

Perioperative Management of a patient with Placenta Percreta

A Planned Cesarean Hysterectomy case report.

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Introduction

OB hemorrhage is the leading cause of severe maternal morbidity in the U.S. and accounts for 25-30% of maternal deaths worldwide.⁵

Placenta previa, one of the most common causes of antepartum hemorrhage, occurs when the placenta completely or partially covers the opening of the uterus.⁵

Placenta accreta spectrum (PAS) refers to a placenta that is abnormally attached to the uterus and is characterized by the degree of invasion into the myometrium. PAS includes placental accreta, increta, and percreta- respectively invading the uterine wall, myometrium, and traversing the uterine wall invading nearby organs.

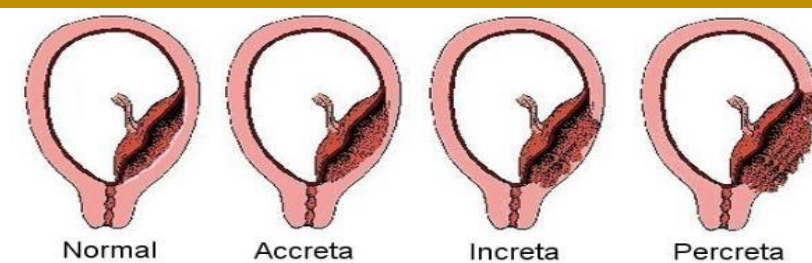
The risk for PAS increases with placenta previa and furthermore with the number of prior cesareans (3%, 11%, 40%, 61%).⁴ The most severe form, placenta percreta, particularly presents a challenge to anesthesia as it is associated with severe hemorrhage and maternal morbidity and mortality. The placenta does not spontaneously separate from the uterine wall at delivery and newly formed collateral vessels make the surgical excision difficult without causing massive peripartum bleeding.

Different therapeutic and surgical procedures, such as local uterine resection, conservative therapy, and interventional radiology (UAE), have been examined for the less severe, accreta and increta. However, the consensus on the optimal management of percreta cases remains unclear largely due to its low incidence (0.07%) and lack of scientific studies.²

Per the American College of Obstetricians and Gynecologists, the most generally accepted approach to PAS is cesarean hysterectomy with the placenta left in situ after delivery.³

Aims and Objectives

1. Identify the perioperative risk associated with PAS, including coagulopathies, ICU admission, metabolic derangements, and potential for massive transfusion.
2. Discuss a multidisciplinary algorithm of PAS management including anesthetic considerations and PPH treatment.
3. Highlight the importance of preoperative planning and a multidisciplinary approach for optimal maternal and fetal outcomes.



Significance

Cesarean hysterectomy in percreta cases is associated with severe maternal morbidities (40-50%) including severe hemorrhage, thromboembolism, and coagulopathies (i.e., hypofibrinogenemia, disseminated intravascular coagulation (DIC)). These procedures carry a 10% incidence of maternal death.

Additionally, literature reports high rates of ICU admission in these cases for further fluid resuscitation, correction of coagulopathy, VTE prophylaxis, pain therapy, and hypothermia.

A 2018 systematic review reported hypothermia, hyperkalemia, hypocalcemia, acidosis, and transfusion reactions as the most common reasons for ICU admission.²

Therefore, a multidisciplinary team approach and optimal preoperative evaluation and preparation is essential for managing and improving the outcome of mother and baby.

Patient Description

A 38y/o female; 5'6, 187lbs, G3P2, scheduled for a planned cesarean hysterectomy at 35 weeks gestational age.

Patient presents with placenta previa and surgical history includes two cesareans under spinal anesthesia with no reported complications.

MRI findings 1 mo. preop: "Evidence of placental previa. Evidence of increta along the anterior aspect of the lower uterine segment. Possible involvement of the anterior right paramedian pelvic body wall concerning for placental percreta. Fetus in breech presentation."

She presented with 2 PIV's: 18ga (L. HA) and 20ga IVs (R HA). OR setup included drips of TXA and Phenylephrine and an OB drug tray with uterotonics. She was crossmatched for 4u of PRBCs.



