

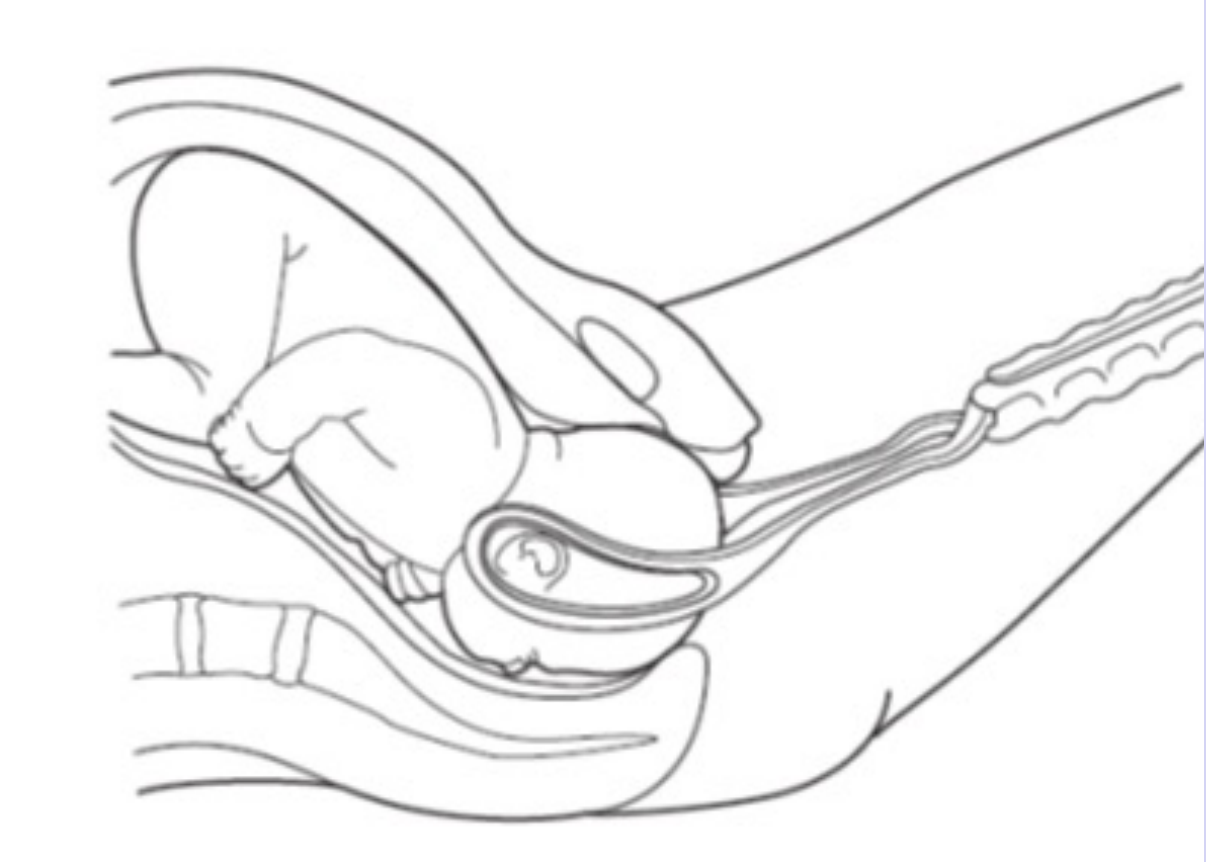
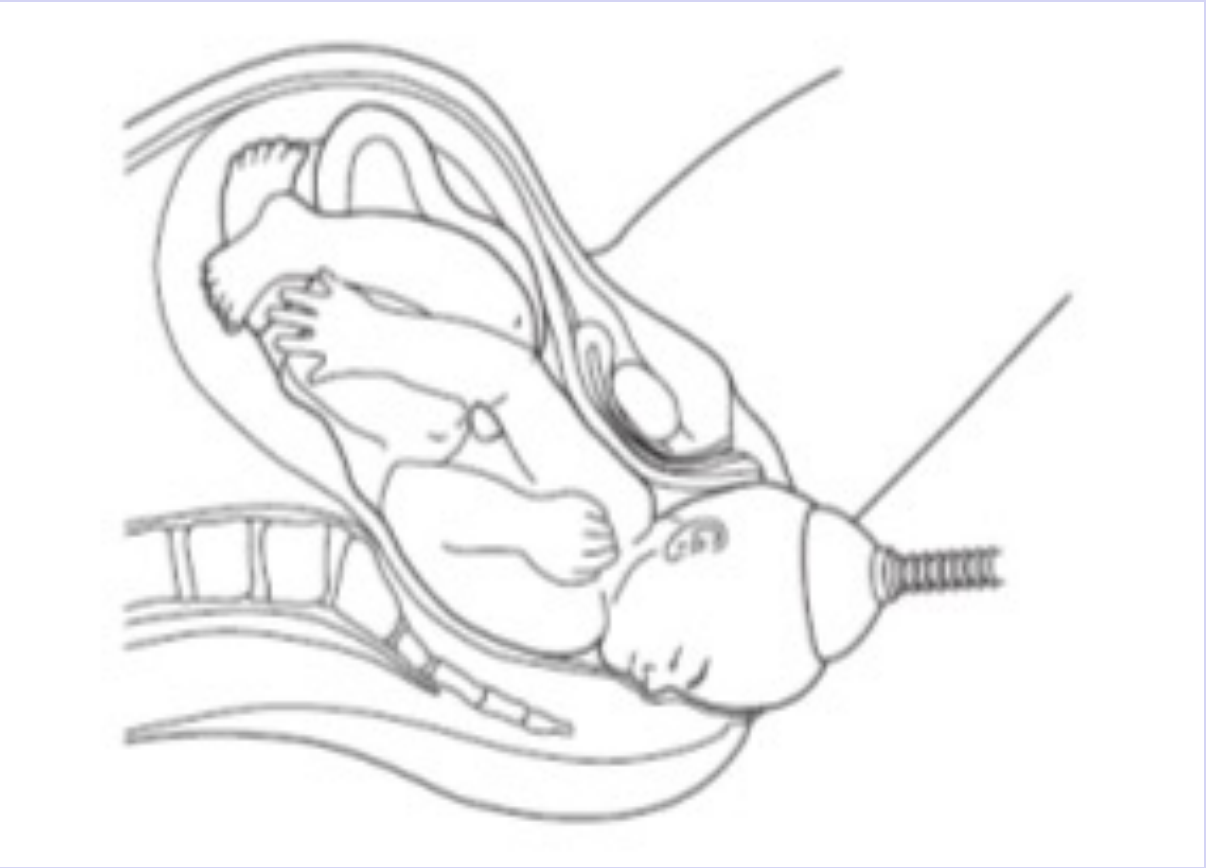
BLOOD LOSS AND TRANSFUSION IN ASSISTED BIRTH: A COHORT STUDY

