Experience of managing abnormally invasive placenta (AIP) over an 8-year period at a UK centre

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Introduction

- Abnormally invasive placenta (AIP) has a significant association with maternal and neonatal mortality and morbidity.
- National and International[1] recommendations support management of AIP cases in specialist centres, although NHS England central commissioning are yet to implement a national network.
- North Bristol Trust (NBT) is a large obstetric unit that has provided regional management of AIP cases since 2014.
- On average 8 patients a year are assessed as high risk for AIP and delivered by specialist team.
- Over this 8-year period our anaesthetic and surgical management has evolved with local experience and from published recommendations.
- This service evaluation project gives an interesting view of the changing management for this complex and diverse cohort of women.

Methods

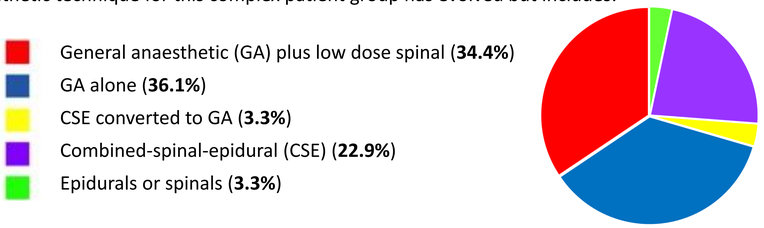
- We performed a retrospective database analysis of all women referred for assessment of AIP at NBT between January 2014 - December 2021, identifying sixty-one patients.
- Details of antenatal imaging, intrapartum management, and postoperative course were collected from interrogation of electronic patient records.
- Local quality improvement panel approval was given (audit number CA51912).

Results

- Mean maternal age 35.2 years.
- Average gestation 34^{+3} weeks (range 19^{+5} to 39^{+1}).
- Average parity 2.5 (range 0 to 7).
- There were no maternal deaths.
- Sixty patients were identified pre-operatively and 1 expectedly intra-operatively.
- Post-operatively, 60 cases were managed on our level 2 obstetric critical care unit, one required level 3 care.

Anaesthetic Technique Results

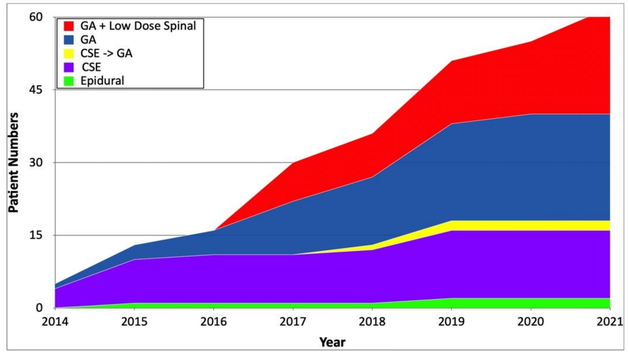
Anaesthetic technique for this complex patient group has evolved but includes:



Please refer to **chart 1**, showing how our anaesthetic technique has evolved over the last 8 years with this patient group.

- Forty-five cases (72%) were delivered via elective CS and 28% required urgent intervention. Invasive arterial blood pressure monitoring was used in 84% and internal jugular venous access in only 2 cases.
- Overall hysterectomy rate was 67%; 59% of elective cases versus 100% urgent cases (12 total) underwent hysterectomies.
- Prior to 2019, 16 operations were performed in our hybrid theatre using prophylactic internal iliac artery balloon catheters. Of these cases, only 4 were inflated (25%), for a median time of 41 minutes. There was no difference in blood loss whether the internal iliac balloons were inflated or not (median average 3000ml). One radiological complication was noted: a femoral artery thrombus, identified on angiography, which required embolectomy during the procedure with no further problems.
- Mean estimated blood loss (EBL) for all cases was 3512ml. EBL covered a significant range from range 500ml-14200ml. There is no statistical difference in blood loss with or without prophylactic interventional radiology balloons, nor planned vs urgent surgery.
- Intraoperative cell salvage was used in 59/61 cases (97%); cell salvage was contraindicated in 1 case due to sickle cell disease. The average salvaged blood was 710ml (range 0-3308ml).
- Packed red blood cells were transfused in 44%, fresh frozen plasma in 34%, platelets in 18%, and cryoprecipitate in 44%.
- ROTEM was utilised in 56% of cases and TXA was given in 82%.

Chart 1 – Cumulative Anaesthetic Techniques for AIP Management



X axis shows the yearly cumulative numbers. **Y axis** shows patient numbers.
Key: GA = General anaesthetic; and CSE = combined-spinal-epidural.

Discussion

Since 2019 we have not utilised prophylactic arterial balloon catheter in AIP management. This is due to contradictory evidence of efficacy, concern over complications, and access to the hybrid theatre environment. This case review suggests that the use of catheter did not alter our overall blood loss, transfusion rates, or requirement for level 3 critical care.

Although other centres have shown good acceptability and outcome for regional anaesthesia for these cases[2] our GA rate has remained high. This was due to hybrid theatre set up making GA conversion difficult mid-case and later, the PPE requirement with COVID-19, made GA conversion mid-case difficult for the surgical team.

We are a centre with high use of cell salvage in all obstetric cases and have developed significant expertise in rapid processing and reinfusion of cell salvaged blood in major haemorrhage cases, exemplified by these AIP cases. We use 2 suction lines and swab washing to improve our yield and feel this is instrumental in keeping our transfusion rate low.

Improved pre-operative experience of diagnosis with doppler US and MRI scanning have allowed early identification and planning for a caesarean hysterectomy.

References

1. E Jauniaux, A Bhide, A Kennedy et al. FIGO consensus guidelines on placenta accrete spectrum disorders:pre natal diagnosis and screening. Int J Gynecol Obstet 2018 140:274-280.
2. NJ Taylor, R Russell. Anaesthesia for abnormally invasive placenta: a single-institution case series. Int J Obstet Anesth 2017 30:10-15.