CASE REPORT

Pseudoaneurysm of Uterine Artery Leading to Secondary Postpartum Hemorrhage: A Case Report

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Abstract

Postpartum hemorrhage (PPH) is a leading cause of maternal morbidity and mortality, with secondary PPH due to uterine artery pseudoaneurysm being a significant concern due to its rare and delayed presentation. Here we have discussed a case of secondary PPH presented at postoperative day 39 of an elective cesarean section. She was diagnosed with pseudoaneurysm of the uterine artery in a computed tomography (CT) angiography of the pelvis. After a multidisciplinary approach, the patient underwent uterine artery embolization under local anesthesia, where glue embolization using a 30% histoacryl and lipiodol mixture was done. The patient has recovered well and is still on regular follow up. This case highlights the need to recognize and manage uterine artery pseudoaneurysms in secondary PPH. Uterine artery embolization offers a highly effective, minimally invasive, and fertility-sparing alternative to more invasive surgical treatments. Early diagnosis and a multidisciplinary approach are essential for improving maternal outcomes.

Keywords: Case report, Secondary postpartum hemorrhage, Uterine artery embolization, Uterine artery pseudoaneurysm.

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Introduction

Postpartum hemorrhage is a significant cause of maternal mortality globally. The incidence of PPH is 2–4% after vaginal delivery and 6% after a cesarean section.[1] Primary PPH occurs within 24 hours of delivery, mostly associated with uterine atony. Secondary PPH occurs within 24 hours to 12 weeks, mostly due to RPOC. The rare causes are arterial pseudoaneurysms, arteriovenous fistula (AVF), choriocarcinoma. Conservative management includes use of uterotonics, antibiotics, and uterine curettage. Refractory cases can lead to internal artery ligation and even hysterectomy. Uterine artery pseudoaneurysm develops in post traumatic obstetric or gynecological procedures. These can remain asymptomatic, or rupture with an increase in intraluminal pressure and contribute to its delayed presentation, extending up to 40 days postsurgery. Over time, with the advancement and use of transcatheter uterine arterial embolization, obstetric hysterectomy and its associated complications can be avoided. Here we discuss a case of pseudoaneurysm of the uterine artery leading to secondary PPH, and managed conservatively.

Case Description

A 30-year-old P2L2, elective LSCS done on 09/06/2024 at Nadia private nursing home. Intraoperative period was uneventful, the patient recovered well post-delivery and was discharged on postoperative day 6. Patient had her first episode of bleeding per vagina on post-natal day 9. Bleeding was associate with the passage of clots and had to change around 6–8 cloths per day, lasting for 3 days, followed by spotting per vagina. She visited the local clinic, and was started on tranexamic acid and medroxyprogesterone acetate. Patient had repeated episodes of bouts of bleeding per vagina associated with generalized fatigue, palpitations and shortness of breath. She received 1 unit of blood transfusion at a state district hospital, and was treated with oral Methergin, antibiotics and later on progesterone 15 mg. However, her bleeding per vagina continued intermittently, for which she visited AIIMS Kalyani at postoperative day 39, and was admitted for evaluation of secondary postpartum hemorrhage (PPH). On clinical examination, the patient was pale, vitals stable, and had mild tachycardia. Abdominal incision was well healed with no erythema. Speculum examination revealed os closed, cervix smeared with blood but no active bleeding, no discharge. On bimanual examination, uterus anteverted, mobile, 6 weeks size with bilateral fornices free and non-tender. On admission, a complete blood count was done, hemoglobin reported 6.2 gm%, 1-unit PRBC transfusion was done. Ultrasound sonography (USG) with uterine artery doppler was done and reported as a bulky uterus, with an endometrial thickness of 9 mm. A focal lesion of 2 × 2.4 cm in the lower uterine segment along the left lateral wall has a low-resistance arterial waveform showing a "yin yang appearance". Features suggestive of uterine artery malformation with pseudoaneurysm. Computed tomography angiography of the pelvis was done, which reported as a 19 × 14 mm pseudoaneurysm arising from the left uterine artery with a small AV malformation. A multidisciplinary team including an interventional radiologist was involved. Patient

