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Original Research Paper

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A SILENT THREAT: POSTPARTUM HEMORRHAGE UNMASKING A UTERINE ARTERIOVENOUS MALFORMATION

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ABSTRACT Uterine arteriovenous malformations (AVMs) are rare but life-threatening vascular anomalies that can cause severe postpartum hemorrhage (PPH). They are often misdiagnosed as retained products of conception (RPOC), delaying appropriate treatment. A 27-year-old woman presented with sudden heavy vaginal bleeding on postpartum day 27 after an uncomplicated emergency cesarean section. Initial ultrasound suggested RPOC, but further imaging with MRI and CT angiography confirmed a uterine AVM. She underwent successful uterine artery embolization (UAE) with polyvinyl alcohol particles, leading to resolution of bleeding and preservation of fertility. Uterine AVMs can be congenital or acquired, often linked to prior uterine trauma. Doppler ultrasound is the first-line diagnostic tool, while CT angiography remains the gold standard. UAE is a minimally invasive, fertility-preserving treatment for hemodynamically stable patients. Uterine AVM should be considered in postpartum women with unexplained heavy bleeding. Early diagnosis using imaging and timely UAE can effectively control hemorrhage, prevent unnecessary surgical intervention, and preserve reproductive potential.

KEYWORDS :

INTRODUCTION

Arteriovenous malformations (AVMs) are abnormal vascular connections between arteries and veins that bypass the capillary network. Uterine AVMs, though rare, can lead to life-threatening postpartum hemorrhage (PPH). Pregnancy and the postpartum period increase the risk of AVM rupture due to hemodynamic and hormonal changes. In many cases, AVMs are misdiagnosed as retained products of conception (RPOC), leading to delays in appropriate management. We present the case of a 27-year-old woman who developed sudden-onset vaginal bleeding 27 days postpartum due to an underlying uterine AVM, successfully managed with uterine artery embolization (UAE).

Case Presentation

A 27-year-old woman, P1L1, with a history of an emergency lower segment cesarean section (LSCS) at term for fetal distress, presented to the emergency department on postpartum day 27 with sudden-onset vaginal bleeding. The bleeding was progressively worsening and associated with clots passage. Her pregnancy and immediate postoperative period were uneventful, and she had no history of abnormal bleeding or vascular disorders. On examination, she was pale but vitally stable. Abdominal examination revealed a soft, non-tender uterus with a well-healed LSCS scar. On per speculum examination, active bleeding was noted.

Laboratory investigations showed a hemoglobin level of 7.2 g/dL, total leukocyte count of 7,400/mm^3, and platelet count of 353,000/mm^3. An urgent ultrasound of the pelvis revealed a bulky uterus with heterogeneous hypoechoic contents measuring 6 × 4 × 3 cm, with an estimated volume of 50 cc, suggestive of grade 2 RPOC. (Fig 1)

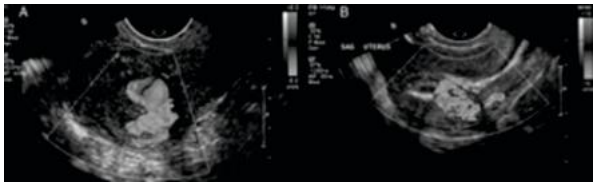

Fig 1- Bulky Uterus With Heterogeneous Hypoechoic Contents Suggestive of Grade 2 RPOC.

To stabilize her condition, an immediate transfusion of one pint of packed red blood cells was administered. MRI of the pelvis was performed, low signal flow voids in the myometrium and endometrial cavity, consistent with a uterine AVM.(Fig 2) Given the suspicion of an underlying vascular anomaly, she was referred for interventional radiology assessment.

