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Case Report

Placenta accreta spectrum with placenta previa: anaesthetic challenges in a planned caesarean hysterectomy with emergency conversion to general anaesthesia

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ABSTRACT

Placenta accreta spectrum (PAS) encompasses abnormal placental adherence and invasion (accreta, increta, percreta) and is strongly associated with placenta previa and prior uterine surgery. It remains a major cause of life-threatening obstetric haemorrhage. Antenatal diagnosis, delivery in a tertiary centre, multidisciplinary planning and meticulous anaesthetic preparation are essential for optimal outcomes. We report a 32-year-old gravida 3 para 2 abortion 1 at 35 weeks with placenta previa and antenatally confirmed PAS, scheduled for elective caesarean delivery with planned hysterectomy. Given her history of bronchial asthma, neuraxial anaesthesia was preferred, with full preparedness for immediate conversion to general anaesthesia. After establishing invasive monitoring and arranging adequate blood products, a subarachnoid block was performed using 2 mL of 0.5% hyperbaric bupivacaine with fentanyl 25 µg. Tranexamic acid 1 g IV was administered before incision. Following delivery, massive haemorrhage with haemodynamic instability occurred, necessitating urgent conversion to general anaesthesia. Induction was achieved with ketamine 2 mg/kg and atracurium, and aggressive resuscitation with vasopressors and transfusion was initiated. Haemostasis was secured by internal iliac artery ligation followed by hysterectomy. Estimated blood loss was 1.8 L; 4 units packed red blood cells and 2 units fresh frozen plasma were transfused. Postoperatively, the patient was electively ventilated in ICU suspecting airway oedema and extubated the next day. She was discharged on postoperative day 3. The neonate (3.1 kg) had Apgar scores of 8 and 10 at 1 and 5 minutes. This case underscores the need for individualised anaesthetic planning and readiness for rapid conversion in PAS.

Keywords: Placenta accreta spectrum, Placenta previa, Caesarean hysterectomy, Obstetric haemorrhage, Neuraxial anaesthesia, Massive transfusion, Tranexamic acid

INTRODUCTION

Placenta accreta spectrum (PAS) encompasses a range of disorders characterised by abnormal placental adherence and invasion into the uterine wall. Placenta accreta refers to villous attachment to the myometrium, placenta increta indicates invasion into the myometrium, and placenta percreta describes penetration through the myometrium with possible extension into adjacent organs. PAS is strongly associated with placenta previa and prior uterine surgery, particularly caesarean delivery.[1,2]

The incidence of PAS has increased significantly over recent decades, largely due to rising caesarean delivery rates. PAS is associated with severe obstetric haemorrhage, peripartum hysterectomy, massive transfusion, critical care admission, mechanical ventilation and maternal mortality.[2,3]

Optimal outcomes depend on antenatal diagnosis, planned delivery in a resource rich tertiary care setting, multidisciplinary management and meticulous anaesthetic management.[3,4]

From an anaesthetic perspective, PAS presents challenges related to sudden massive haemorrhage, haemodynamic instability, transfusion requirements, airway management and postoperative critical care support.[5,8] Although general anaesthesia has historically been favoured, neuraxial techniques are increasingly used in selected patients, provided there is preparedness for rapid conversion to general anaesthesia if required.[5,6,7]

CASE REPORT

A 32-year-old gravida 3 para 2 live 1 abortion 1 at 35 weeks 'gestation presented for pre-anaesthetic evaluation. She had a history of one previous lower segment caesarean section and a first-trimester medical termination of pregnancy. Antenatal ultrasound revealed an anterior placenta previa with features suggestive of PAS, confirmed on MRI. She had a history of bronchial asthma.

An elective caesarean delivery followed by planned hysterectomy was scheduled at 36 weeks 'gestation. A multidisciplinary plan was developed involving obstetricians, anaesthesiologists, neonatologists, nursing team, transfusion services and intensive care.

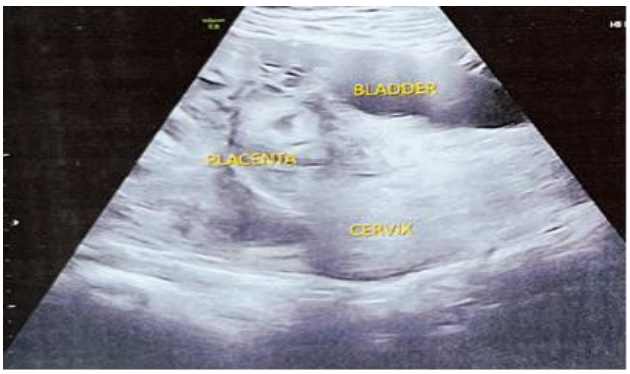

Figure 1: Grey-scale ultrasound of anterior placenta previa covering the internal os with loss of retroplacental clear zone and close approximation to bladder.

