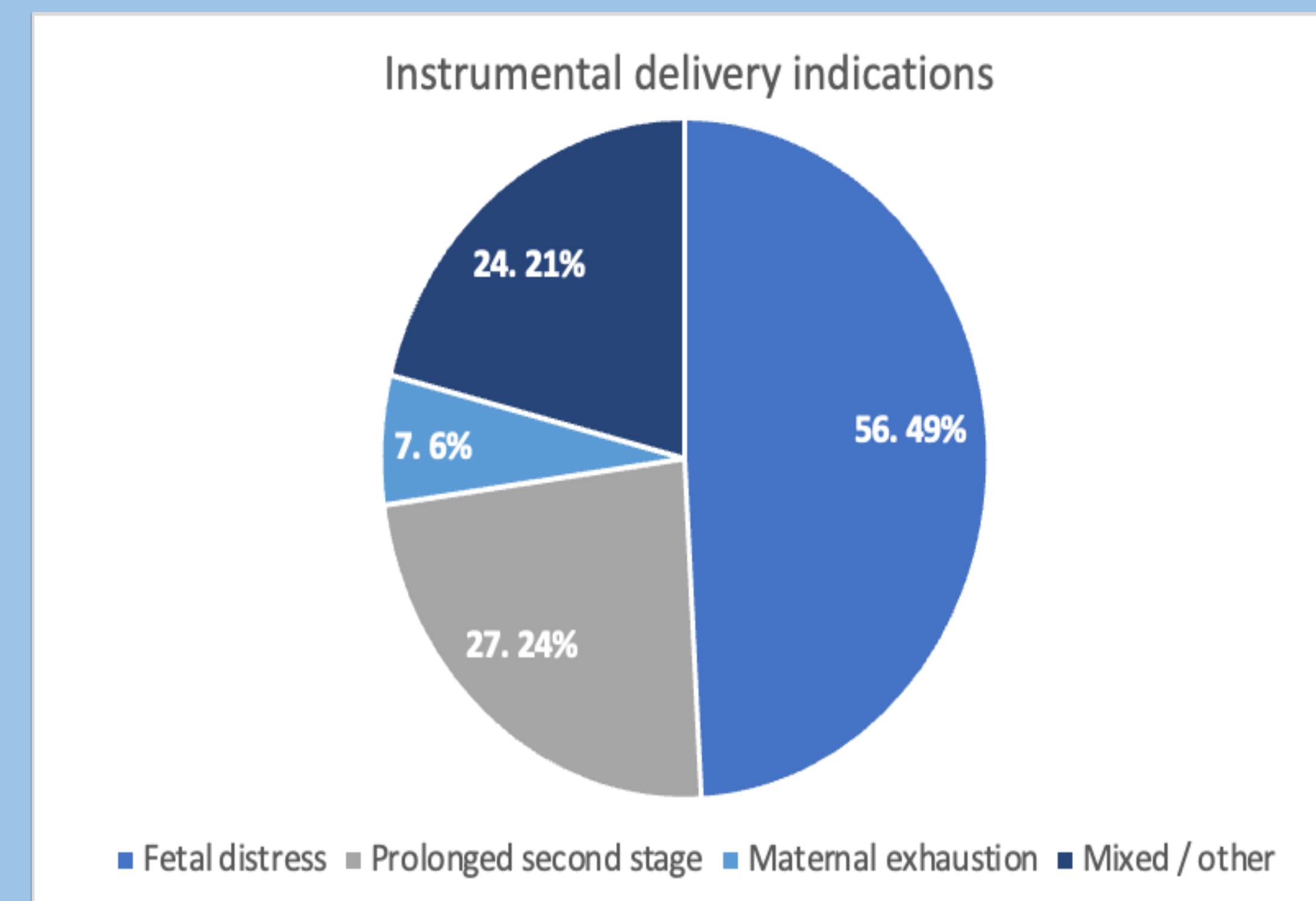
Retrospective observational study.

Methods

Sequential instrumental deliveries conducted at the Royal Brisbane and Women's Hospital, Queensland, Australia, were reviewed from 2017 to 2019 inclusive. Multiple pregnancies and malpresentations were excluded. Primary maternal outcome measures included perineal tears (3rd/4th degree), length of stay, urinary retention/incontinence, postpartum haemorrhage and transfusion. Primary neonatal outcome measures included Apgar 5 minute score <7, arterial cord pH <7.1, shoulder dystocia, neonatal injury and alive on discharge. Electronic patient records were utilised for data collection and Microsoft Excel was used for statistical analysis.