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Objective

In the UK 10-15% of women have an assisted vaginal birth (AVB).¹ AVB is associated with maternal complications including haemorrhage; with postpartum haemorrhage (PPH) rates estimated at 10-40%.² Haemorrhage is the second largest direct cause of maternal death in the UK.³ However, there is limited research into the impact of blood products on associated maternal and neonatal factors, such as length of stay. This study aims to inform training and antenatal information provision specifically related to the use of blood products and associated sequelae. We are producing a patient information video on AVB based on our findings.



Design

A single-centre, retrospective cohort study of all attempted AVBs during an 18-month period (01/08/2019 – 31/01/2021) at a tertiary maternity unit, North Bristol NHS Trust, UK. This is an observational descriptive study of anonymised data. This study has been funded by donations to Southmead Hospital Charity.

Methods

Women with a singleton, cephalic vertex presentation who had an attempted AVB were identified. Key outcome measures, device used (non-rotational forceps (NRF), rotational forceps (RF), Kiwi (K), Silastic (S) and Odon Device (OD)), and conversion to caesarean section were retrospectively collected from the maternal and neonatal records.

Primary outcomes: blood loss (mL), PPH (>1L), blood products administered (number of units, indication, and cause of bleeding)

Secondary outcomes: key maternal and neonatal variables, such as length of stay and neonatal admission, to assess the impact of blood loss and transfusion.

Results

1,074 AVBs were identified, with an AVB rate of 13%. 1,001 (93%) of the attempted AVBs were successfully assisted vaginally, with a 7% (n=73) conversion rate to caesarean section (CS).Success rate of the first device used was 85% - NRF:94%, RF:86%, K:84%, S:85%, OD:67%. In 80 births two devices were used and in three births three devices were used.

There were 73 unsuccessful AVBs resulting in CS: 27 (37%) had no device used due to failure to manually rotate. Only one device was attempted in 68 (93.2%), a second device was attempted in 5 (6.8%). First device used: RF: 10 (13.7%), NRF: 26 (35.6%), forceps not specified: 1 (1.4), K: 8 (11%), S: 0, OD: 1 (1.4%)

The overall mean blood loss in attempted AVB was 796mls (SD 564), with a higher loss in those with a successful AVB (811mls (SD 575)) than an unsuccessful AVB (594mls (SD 327))). 29% of successful AVBs had a blood loss >1000ml (10% in those that were unsuccessful), and 8% had a blood transfusion (3% unsuccessful). 23.6% of successful AVBs received TXA (13.7% unsuccessful). However, length of stay ≥ 5 days was 12.1% in successful AVBs compared to 15.1% in unsuccessful, and 15.9% of successful AVBs had at least one readmission (20.5% unsuccessful).

Median (IQR) blood loss by final instrument used was: NRF 764mls (703); RF 731mls (665); K: 506mls (457); S: 567mls (632); OD: 839mls (743). Mean blood loss: RF: 851.164, NRF: 899.383, K: 631.941, S: 746.871, OD: 839.000. ANOVA of blood loss by final mode of delivery shows significance (p<0.001). Transfusion rates by final device were: NRF: 54/535 (10%); RF: 7/ 73 (10%); K: 8/254 (3%); S: 3/85 (4%); OD: 4/52 (8%).

There were 76 third and 6 fourth degree tears in successful AVB (overall 8.2%). Third/fourth degree tear rates by final device were: NRF: 58/535 (10.8%); RF: 5.5% (4/73); K: 3.9% (10/254); S: 3.5% (3/85); OD: 13.5% (7/52).

The post-natal length of stay was >= 5 days in 120 attempted AVBs (12.0%).

Of the 1001 babies that were born by successful AVB, 91 (9.1%) were admitted to NICU, 27 (2.7%) required phototherapy and 192 (19.2%) IV antibiotics.



