Diagnosing and treating postpartum uterine artery pseudoaneurysm

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ABSTRACT

Uterine artery pseudoaneurysm (UAP) is an uncommon cause of postpartum hemorrhage. We present a case of a 19-year-old woman 6 weeks postpartum after low transverse cesarean delivery with recurrent heavy vaginal bleeding requiring a blood transfusion. Transvaginal sonogram revealed a UAP. Embolization of the uterine artery was performed, with resolution of her symptoms.

KEYWORDS Embolization; hemorrhage; postpartum; pseudoaneurysm

Uterine artery pseudoaneurysm (UAP) is an uncommon cause of postpartum vaginal bleeding. The prevalence is difficult to determine due to its rarity. A prevalence of 2–3/1000 deliveries has been cited when asymptomatic patients are included.¹ UAP typically presents as delayed postpartum hemorrhage, occurring >24 hours after delivery but within 6 weeks of delivery. The presentation can vary from insidious bleeding to gross hemorrhage.² Often the presentation is attributed to more common causes of postpartum hemorrhage, such as retained products of conception, involution of the placental bed, or postpartum endometritis.^{3,4} Lack of recognition of UAP can lead to incorrect management and poor outcomes, including repeat blood transfusions, multiple emergency room visits, and, in severe cases, hysterectomy.

CASE REPORT

A 19-year-old gravida I para I Caucasian woman presented to the emergency department with heavy vaginal bleeding for the past hour. She was 6 weeks postpartum after undergoing a low transverse cesarean delivery. She reported the resumption of her normal menstrual cycle the previous week with spotting the last few days. On the day of presentation, she experienced a large amount of vaginal bleeding and weakness, which were unassociated with cramping, abdominal pain, fever, chills, headache, or dysuria. Current medications included oral iron and prenatal vitamins. Three weeks earlier she had experienced a similar episode of vaginal bleeding and received a transfusion of two units of packed red blood cells. She was also found to have appendicitis that was treated via a laparoscopic appendectomy.

Upon arrival to our emergency department, her temperature was 98.1°F, her heart rate was 105 beats per minute, her blood pressure was 105/60 mm Hg, and her respiratory rate was 19 breaths per minute. The oxygen saturation was 100% on room air. The patient appeared anxious but in no acute distress. Her abdomen was soft, nondistended, and nontender. On pelvic exam, there were no labial, vaginal, or cervical lesions. A large clot was evacuated from the vaginal vault with no active bleeding appreciated. No cervical motion tenderness was noted. The cervical os was closed and her uterus measured 6-week size, anteverted. No pelvic or adnexal masses were noted. The blood hemoglobin was 11.4 g/dL and hematocrit was 34.2%. She also had a negative quantitative human chorionic gonadotropin and normal prothrombin time, partial thromboplastin time, and international normalized ratio. A transvaginal ultrasound with color Doppler was performed and showed the uterus to measure 7.9 × 4.4 × 5.7 cm, with an endometrial thickness of 4 mm, normal adnexa bilaterally without compromised blood flow, and no retained products of conception. The ultrasound did show a 1.5-cm pseudoaneurysm near the cesarean section scar that appeared to originate from the left uterine artery (*Figure 1*). Due to the risk of rupture with subsequent hemorrhage, the patient was admitted for pelvic arteriogram and embolization of the left UAP. Coils were placed into the UAP and the associated branch of the left uterine artery (*Figure 2*). After the coils were placed, no flow was noted in the UAP but flow was maintained in the remainder of the uterus. There were no complications during the procedure. The patient was discharged home the following day.

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Figure 1. Transvaginal sonogram. (a) Sonogram reveals a focal fluid collection in the lower uterine segment (arrow). (b) Use of color Doppler reveals arterial blood flow into the fluid collection (arrow).

DISCUSSION

There are many causes of delayed postpartum hemorrhage, but UAP is an important cause to recognize. Pseudoaneurysms have been found after vaginal deliveries and cesarean deliveries, as well as dilation and curettage, myomectomies, and cervical conization.³ They develop as a result of disruption to the arterial wall, potentially due to instrumentation or implantation of the placenta.⁵ They have been diagnosed more frequently after cesarean delivery than vaginal delivery due to the inherent trauma to tissue that occurs with cesarean delivery.⁶ Pseudoaneurysms differ from a true aneurysm because they have only a single layer of connective tissue, rather than a three-layer wall. Due to the high pressure in the artery, blood can extravasate through the connective tissue, leading to vaginal bleeding. This connective tissue can easily rupture, leading to significant hemorrhage into the uterine cavity.⁷ The pseudoaneurysm can also reseat, leading to recurrent episodes of vaginal bleeding rather than one acute episode.⁸

The diagnostic modality of choice is transvaginal ultrasound with color Doppler. UAPs typically present as a hypoechoic mass with a “yin-yang” pattern on Doppler, reflecting turbulent blood flow into the pseudoaneurysm during systole and blood flow out of the cavity during diastole.¹ UAPs can also be seen on magnetic resonance imaging and computed

Figure 2. Image obtained following digital subtraction arteriogram. (a) The pseudoaneurysm is identified (arrow) and found to emanate from a branch of the left uterine artery. (b) Appearance of the pseudoaneurysm following placement of interlock coils (arrow). Blood flow is no longer seen in the pseudoaneurysm.

tomography with contrast.^{7,8} For hemodynamically stable patients, the treatment of choice is interventional radiology (IR) embolization of the uterine artery, which can be performed using various agents and is 93% to 96% successful.⁹ IR embolization is the preferred method because it is well tolerated by the patient, less invasive, allows for shorter hospitalization, and preserves fertility, in contrast to hysterectomy.^{3,10} For hemodynamically unstable patients, intraoperative ligation of the uterine vessels and hysterectomy are the options.⁵ Dilation and curettage should be avoided in these patients because it can disrupt the pseudoaneurysm, leading to heavier bleeding.⁷ This is important to prevent because delayed postpartum hemorrhage is often attributed to retained products of conception. Prior to proceeding with this procedure, the presence of a UAP should be ruled out. After IR embolization has been performed, patients should have a follow-up ultrasound in a few months to confirm resolution of the pseudoaneurysm.¹

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