



CASE REPORT

Successful Pregnancies After Embolization for Uterine Artery Pseudoaneurysm: A Report of Two Cases

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Introduction

Pseudoaneurysm is a result of disruption in the continuity of arterial wall resulting in the dissection of blood into the tissues which forms a sac that communicates with the arterial lumen. Though uterine artery pseudoaneurysm is a rare condition, the number of cases reported has increased with availability of better diagnostic modalities. It has been reported to occur at a rate of 0.2% [1]. Vascular trauma in the form of dilatation and curettage, cesarean section, myomectomy and hysterectomy can lead to its formation. Over the last decade, therapeutic options have evolved from traditional surgical approach to minimally invasive approach using embolization techniques. This has led to a drastic reduction in associated morbidity and mortality. We are reporting two cases of uterine artery pseudoaneurysm formed following termination of pregnancy, out of which one was following medical termination of pregnancy where no instrumentation was done. Both these patients conceived afterwards and had successful uncomplicated pregnancies. Pregnancy outcomes after uterine artery embolization (UAE) for pseudoaneurysm have never been described before.

Case 1

A 25-year-old lady presented to gynecology emergency department with complaint of heavy menstrual bleeding for last 3 months, with soakage of seven pads per day. She had a history of dilatation and evacuation done for first-trimester termination of pregnancy 1 year back, subsequent to which she had regular cycles with normal menstrual flow. Patient was treated with antifibrinolytics, but with no improvement in symptoms and hence was referred to us with severe anemia. There was no history of easy bruisability, bleeding from any other site or family history of bleeding diathesis.

At the time of presentation, she had severe pallor, pulse rate of 100 beats/min, blood pressure of 110/70 mmHg, temperature of 37 °C and respiratory rate of 16/min. Her systemic and abdominal examinations were unremarkable, and significant bleeding was noted per vaginum. Her investigations revealed hemoglobin of 4.4gm/dL, total leucocyte count of 6700/dL, platelet count of 2.6lakh/dL, bleeding time of 1 s, clotting time of 6 s, INR of 1.0 and activated partial thromboplastin time of 30 s. Serum beta hcg was 8mIU/mL. Transvaginal ultrasound showed a cystic area on left lateral wall of uterus sized 1.4 cm × 1.5 cm showing high-velocity flow on Doppler with a typical “yin yang” pattern (Fig. 1) suggestive of uterine artery pseudoaneurysm which was confirmed with CT angiography; however, a communicating neck could not be identified.

Patient received adequate transfusion of blood & blood products prior to UAE. Using Seldinger technique, femoral artery was accessed through a valved sheath and left uterine artery was embolized with gelfoam particles (500–2000 um) until stasis of flow was confirmed on angiogram. Her bleeding ceased completely over next 4 days. Repeat CT angiogram done after 5 days showed thrombosed pseudoaneurysm. She was discharged on day 7, and her subsequent menstrual cycles were normal on follow-up. After 2 years,

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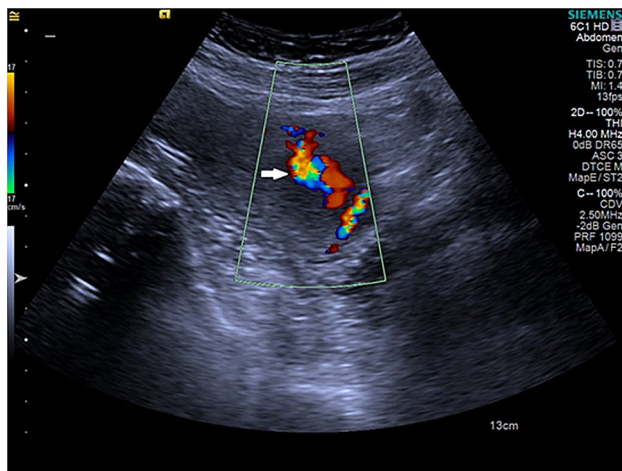


Fig. 1 Ultrasound Doppler showing “yin yang” pattern in pseudoaneurysm

she conceived spontaneously and did not have any antenatal complication. She went into spontaneous labor and had a normal vaginal delivery at 39 weeks of gestation. Blood loss at delivery was 400 mL, and she had an uneventful postnatal period. Patient resumed her periods after 3 months of delivery which were normal.