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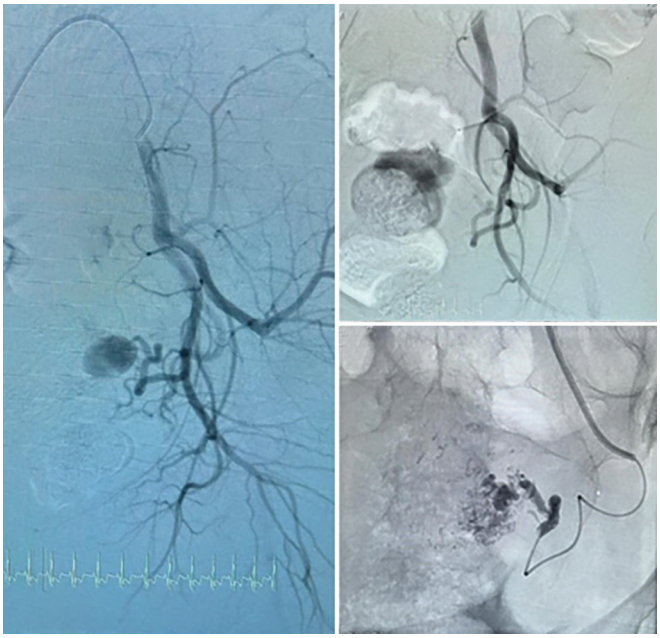

Fig. 1: Progreat 2. 4F coaxial microcatheter introduced pseudoaneurysm identified in the left uterine artery, NBCA glue embolization done

was posted for uterine artery embolization under local anesthesia. A 20 × 15 mm aneurysm arising from the left uterine artery was visualized. Selective catheterization of the distal left uterine artery, done with progreat 2.4F coaxial microcatheter. Glue embolization done with 30% Histoacryl and Lipiodol mixture (Fig. 1). Check digital subtraction angiography (DSA) of the bilateral uterine artery, which shows occlusion of the pseudoaneurysm (Fig. 2). The patient tolerated the procedure well. Postoperatively patient's bleeding per vagina reduced, and their health improved. Patient thus got discharged after 1-unit PRBC transfusion and is in regular follow-up on an outpatient department (OPD) basis.

Discussion

The incidence of pseudoaneurysm of the uterine artery ranges between 3 and 6/1,000 deliveries.[2] The prevalence of UAP was 0.51 % among patients with primary PPH and 2.55% among secondary PPH mostly post-cesarean section accounting for 47.4%.[3] In a literature of 123 patients presenting with secondary PPH, 3.3% were caused by pseudoaneurysm of the uterine artery, exclusively in post cesarean cases.[4] In developing countries like India, cesarean section rates have increased over the past few years, and are considered a routine surgical procedure. But, sometimes, unhealed and undetected uterine vascular injury can lead to pseudoaneurysms, acquired arteriovenous malformations, arteriovenous fistulas, and vessel ruptures. A pseudoaneurysm is an extra-luminal collection of turbulent blood caused by iatrogenic damage to the arterial wall. This dissects into the perivascular areas, but maintains communication with the parent vessel. Since, it is covered only by a peripheral thrombus layer, it is termed a false aneurysm. The most common location is at the angle of the uterine incision in a cesarean section. The first line of investigation is doppler USG. The turbulent flow represents as a swirling appearance in color doppler or a yin-yang appearance.[5] Computed tomography angiography is the gold standard examination for precise localization and delineating the

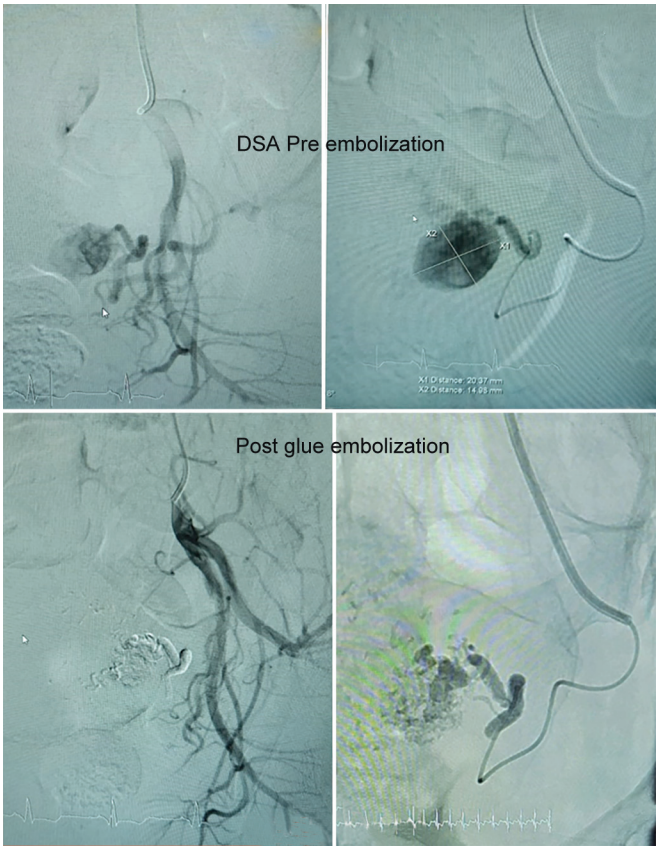

Fig. 2: Digital subtraction angiography, pre- and post-procedure

feeding vessel. According to Kim BM et al. angiographic findings could be with an active bleeding sign (pseudoaneurysm or contrast extravasation) or a non-active bleeding sign (only spastic uterine artery or hyperemia).[6]