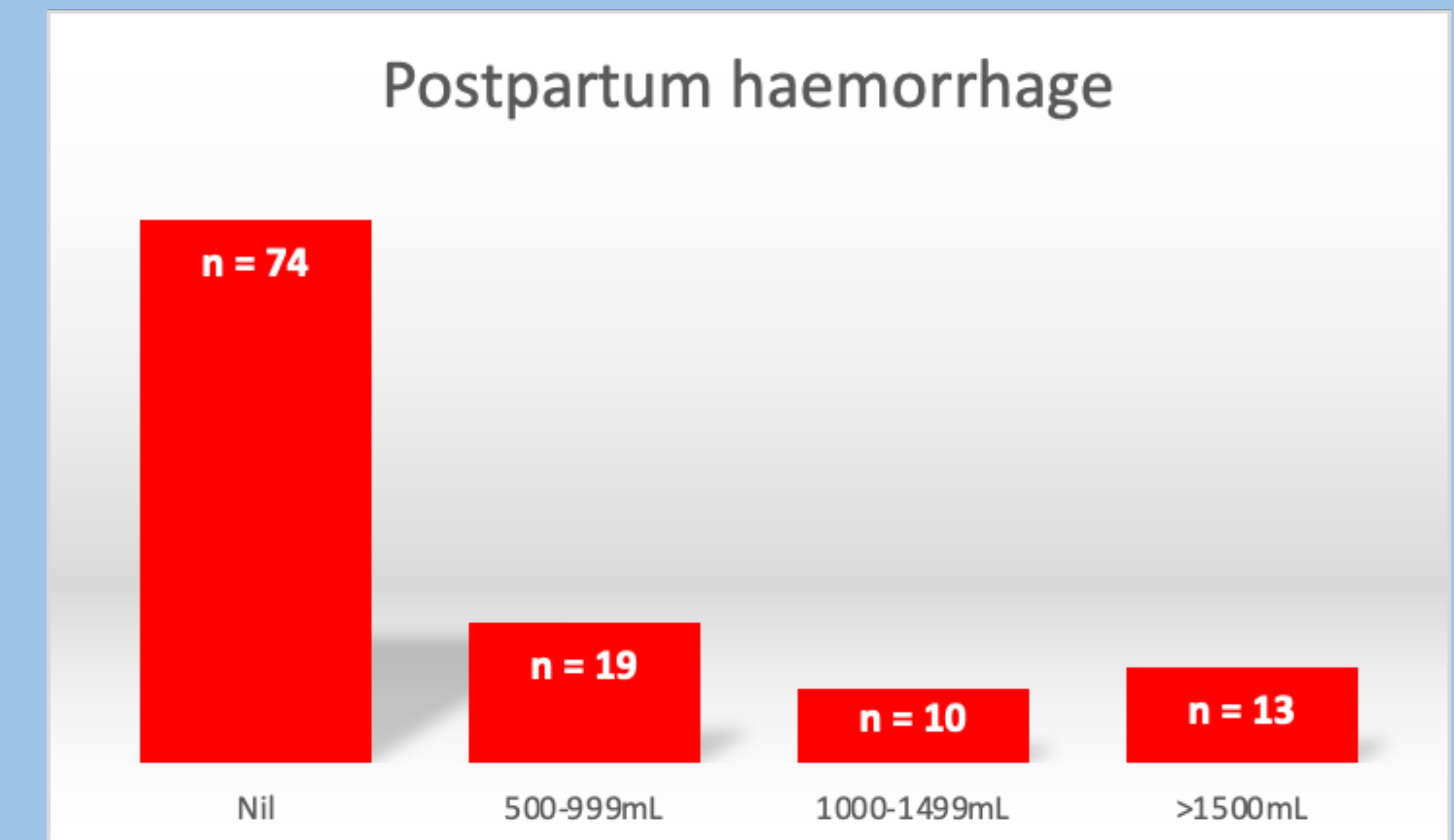
Results

One thousand five hundred and eighty-five women had instrumental deliveries. 7.3% of total instrumental deliveries required sequential instruments (N = 116). Vacuum extraction was attempted as the first instrument in 98% of cases. The average age was 29.4 ± 4.9 years old (mean $\pm$ SD). 66% of women were primigravid (n = 76). The mean K36 BMI was 28.5 ± 4.1 kg/m² (mean $\pm$ SD). 43% were induction of labours (n = 50) and 57% were spontaneous labourers (n = 66). The median number of pulls for vacuum extraction was 3 and for forceps was 1.



