

Between Hemorrhage and Ischemia: Simultaneous Massive Obstetric Hemorrhage and Acute Bilateral Limb Ischemia During the Management of Placenta Percreta

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Case Report

Keywords: Placenta percreta, Placenta accreta spectrum, Obstetric hemorrhage, Limb ischemia, Internal iliac balloon occlusion, Massive transfusion, Obstetric anesthesia

Posted Date: September 21st, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-10592267/v1>

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Additional Declarations: No competing interests reported.

Abstract

Background

Placenta accreta spectrum (PAS) disorders are associated with substantial maternal morbidity and mortality, primarily due to catastrophic obstetric hemorrhage. Prophylactic internal iliac artery balloon occlusion has been utilized to reduce pelvic blood flow during surgery; however, vascular complications including arterial thrombosis and limb ischemia have been reported. The simultaneous occurrence of severe hemorrhage and acute limb-threatening ischemia presents a unique anesthetic and perioperative challenge, as treatment priorities may conflict.

Case presentation

A 26-year-old gravida 3 para 1 + 1 woman at 37 weeks' gestation with antenatally diagnosed placenta percreta and suspected bladder invasion underwent planned cesarean delivery under general anesthesia. Bilateral internal iliac artery balloons were placed preoperatively. Following fetal delivery, despite balloon inflation massive hemorrhage occurred requiring activation of a massive transfusion strategy, vasopressor support, and subsequent embolization. Prolonged balloon inflation was associated with bilateral iliac artery thrombosis and acute lower limb ischemia. The patient developed severe metabolic acidosis, rhabdomyolysis, acute kidney injury, and life-threatening hyperkalemia. Emergency bilateral femoral thrombectomy, hysterectomy, and bladder repair were performed during ongoing hemorrhagic resuscitation. Following multidisciplinary management involving anesthesia, obstetrics, interventional radiology, vascular surgery, urology, transfusion medicine, and intensive care teams, the patient recovered fully and was discharged home with a healthy infant.

Conclusions

This case highlights the rare coexistence of catastrophic obstetric hemorrhage and acute limb-threatening ischemia during PAS management. It underscores the importance of multidisciplinary coordination, vigilant vascular monitoring, and prompt recognition of ischemic complications when endovascular techniques are employed for hemorrhage control.

Background

Placenta accreta spectrum (PAS) encompasses a range of abnormal placental adherence disorders, including placenta accreta, increta, and percreta. Placenta percreta represents the most severe form, characterized by invasion through the myometrium and occasionally into adjacent organs. PAS is a leading cause of severe obstetric hemorrhage and remains a major contributor to maternal morbidity worldwide.

Advances in antenatal imaging have enabled multidisciplinary planning for patients with PAS. Various adjunctive measures have been proposed to reduce intraoperative blood loss, including prophylactic balloon occlusion of the internal iliac arteries. Despite widespread adoption in some centers, evidence regarding its efficacy remains controversial, while vascular complications such as arterial thrombosis, limb ischemia, pseudoaneurysm formation, and vessel injury are increasingly recognized.

We report a case of placenta percreta complicated by the simultaneous occurrence of massive obstetric hemorrhage and acute bilateral limb ischemia following prolonged internal iliac balloon occlusion. The coexistence of these life-threatening complications created competing perioperative priorities and posed significant challenges for the anesthesia team.

Case Presentation

A 26-year-old woman, gravida 3 para 1 + 1, at 37 weeks gestation with antenatally diagnosed placenta percreta involving the posterior bladder wall was scheduled for an elective cesarean delivery. The patient expressed a strong desire to preserve her uterus to maintain future fertility. She was extensively counseled regarding the high risk of catastrophic obstetric hemorrhage and the potential need for cesarean hysterectomy if bleeding could not be adequately controlled. Following multidisciplinary discussion, a uterine-conserving approach with prophylactic bilateral internal iliac artery balloon occlusion was planned, with hysterectomy reserved as a life-saving measure should conservative management fail.

