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Anaesthesia at the extremes of obstetric haemorrhage

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Introduction

Major obstetric haemorrhage may be defined as blood loss >1.5L. A subgroup of women suffer more extreme haemorrhage, with associated morbidity and mortality. Placenta Accreta Spectrum (PAS) may result in catastrophic haemorrhage and/or caesarean hysterectomy, posing a significant challenge for surgical and anaesthetic teams. With the UK rate of caesarean section now 30%,[1] the incidence of PAS is rising. Following several cases of massive haemorrhage associated with PAS in our tertiary unit, a multidisciplinary evaluation of the management of women with haemorrhage >3L and/or PAS over 3 years was undertaken.

Methods

Following trust approval, obstetric patients with estimated blood loss (EBL) >3L and/or PAS between August 2017 and August 2020 were identified. Diagnosis, time of day, grade of anaesthetist, mode of anaesthesia, blood products, monitoring and postoperative level of care were recorded.

Results

Blood loss
33 cases were identified (estimated incidence 0.1% based on 8000 deliveries/year). PAS was present in 42% of bleeds ≥3L. The largest non-PAS EBL was 4L, compared with 8 cases with EBL >4L in the PAS group (max.12L).

Staffing
14/33 cases (42%) occurred out-of-hours. A consultant anaesthetist was present in 30/33 (91%).

Mode of anaesthesia
25 were caesarean section and 8 vaginal deliveries, 12 required hysterectomy.
Initial anaesthetic was spinal 52%, general (GA) 42%, CSE 3%, none 3%. Conversion from regional to GA was 39% overall, 70% for PAS and 100% for hysterectomy. Conversions had a higher EBL (mean 7.3L vs. 3.4L). One was complicated by unexpected difficult intubation.

91% had arterial monitoring and 4 had a central line inserted before ICU transfer.

Blood products required
RBC transfusion occurred in 73% (median 2U, range 0-22U), with cell salvage in 67% (mean volume returned 700 mL, maximum. 5600mL, during a case where 2 cell salvage machines were utilised simultaneously). Rotational thromboelastometry (ROTEM) was used in 91%. Fibrinogen concentrate was used in 36%, with fresh frozen plasma and platelets each in 15%.

Postoperative level of care
7 patients were transferred to ICU; 5 were intubated, one required vasopressor support and one renal replacement therapy following a transfusion reaction. Postoperative ventilation was only required for the most extreme blood losses (7, 9, 11 and 12L), and one patient with EBL 3.5L with a mixed picture of sepsis and haemorrhage. All were extubated < 24h with 4/5 < 12h. There were no maternal deaths.

Discussion

- In this evaluation, PAS contributed to 42% of haemorrhage of 3L or more, 100% >4L and 92% of caesarean hysterectomy.
- There was a high rate of conversion to GA which was related to EBL, presence of PAS and need for hysterectomy.
- Use of cell salvage was beneficial with high volumes returned (up to 5.6L).
- Coagulation products were required in only the minority of this group, despite high blood losses.
- Postoperative ventilation was only required in a minority of cases and for a very short period.
- Such cases are labour intensive and appropriate staffing needs to be available 24/7 as many present out-of-hours.
- Multidisciplinary planning with early anaesthetic involvement is key to allow advance counselling.[2]

References

1. Sultan P, Sultan E, Carvalho B. Regional anaesthesia for labour, operative vaginal delivery and caesarean delivery: a narrative review. Anaesthesia 2021. 76:136-47.
2. Jauniaux ERM, Alfirevic Z, Bhide AG et al. Placenta Praevia and Placenta Accreta: Diagnosis and Management. Green-top Guideline No. 27a. BJOG 2019; 126:e1-e48