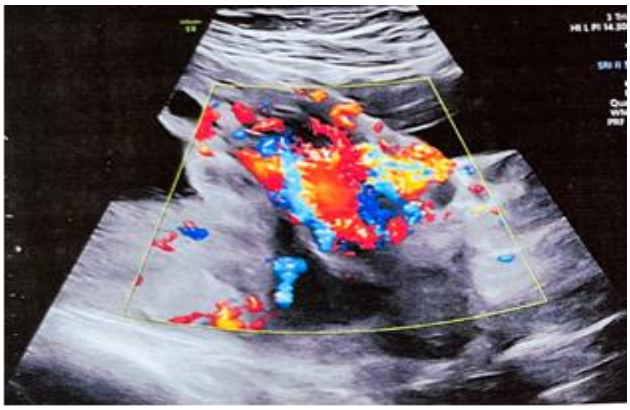

Figure 2: Colour Doppler showing marked placental hypervascularity with bridging vessels consistent with PAS.

Preoperative evaluation and planning

Preoperative assessment focused on optimisation and risk mitigation. Pulmonary function testing was performed due to bronchial asthma and demonstrated an obstructive pattern with reversibility (FEV1/FVC 0.75). A thorough airway assessment was performed to anticipate potential difficulty if conversion to general anaesthesia became necessary. The patient falls under Mallampatti class II. Physical examination was not remarkable and no wheeze on chest auscultation.

Preoperative laboratory values were: haemoglobin 10.8 g/dL, platelet count $2.4\times10^5/\mu L$, PT 13 seconds and INR 1.0. The blood bank was informed in advance and prepared for rapid blood product release and activation of a massive transfusion protocol if required. Ten units of packed red blood cells eight units of fresh frozen plasma and other blood products were arranged.

A structured perioperative plan was discussed with all team members, and roles were assigned to minimise delays during haemorrhage management. Difficult airway equipment, including a video laryngoscope, was made immediately available in theatre.

Intraoperative management

The procedure was planned under neuraxial anaesthesia with full readiness for urgent conversion to general anaesthesia. The patient was given IV pantoprazole 40 mg morning on the day of surgery. Nebulisation with budecort was done before the surgery. Two large-bore peripheral intravenous cannulas were secured and a triple-lumen central venous catheter was inserted. Standard ASA monitoring was applied and invasive arterial blood pressure monitoring was instituted prior to incision.

Vasopressors including norepinephrine, vasopressin and adrenaline were prepared and available. Four units of packed red blood cells and four units of fresh frozen plasma were kept immediately available in theatre, with additional products reserved in the blood bank.

Subarachnoid block was administered using 2 ml of 0.5% hyperbaric bupivacaine with fentanyl 25 micrograms. Tranexamic acid 1 g IV was administered before skin incision. Caesarean delivery was performed and a live male neonate weighing 3.1 kg was delivered with Apgar scores of 8 at 1 minute and 10 at 5 minutes.

Immediately following delivery, severe haemorrhage occurred with rapid haemodynamic deterioration including hypotension, bradycardia, fall in level of consciousness and desaturation. Urgent conversion to general anaesthesia was performed and the airway was secured with a 7.5 mm cuffed endotracheal tube. Induction was achieved using ketamine 2 mg/kg and neuromuscular blockade was provided with vecuronium.

Vasopressor support and blood product transfusion were initiated. Arterial blood gas analysis demonstrated metabolic acidosis with elevated lactate. Ventilation and oxygenation were optimised, and supportive measures were instituted to correct physiological derangements. Sodium bicarbonate IV was given to correct acidosis.

Definitive haemostasis was achieved by internal iliac artery ligation followed by hysterectomy. Estimated blood loss was approximately 1.8 L. Normothermia was maintained using forced-air warming and warmed intravenous fluids. Urine output was maintained at approximately 1 mL/kg/hour. IV antibiotic was repeated.

Postoperative course

A total of 4 units packed red blood cells and 2 units fresh frozen plasma were transfused intra- and postoperatively. The patient was transferred intubated to ICU for elective postoperative ventilation due to suspected airway oedema and the physiological burden of haemorrhagic shock and resuscitation. She remained sedated overnight and was ventilated with close haemodynamic monitoring.

Vasopressor support was gradually tapered and discontinued. Sedation was stopped the following morning and the patient was extubated uneventfully after confirmation of stable respiratory status, satisfactory arterial blood gas results and adequate urine output. She was transferred to the ward the next day and discharged home on postoperative day 3.

Follow-up and recovery

The patient was followed up and reviewed in the outpatient department at week one, two, four and then at six weeks post discharge. The patient was haemodynamically stable with a well-healed surgical wound and no evidence of secondary haemorrhage, infection, or thromboembolic complications. The haemoglobin levels of the patient also improved with oral iron supplementation. There was no exacerbation of bronchial asthma.

At the 6-week follow-up, the patient had resumed normal daily activities and care for her newborn with no complaints of fatigue, breathlessness, or urinary/bowel dysfunction. Psychological assessment revealed good emotional recovery, with no features of postpartum depression or post-traumatic stress. The neonate demonstrated appropriate weight gain and normal developmental parameters on paediatric follow-up, with no delayed complications.