Preoperative laboratory investigations revealed a hemoglobin concentration of 9.6 g/dL, platelet count of $227 \times 10^9/L$, an international normalized ratio (INR) of 0.88, and a serum creatinine level of 0.59 mg/dL.

A multidisciplinary management plan involving obstetrics, anesthesia, interventional radiology, urology, blood bank, and intensive care services was established. General anesthesia with rapid-sequence induction was chosen because of the anticipated complexity and duration of surgery. Standard monitoring was supplemented with invasive arterial pressure monitoring, central venous line and large-bore intravenous cannulae. Blood products were prepared in anticipation of major hemorrhage. Bilateral femoral arterial sheaths were inserted preoperatively for placement of internal iliac artery occlusion balloons.

Following induction and uncomplicated delivery of the neonate, the internal iliac balloons were inflated. Subsequently massive hemorrhage occurred with hemodynamic instability requiring transfusion of packed red blood cells and fresh frozen plasma, initiation of norepinephrine infusion, correction of hypocalcemia, and aggressive metabolic resuscitation.

Despite ongoing transfusion, the patient developed severe metabolic acidosis with a lactate concentration of 8.7 mmol/L. Uterus was packed and was transferred to the interventional radiology suite for pelvic embolization while remaining mechanically ventilated and vasopressor dependent.

During the procedure, clot formation within the sheaths necessitated replacement. Angiography demonstrated markedly attenuated but patent external iliac arteries with sluggish distal flow.

The total balloon inflation time reached approximately 150 minutes. Following removal of the femoral sheaths, distal lower limb pulses were absent. Doppler examination confirmed severe impairment of arterial flow, raising concern for acute bilateral limb ischemia. Simultaneously, the patient continued to exhibit features of hemorrhagic shock requiring ongoing transfusion support.

Serial arterial blood gas analyses demonstrated worsening metabolic derangement, with progressive lactate elevation, severe acidosis, and hyperkalemia reaching 8.18 mmol/L. Urine output declined significantly, suggesting acute kidney injury secondary to ischemia-reperfusion injury and rhabdomyolysis.

Anesthetic management became particularly challenging because active hemorrhage and critical limb ischemia required simultaneous intervention. Vascular surgery taken on board and proceeded with emergency bilateral femoral thrombectomy while resuscitation for hemorrhagic shock continued. Concurrent reassessment by the obstetric team revealed ongoing pelvic bleeding, prompting emergency hysterectomy. Urological repair of bladder involvement was subsequently performed.

Overall, the patient received 16 units of packed red blood cells, 14 platelet concentrates, 8 units of fresh frozen plasma, and 4 units of cryoprecipitate along with other colloids and crystalloids. Following thrombectomy and definitive hemorrhage control, metabolic parameters gradually improved and vasopressor requirements decreased.

After approximately 14 hours of operative management, the patient was transferred to the surgical intensive care unit. She was extubated on postoperative day one and experienced progressive recovery of renal function and limb perfusion. She was discharged home on postoperative day six with no residual vascular complications and remained well on follow-up.

Table 1
Sequential ABGs

Parameters	During Ceaserian section		During embolization		Thrombectomy and hysterectomy		
	Values	Values	Values	Values	Values	Values	Values
PH	7.12	7.16	7.23	7.20	7.16	7.33	7.37
PCO2	37	42	44	39	50	36	40
HCO3	12	15.2	18.6	15	17.5	19.3	23
Potassium	4.5	5.15	5.4	8.18	5.72	2.8	3.17
Lactate	8.7	8.3	9.5	14	13.36	8.5	5.9
Calcium	4.1	3.3	3	3.8	4.04	3.2	4.7
Base excess	-15.8	-12.5	-8.4	-11	-10	-5.9	-1.8

Discussion

The role of prophylactic internal iliac artery balloon occlusion (IIABO) in placenta accreta spectrum disorders remains controversial. Although intended to reduce pelvic blood flow and facilitate surgical hemostasis, evidence supporting its effectiveness is inconsistent. Several studies have demonstrated persistent rates of severe postpartum hemorrhage despite balloon placement, with many patients still requiring massive transfusion and hysterectomy.