Surgical Timeline

09:37 - Time out; patient was placed in left lateral tilt position, to relieve aortocaval compression. Patient was preoxygenated with standard ASA monitors in place.

09:40 - Induction; Propofol (200mg), Lidocaine (100mg), Fentanyl (50mcg), Succinylcholine (40mg). Upon LOC, vertical abdominal incision by surgeon while A/W secured with 6.5 ETT and McGrath. Arterial line was placed post-induction.

09:46 - Delivery; Neonate VSS; Pitocin was administered. Minutes later, surgeon mentioned oozing and requested 2 units of PRBCs and Albumin.

10:23 - Transfusion; 1u of FFP administered. With increasing blood loss and pressures trending downward, Cell Saver and Belmont were requested in the room.

10:25-15:41 - MTP & DIC; After unsuccessful bilateral attempts of U/S guided large bore access, she was not clotting and now leaking fluids and medications administered through more distal IV's. With continued bleeding and suspicion of coagulopathy, MTP was ordered.

PIV's infiltrated due to rapid fluid administration. A left IJ central line was successfully placed but rapidly became edematous. Right IJ CVL secured and connected to the Belmont, fluids, and pressors. Patient went into Ventricular Tachycardia twice throughout this period.

	12:15	13:43	16:51
Hgb/Hct	7.5/22.3	8.0/24.2	10.1/29.9
PLT	71		38
Fibrinogen	97		206
PT/INR	17.3(1.5)		11.2 (1.0)
PTT	44.6		25.9

	12:15	13:43	16:51
pH	7.223	7.402	7.396
PCO2	37.6	38.6	36.6
PO2	411.6	326.8	203.6
HCO3	15.1	23.5	22
Glu	252		160
Ca	6.7		7.2
K	3.2	4.1	3.1

15:41 - Transport; Patient was transported to ICU with AMBU bag, VSS on transport and arrival.

Post-op CXR findings: "Diffuse hazy infiltrates throughout both lungs could reflect edema. Mild pulmonary congestion."

	Totals
Crystalloids	4.5 L
Colloids	1L
Cell Saver	3L
PRBCs	12 Units
FFP	15 Units
Cryoprecipitate	4 Units
PLT	4 Units

	Totals
TXA	2g
Calcium	3g
Sodium Bicarb	100mEq
Novoseven	8mg
Desmopressin	24mcg
Epinephrine	800mcg
EBL	12L



Discussion

Physiologic changes during pregnancy make perioperative management more challenging to clinicians. Even more, PAS cases are at increased risk for hemorrhage, coagulopathy, and mortality.

- The International Society of PAS guidelines:**
- **A multidisciplinary care team:** Expert obstetrician, OB anesthesia specialist, surgeon experienced with complex pelvic surgery, urologist, and radiologist experienced with PAS diagnostics.² A discussion among team members regarding surgical intervention (local resection, conservative therapy, IR) is encouraged.
 - **PAS anesthesia algorithm considerations:** preoperative coagulation panel (standard coag., fibrinogen, d-dimers, PLT, cross-match), prewarming, antifibrinolytics, uterotonics, viscoelastic testing, 4RBCs and 6FFP in OR, rapid transfuser, and blood bank alerted for potential MTP.
 - **Anesthesia considerations cont'd:** Arterial lines, central venous lines, and advanced monitoring (PPV, SVV, SV, and CO) for fluid replacement guidance and higher doses of vasopressors.^{1,2}
 - **Check-lists and team time-outs:** Both pre-induction and intraoperatively following delivery after PAS evaluation, focusing on intended management, expected complications, and current state of bleeding.
- A preoperative interdisciplinary case review would allow for intraoperative synchrony and rapid access to cell salvage/rapid infusion services, blood product availability, colorectal and vascular surgeons, and efficient treatment.
- ISPAS guidelines have been found to reduce the risk of adverse outcomes in PAS cases. Therefore, a multidisciplinary approach as discussed should be employed whenever possible.

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