The option for surgical management like internal artery ligation or hysterectomy is reserved for large aneurysm without a narrow neck, with failed compression or thrombin injection.[7] Interventional radiology techniques can be divided into vascular and non-vascular types. For obstetric causes, devascularization for major hemorrhage vessels is used. In 1979, the first case of PPH, was treated with selective arterial embolization after 3 unsuccessful surgical attempts to treat pelvic hematoma by Brown et al. Non-permanent embolic agents (like Gelfoam) and permanent embolic agents like fibred platinum coils, vascular plugs, detachable balloons, PVA particles (250–300 mm), glue, alcohol, and sclerosants are used for occlusions of the pseudoaneurysms and AV malformations. In our case, NBCA; N-Butyl-2-Cyanoacrylate (e.g., Histoacryl) mixed with ethiodized poppy seed oil (e.g., Lipiodol) or with microsphere particles was used for the occlusion of pseudoaneurysm.[8] In secondary PPH, study of 52 patients treated with TAE, concluded 100% technical success, and 90.4% success rate with gelatin sponge particles with or without permanent embolic agents like microcoils or NBCA, like in our case.[9] Retrospective analysis of 33 patients suffering from primary PPH due to uterine atony in Gunma university, treated with the UAE had 85% success rate.[10] Complications were seen in 6–7% cases, like, uterine necrosis, lower limb ischemia, pelvic infection, urinary frequency, bladder necrosis, transient numbness of the buttocks, and vesicovaginal fistula.

Conclusion

The management of secondary PPH due to uterine artery pseudoaneurysm presents a significant clinical challenge, particularly given its rare occurrence, and delayed presentation. The availability of the UAE in hospital settings is crucial, as it provides a highly effective, fertility-sparing alternative to more invasive surgical options, such as hysterectomy, especially in cases involving vascular malformations like pseudoaneurysms. The patient's positive outcome in this case highlights the critical role of interventional radiology in modern obstetric care, offering a minimally invasive, yet definitive solution to what could otherwise be life-threatening postpartum complications. Thus, this case report emphasizes the importance of a multidisciplinary approach involving prompt recognition through advanced imaging techniques and timely intervention via uterine artery embolization (UAE) to improve maternal outcomes.

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Reference

1. National Health Portal of India. Pospartum haemorrhage. Available from: Available from: https://www.nhp.gov.in/disease/gynaecology-and-obstetrics/postpartum-haemorrhage. Accessed on: 06 July 2022.
2. Heim M, Moldovan A, Hunter A. The uterine artery pseudoaneurysm: A challenging diagnosis in secondary PPH after Caesarean section – case report and literature review. 2024;54(S1). DOI: 10.1002/uog.21787.
3. Karmous N, Ayachi A, Derouich S, et al. Rupture of uterine artery pseudoaneurysm: Role of ultrasonography in postpartum hemorrhage management. Pan African Medical Journal 2016;25:136. DOI: 10.11604/pamj.2016.25.136.10676.
4. Chainarong N, Deevongkij K, Petpichetchian C. Secondary postpartum hemorrhage: Incidence, etiologies, and clinical courses in the setting of a high cesarean delivery rate. PLoS One 2022;17(3):e0264583. DOI: 10.1371/journal.pone.0264583.
5. Rivera PA, Dattilo JB. Pseudoaneurysm. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2024. PMID: 31194401.
6. Kim BM, Jeon GS, Choi MJ, et al. Usefulness of transcatheter arterial embolization for eighty-three patients with secondary postpartum hemorrhage: Focusing on difference in angiographic findings. World J Clin Cases 2023;11(15):3471–3480. DOI: 10.12998/wjcc.v11.i15.3471.
7. Poudel A, Thapa S, Giri A, et al. Post-cesarean section pseudoaneurysm of uterine artery: A case report. Int J Surg Case Rep 2024;119:109697. DOI: 10.1016/j.ijscr.2024.109697.
8. Davies R, Parker M, Basu A, et al. The clinical applications of interventional radiological techniques in obstetrics and gynaecology. The Obstetrician & Gynaecologist 2023;25(2). DOI: 10.1111/tog.12871.
9. Park HS, Shin JH, Yoon HK, et al. Transcatheter arterial embolization for secondary postpartum hemorrhage: Outcome in 52 patients at a single tertiary referral center. J Vasc Interv Radiol 2014;25(11):1751–1757. DOI: 10.1016/j.jvir.2014.05.009.
10. Aoki M, Tokue H, Miyazaki M, et al. Primary postpartum hemorrhage: Outcome of uterine artery embolization. Br J Radiol 2018;91(1087):20180132. DOI: 10.1259/bjr.20180132.