Our case is notable because IIABO failed to prevent catastrophic hemorrhage while simultaneously being associated with severe ischemic complications. Following delivery, the patient developed massive obstetric hemorrhage requiring extensive transfusion support, vasopressors, and prolonged resuscitation. Concurrently, prolonged balloon inflation and femoral arterial instrumentation likely contributed to bilateral iliac artery thrombosis, resulting in acute limb-threatening ischemia, rhabdomyolysis, hyperkalemia, metabolic acidosis, and acute kidney injury.

This combination created competing physiological priorities for the anesthesia team. Ongoing hemorrhage necessitated aggressive volume resuscitation, transfusion therapy, and definitive surgical hemostasis, whereas acute limb ischemia required urgent vascular intervention to prevent irreversible tissue loss. Reperfusion of ischemic limbs further risked exacerbating metabolic instability through the release of potassium, lactate, and myoglobin into the systemic circulation. Consequently, management required continuous reassessment and close coordination between anesthesiology, obstetrics, interventional radiology, vascular surgery, urology, and intensive care teams.

Another important consideration is the prolonged balloon inflation time of approximately 150 minutes, which exceeded commonly recommended duration of less than 90minutes. Previous reports have

identified prolonged occlusion as a significant risk factor for thrombotic complications and distal ischemia. In our patient, the combination of pregnancy-associated hypercoagulability, severe hemorrhagic shock, vasopressor exposure, arterial instrumentation, and prolonged occlusion likely contributed to thrombus formation.

To our knowledge, few reports have described the simultaneous occurrence of catastrophic obstetric hemorrhage and acute bilateral limb-threatening ischemia during management of placenta percreta. This case highlights the potential for hemorrhagic and thrombotic complications to coexist rather than occur in isolation and raises important questions regarding patient selection, monitoring protocols, and risk-benefit assessment when prophylactic balloon occlusion is employed.

Conclusions

This case demonstrates the rare coexistence of catastrophic obstetric hemorrhage and acute bilateral limb-threatening ischemia during management of placenta percreta. The combination of massive transfusion requirements, vascular thrombosis, reperfusion injury, and multiorgan dysfunction created exceptional anesthetic challenges. Early recognition of ischemia, aggressive resuscitation, and coordinated multidisciplinary intervention were essential to achieving a favorable maternal outcome.

Learning points

- Internal iliac balloon occlusion may reduce pelvic blood flow but carries a risk of serious thrombotic complications.
- Acute limb ischemia should be considered when distal pulses are absent following balloon occlusion or sheath removal.
- Simultaneous hemorrhagic shock and limb-threatening ischemia create competing perioperative priorities requiring multidisciplinary management.
- Serial blood gas analysis and electrolyte monitoring are critical for early detection of reperfusion-related complications.
- Successful outcomes depend on rapid recognition, timely thrombectomy, definitive hemorrhage control, and coordinated critical care support.

Abbreviations

PAS

Placenta accreta spectrum

PRBC

Packed red blood cells

FFP

Fresh frozen plasma
ICU
Intensive care unit
RSI
Rapid sequence induction

Declarations

Ethics approval and consent to participate

Not applicable

Consent for publication

Written informed consent was obtained from the patient for publication of the case report.

Competing interests

The authors declare that they have no competing interests.

Author Contribution

Dr Asma Zareen; clinically managed the patient, conceived the case report, performed the literature review, collected and interpreted the clinical data, and drafted the manuscript. Dr Anam Aftab; supervised the clinical management of the patient and critically revised the manuscript for important intellectual content. Dr Eesha Shafqat; contributed to the perioperative management of the patient and manuscript revision. Dr Muhammad Ashraf; contributed to the surgical/procedural aspects of the case and critically reviewed the manuscript. All authors read and approved the final manuscript.

Acknowledgements

Not applicable

Data Availability

the data analysed and generated during this case report are not publically available due to patient privacy and confidentiality considerations but are available on reasonable request, subject to institutional and ethical restrictions.

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