Fig. 2 Bar chart of Transfusion rate by final mode of delivery

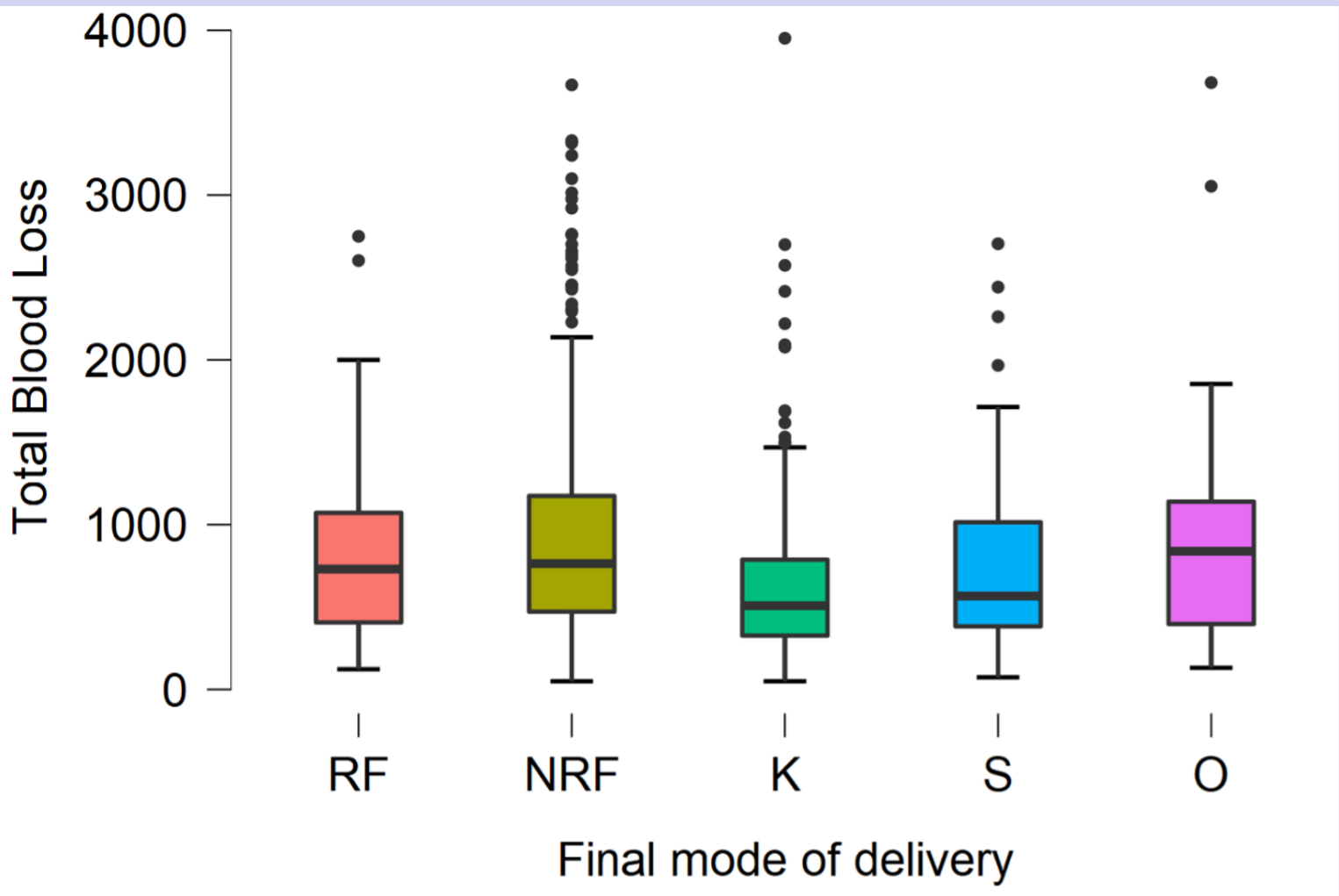


Fig. 3 Box and Whisker plot of total blood loss by final mode of delivery.