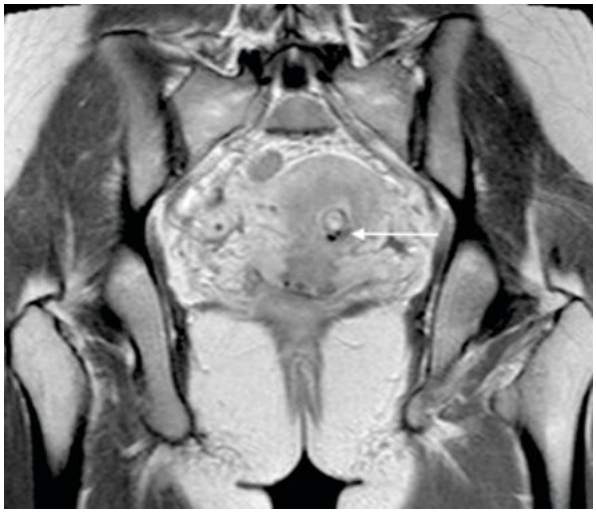

Fig 2 - Coronal MRI Pelvis T1W Post Intravenous Gadolinium Administration Showing Serpiginous Low Signal Flow Voids in the Myometrium and a Uterine AVM.

CT angiography confirmed abnormal vascular connections within the uterus, raising concerns for uterine AVM. She was planned for UAE. Under aseptic precautions, right femoral 5F arterial access was obtained. Superselective catheterization was performed using a Progreat microcatheter, and embolization was carried out using 250–355 micron polyvinyl alcohol (PVA) particles. A post-procedural angiogram demonstrated stasis of contrast in both uterine arteries, confirming successful embolization. (Fig 3) The procedure was uneventful, and the patient was shifted to the ward for observation. She received an additional pint of packed red blood cells postoperatively.

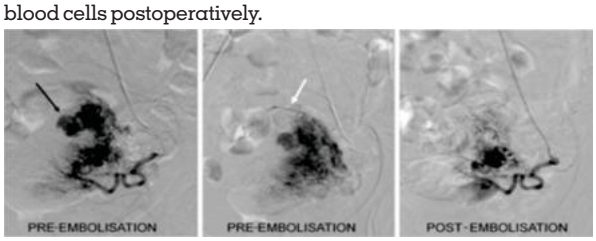

Fig 3 - Angiogram of the Left Uterine Artery Showed an

Arteriovenous Malformation (AVM) (Black Arrow) with an Early Draining Vein Seen at the Fundus (White Arrow). Post-embolisation Run Showed Complete Embolisation of the AVM.

The patient had no further vaginal bleeding following UAE, and her hemoglobin improved to 10.2 g/dL at discharge. She was discharged on post-procedure day 3 with advice for a follow-up Doppler ultrasound after six weeks. Her menstrual cycles resumed normally after three months. She was counseled regarding future pregnancy risks, including the potential recurrence of AVM and the need for close monitoring in subsequent pregnancies.

DISCUSSION

Uterine AVMs, though rare, should be considered in cases of unexplained secondary PPH. These vascular anomalies may be congenital or acquired, with acquired AVMs commonly resulting from uterine trauma such as cesarean sections, curettage, or other uterine surgeries. Misdiagnosis as RPOC is common, leading to unnecessary interventions and increased morbidity. Doppler ultrasound is the first-line imaging modality, demonstrating high-velocity, low-resistance turbulent flow. CT angiography remains the gold standard for definitive diagnosis, while MRI helps differentiate RPOC from AVM.(1)(2) Management options include conservative monitoring in hemodynamically stable cases, UAE as a minimally invasive fertility-preserving approach, and hysterectomy in life-threatening cases where embolization fails. (3)

CONCLUSION

This case highlights the importance of considering uterine AVM as a differential diagnosis in postpartum women with unexplained recurrent heavy vaginal bleeding, especially after cesarean delivery. Early diagnosis using Doppler ultrasound and CT angiography, followed by timely intervention with UAE, can effectively control hemorrhage while preserving fertility and avoiding the need for hysterectomy.(4)

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