Case 2

A 39-year-old lady presented with an episode of heavy menstrual bleeding for 2 months following a second-trimester medical termination of pregnancy performed for lethal form of skeletal dysplasia. The termination of pregnancy was done using tablet Misoprostol, and there was no history of instrumentation done. Her previous menstrual cycles were regular with normal flow. At the time of presentation, she was having an episode of heavy menstrual bleeding, soaking around 8 pads per day along with passage of clots. She had a pulse rate of 90 beats/min, blood pressure of 120/80 mmHg, temperature of 37 °C and a respiratory rate of 16/min. Her systemic and abdominal examination were unremarkable. Her hemoglobin was 6.7 g/dL, total leucocyte count 9600/dL, platelet count 2.3lakh/dL, bleeding time 2 s, clotting time 8 s, INR 1.0 and activated partial thromboplastin time 28 s (reference range 25–40 s). Serum beta hcg was 8.9 mIU/mL. Ultrasound pelvis showed a cystic space at fundus of uterus measuring 2.6 × 1.5 cm with high-velocity blood flow on Doppler study along with accompanying feeding artery. Further, CT angiogram confirmed the presence of uterine artery pseudoaneurysm supplied by left uterine artery (Fig. 2).

UAE was done using Seldinger technique with gelfoam particles (500–2000um) after percutaneous access taken



Fig. 2 2.6 × 1.5 cm pseudoaneurysm arising from left uterine artery seen on CT angiogram

through femoral artery till stasis of blood was seen on angiogram. After embolization, bleeding per vaginum reduced and the patient was discharged on day 7. Her subsequent menstrual flow was normal on follow-up. She conceived by in vitro fertilization after one and half years and had dichorionic–diamniotic twin pregnancy. Antenatal period was uneventful, and she delivered twins at 36 weeks by emergency cesarean section in view of breech presentation of first twin in labor. Intraoperative blood loss was 600 mL, and there was no complication. Patient is doing fine after 6 months of follow-up.

Discussion

Uterine artery pseudoaneurysm can form after surgeries such as cesarean section, myomectomy, hysterectomy, previous traumatic delivery [2] or dilatation and curettage which might cause direct injury to the artery or secondary to infection causing arterial wall weakness. However, it can form after nontraumatic deliveries or nontraumatic pregnancy termination, even without any history of postpartum or postabortal hemorrhage. Though less likely following uncomplicated pregnancy termination, Baba Y pointed out in a case series that out of 22 cases of uterine artery pseudoaneurysm, 11 cases occurred after nontraumatic deliveries/pregnancy termination [1]. In the present study, both the patients were diagnosed with uterine artery pseudoaneurysm after termination of pregnancy and second patient had no history of any surgical intervention. Pseudoaneurysm may be asymptomatic detected incidentally during radiological investigation, can cause pressure effect on adjacent structures and undergo thrombosis or rupture leading to massive hemorrhage. Rupture of uterine artery pseudoaneurysm can

present as secondary postpartum hemorrhage up to 3 months of cesarean section [2].

On grayscale ultrasound, it is seen as hypoechoic cystic structure adjacent to supplying artery. Doppler study shows blood flow within a cystic structure with a typical swirling motion called “yin-yang” sign and “to-fro” waveform seen in the neck of the pseudoaneurysm. However, in the case of uterine artery pseudoaneurysm, demonstration of neck is difficult because of small size of parent artery [3]. CT angiogram shows contrast material-filled sac adjacent to donor artery and can be seen communicating with it [3]. Though conventional angiography has its benefits, it can also cause hematoma, pseudoaneurysm and thrombosis at puncture site.

Most vascular malformations can be treated by transcatheter arterial embolization. It has excellent success rates, low complication rates and preserves the fertility. Absorbable gelatin sponge pledgets are usually the material of choice for embolization of pseudoaneurysm arising from uterine artery because of ease of delivery and the duration of effect [4]. The 3–6-week duration of occlusion by absorbable gelatin sponge pledgets is sufficient to stop hemorrhage while still permitting slow development of collateral vessels [4]. Due to temporary occlusion by gelatin foam and development of collateral vessels, there is preservation of fertility and menstrual function. This procedure is still not preferred in women desiring future fertility; however, with timely diagnosis, suitable resources and expertise, the same can be used to deliver optimal outcome as seen in the cases reported above.

Successful pregnancy outcomes after UAE for pseudoaneurysm have never been described. There are various case series of pregnancy outcome after UAE for fibroids, however, these patients need close monitoring for complications such as increased risk of cesarean delivery, abnormal placentation and postpartum hemorrhage. Both the patients in the present study did not have abnormal placentation or postpartum hemorrhage.

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Compliance with Ethical Standards

Conflict of interest There is no conflict of interest among the author.s

Ethical Approval Ethical approval was not required for case reports as per the Institutional Ethics Committee guidelines.

Informed Consent Written informed consent was obtained from both the patients, and their anonymity was maintained throughout the study.

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