

Case Report

Uterine Artery Pseudoaneurysm: Unusual Cause of Delayed Postpartum Hemorrhage

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ABSTRACT: We describe a case of uterine artery pseudoaneurysm in a 21-year-old woman with postpartum hemorrhage. This condition is easily diagnosed with duplex Doppler sonography and can be treated with embolization, but only if delayed postpartum hemorrhage is considered in the differential diagnosis. © 2007 Wiley Periodicals, Inc. *J Clin Ultrasound* 00:000–000, 2007; Published online in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/jcu.20372

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A pseudoaneurysm is defined as a contained rupture of the wall of an artery. The common femoral artery is the most frequent site affected. The primary cause is penetrating trauma, such as knife wounds, bullet wounds, and medical intervention.¹ Uterine artery pseudoaneurysm (UAP) is a rare cause of hemorrhage in the postpartum period; however, with the advent of new noninvasive imaging techniques such as Doppler sonography, it is being diagnosed more and more often.

CASE REPORT

A 21-year-old woman was admitted to the hospital for recurrent, intermittent vaginal bleeding after a cesarean section 1 month earlier. Physi-

cal and gynecologic examinations were normal except for the vaginal bleeding, and the only finding in laboratory tests was anemia. The patient had a white blood cell (WBC) count of $7.5 \times 10^3/\mu\text{L}$, a red blood cell (RBC) count of $3.06 \times 10^6/\mu\text{L}$, a hemoglobin level of 7.4 g/dL, a hematocrit level of 24%, a platelet count of $239 \times 10^3/\mu\text{L}$, and an erythrocyte sedimentation rate of 16 mm in half an hour.

An abdominal and transvaginal sonographic examination were performed with an Antares scanner (Siemens Ultrasound, Mountain View, CA) equipped with CH4-1 and EC9-4 probes to determine the cause of hemorrhage. Examination of the upper abdomen was normal. The transvaginal sonographic examination did not reveal any retained products of conception (eg, placenta). A pulsating cystic area in the cervix measuring $15 \times 12 \times 12$ mm was detected with gray-scale sonography (Figure 1). Color and duplex Doppler scans were performed to check for the presence of blood flow in the cystic area. The color Doppler sonogram showed a swirl of colors (yin-yang symbol) (Figure 2), and the duplex Doppler sonogram showed a typical “to-and-fro” pattern (Figure 3). The patient was transfused with 2 units of blood and was referred to the university hospital for confirmation of the UAP and embolization. After digital subtraction angiography of both uterine arteries, the right UAP was confirmed and the feeding artery of the pseudoaneurysm was embolized with coils successfully during the same

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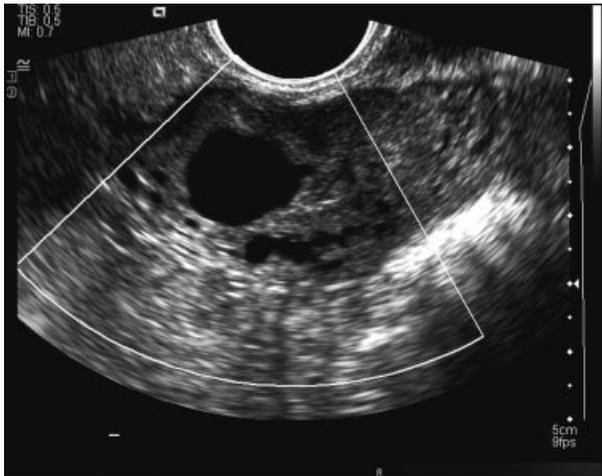


FIGURE 1. Gray-scale transvaginal sonogram shows the anechoic cyst-like lesion in the cervix.