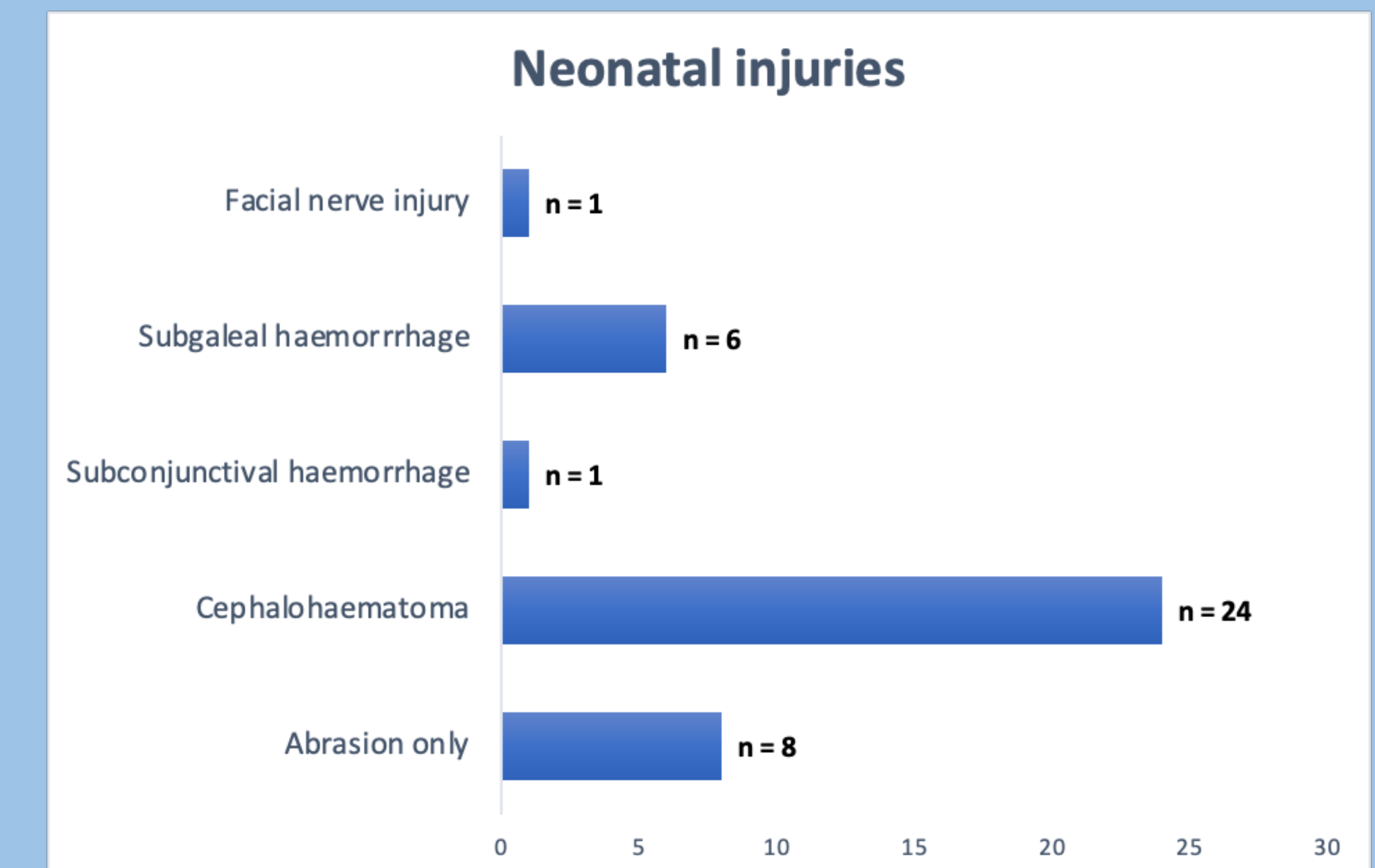
Maternal outcomes

The median length of stay for sequential instrumental women was 3 days. Only 5% had urinary retention/incontinence post-operatively (n = 6) and 11% required transfusion (n = 13). 22% suffered third degree perineal tears (n = 25) while a further 23% had episiotomy extensions (n = 27). One mother had a cervical tear and none had a fourth degree tear.



Neonatal outcomes

The mean Apgar score at 1 minute was 7.7 ± 1.8 (mean $\pm$ SD) and at 5 minutes was 8.7 ± 0.8 (mean $\pm$ SD). Only three newborns had an Apgar <7 at 5 minutes. 44% required admission to SCN/ICN (n = 51). Mean arterial cord pH was 7.3 ± 0.6 (mean $\pm$ SD). 12% had arterial cord pH <7.1 (n = 14). 9% were complicated by shoulder dystocia (n = 10). All neonates were alive on discharge.



Conclusion

Sequential instrumental delivery exposes women to considerable risks of perineal tears and postpartum haemorrhage and neonates to injury. This study emphasises the importance of appropriate instrument selection for clinical intervention during second stage of labour by the accoucheur.

1. Australian Institute of Health and Welfare. Australia's mothers and babies [Internet]. Canberra: Australian Institute of Health and Welfare, 2021.

2. Murphy DJ, Macleod M, Bahl R, Strachan B. A cohort study of maternal and neonatal morbidity in relation to use of sequential instruments at operative vaginal delivery. Eur J Obstet Gynecol Reprod Biol. 2011 May;156(1):41-5. doi: 10.1016/j.ejogrb.2011.01.004. Epub 2011 Feb 1. PMID: 21277670.