Therapeutic intervention

Anaesthesia

Planned neuraxial anaesthesia with full preparedness for conversion to general anaesthesia. Subarachnoid block with 0.5% hyperbaric bupivacaine 2 mL + fentanyl 25 micrograms.

Rapid conversion to general anaesthesia for airway control and haemodynamic instability. Induction with ketamine 2 mg/kg, neuromuscular blockade with atracurium. Tranexamic acid 1 g IV given as haemorrhage adjunct.

Invasive monitoring for blood pressure, vasopressors, transfusion support and ICU ventilation.

Surgical

Caesarean delivery followed by internal iliac artery ligation and total hysterectomy for definitive haemostasis

DISCUSSION

PAS is associated with substantial maternal morbidity and mortality, primarily driven by severe haemorrhage and the consequent need for massive transfusion, peripartum hysterectomy, critical care admission and multiorgan dysfunction. The rising global incidence of PAS parallels increasing caesarean delivery rates, with placenta previa and previous uterine surgery being the strongest risk factors.[1-3] PAS is now a leading indication for peripartum hysterectomy and represents one of the most challenging scenarios in contemporary obstetric anaesthesia.[1,2]

Current consensus supports planned delivery in a tertiary care centre with a multidisciplinary PAS team, ideally with the capacity for rapid blood product availability, advanced monitoring and coordinated surgical and anaesthetic response.[2,3] ACOG recommends that suspected PAS be managed in specialised centres with access to experienced obstetric surgeons, anaesthesiologists, critical care services and a blood bank capable of implementing massive transfusion protocols.[3] FIGO consensus guidance similarly emphasises antenatal diagnosis and structured multidisciplinary planning to improve outcomes.[2] Definitive surgical management for most PAS cases is caesarean hysterectomy with the placenta left in situ, as attempted manual placental separation is strongly associated with catastrophic haemorrhage.[2,3] This was consistent with the approach in the present case, where haemorrhage occurred immediately after delivery, requiring urgent escalation of resuscitation and definitive hysterectomy. The potential for sudden haemodynamic collapse remains high even in planned cases, reinforcing the need for early invasive monitoring, vasopressor readiness and immediate access to blood products.[4]

The optimal anaesthetic technique for PAS remains debated. General anaesthesia has traditionally been preferred due to anticipated prolonged surgery and high transfusion requirements.[5] However, increasing evidence supports neuraxial anaesthesia as a feasible and safe option in selected PAS patients, particularly when managed in experienced centres with a clear plan for conversion to general anaesthesia if haemorrhage occurs.[5-7] Neuraxial

techniques offer advantages including avoidance of airway manipulation, reduced aspiration risk and improved maternal experience at delivery.[5,6] In this case, bronchial asthma influenced the initial choice of neuraxial anaesthesia, with full preparedness for conversion. This aligns with contemporary obstetric anaesthesia practice where neuraxial anaesthesia may be initiated for planned PAS surgery, with conversion to general anaesthesia reserved for haemodynamic instability, uncontrolled bleeding, prolonged surgery or airway/ventilation concerns.[5-7]

A key learning point is the value of anticipatory preparation for haemorrhage and rapid physiological deterioration. Massive haemorrhage in PAS may be associated with dilutional and consumptive coagulopathy, metabolic acidosis, hypothermia and hypocalcaemia, which worsen bleeding and increase morbidity.[4,8] Therefore, haemorrhage management should incorporate early haemostatic resuscitation, temperature control and aggressive correction of metabolic derangements.[4,8] In the present case, administration of tranexamic acid (1 g IV) formed part of the haemorrhage response, consistent with contemporary obstetric haemorrhage management principles.[7,8] Postoperative critical care is frequently required following PAS surgery due to haemodynamic instability, ongoing transfusion needs and the risk of respiratory complications.[5,9] In this patient, elective postoperative ventilation was chosen due to suspected airway oedema and the physiological stress of haemorrhagic shock and resuscitation. Obstetric airway oedema is well recognised, and risk may be increased following large-volume resuscitation and prolonged surgery.[9] Elective ventilation can be safer than early extubation with potential need for reintubation in a high-risk airway.[9]

Overall, this case supports the principle that PAS anaesthetic management should be individualised rather than dictated by a single preferred technique. Successful outcomes rely on antenatal diagnosis, delivery in a well-resourced setting, multidisciplinary planning, meticulous anaesthetic preparation and rapid escalation when haemorrhage occurs.[2,3,5-7]

CONCLUSION

PAS is a high-risk obstetric condition requiring careful multidisciplinary planning, anaesthetic preparedness and rapid haemorrhage management. While general anaesthesia is frequently required in PAS, neuraxial anaesthesia can be safely initiated in selected patients when supported by invasive monitoring, immediate availability of blood products, vasopressor readiness and a clear plan for urgent conversion. Standardized protocols and team-based preparedness are central to improving maternal outcomes.

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