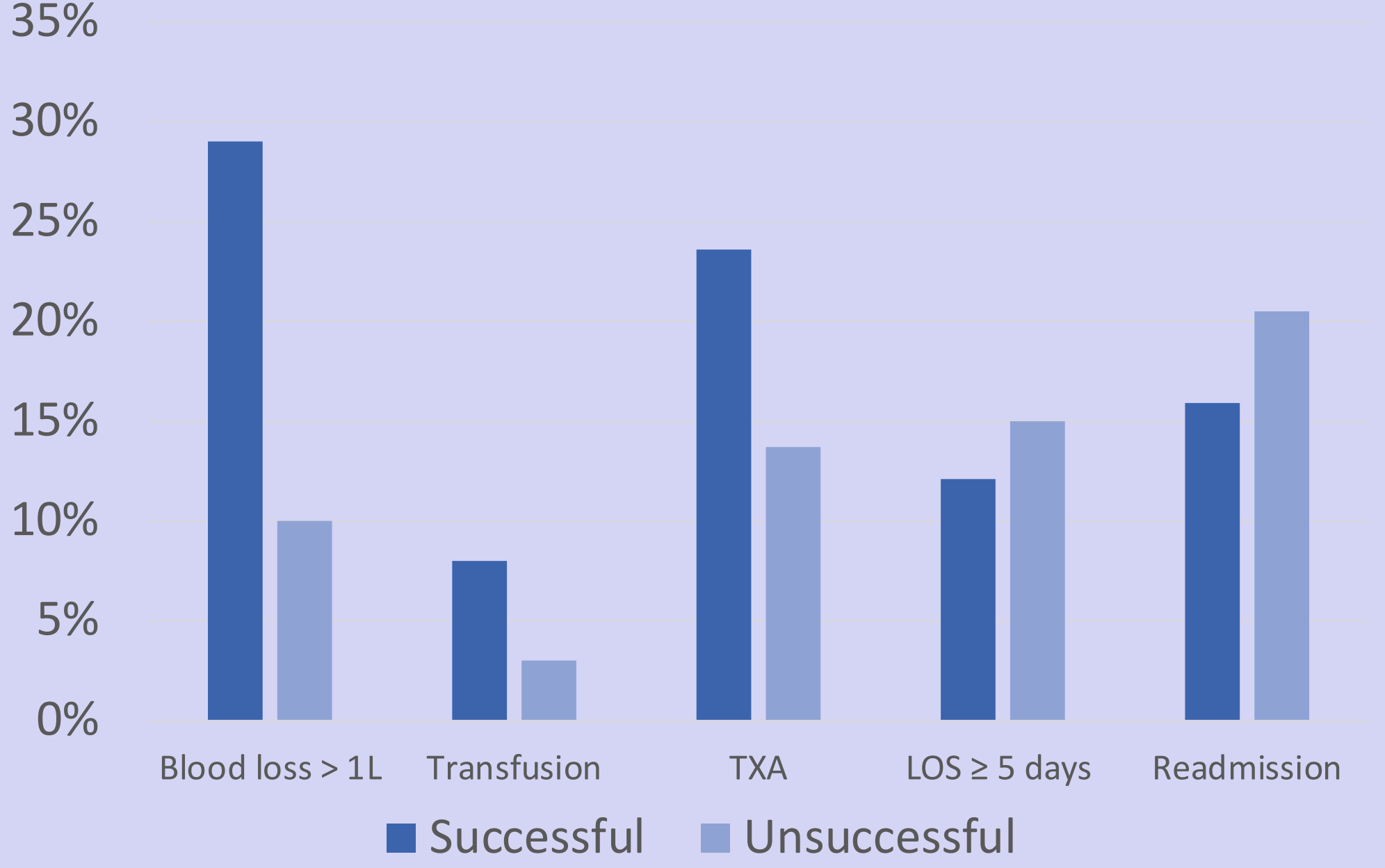


Fig. 1 Bar chart comparing successful and unsuccessful AVB

Conclusion

There was a high overall success rate for AVB. A significant difference was found between the mean total blood loss by instrument; RF and NRF are associated with a higher blood loss and transfusion rate. Successful AVB is associated with a higher blood loss, PPH (>1L) rate, blood transfusion rate and TXA administration rate compared to unsuccessful AVB converted to emergency CS. However, unsuccessful AVB is associated with a longer length of stay (≥ 5 days) and a higher rate of readmission. This has highlighted the need for further research to identify strategies to reduce blood loss in AVB.

References:

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