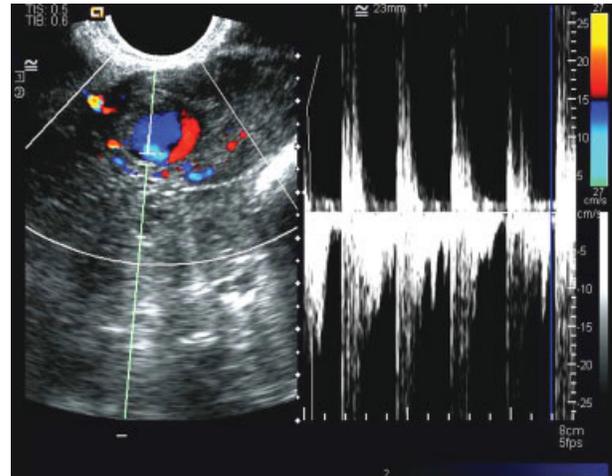


FIGURE 3. Duplex Doppler examination shows the typical “to-and-fro” pattern at the neck of the pseudoaneurysm.

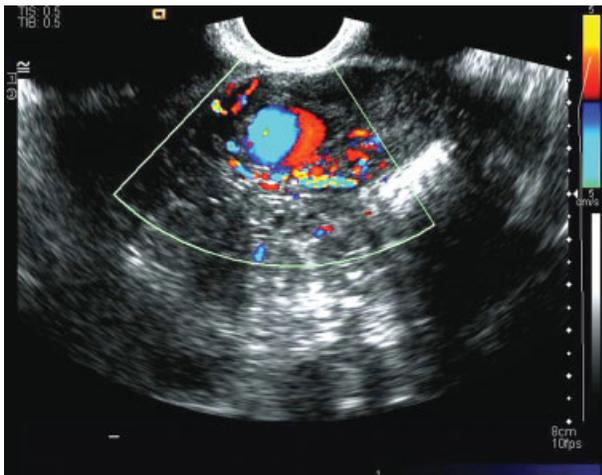


FIGURE 2. Color Doppler sonogram shows turbulent blood flow in the lumen of pseudoaneurysm.

session (Figure 4). Follow-up transvaginal sonographic and duplex Doppler US examination 10 days later demonstrated complete thrombosis of the pseudoaneurysm and no blood flow.

DISCUSSION

Postpartum hemorrhage is the major cause of maternal mortality. Hemorrhage may also result from lacerations, retained products of conception, or hypofibrinogenemia.² The postpartum period, or *puerperium*, is defined as the 6 weeks after delivery of the neonate.^{2,3} It can be either primary (ie, early), which is within 24 hours of delivery, or secondary (ie, delayed), which is the period beginning 24 hours after delivery until week 6 of puerperium.

UAP is a rare complication, although it is more common than a true aneurysm and is usually due to interventional procedures, surgery, curettage, or infection.⁴ The detection and diagnosis of a UAP is important because of the potential for rupture and hemorrhage, which could be fatal.

We found 25 UAP cases in the literature, 7 of which were from the same center within an 8-year-period.⁵ We think that the reason for the low incidence rate of UAP is the limited use of noninvasive imaging equipment before the 1990s. Recently, Eason et al reported a case similar to ours, with some differences.⁶ In their case, an accurate diagnosis was delayed because this uncommon complication was not considered in the diagnosis of secondary postpartum hemorrhages. This misdiagnosis resulted in an unnecessary hysterectomy.

UAP is easily diagnosed with duplex Doppler sonography. The hallmark Doppler sign is a “to-and-fro” waveform as seen in common femoral artery pseudoaneurysm after arterial catheterization; however, in our case we detected it not only over the communicating channel, but also in the lumen of the pseudoaneurysm (Figure 3).

To our knowledge, there is no compression repair maneuver of UAP as there is for common femoral artery pseudoaneurysm. Selective arterial embolization of the uterine arteries is an effective and safe treatment for the control of delayed postpartum hemorrhage.^{3,5-7} The first case of uterine embolization in the management of severe postpartum hemorrhage was reported by Brown et al.⁸

In conclusion, UAP, though rare, is easily diagnosed with duplex Doppler sonography—but only if delayed postpartum hemorrhage is considered

UTERINE ARTERY PSEUDOANEURYSM

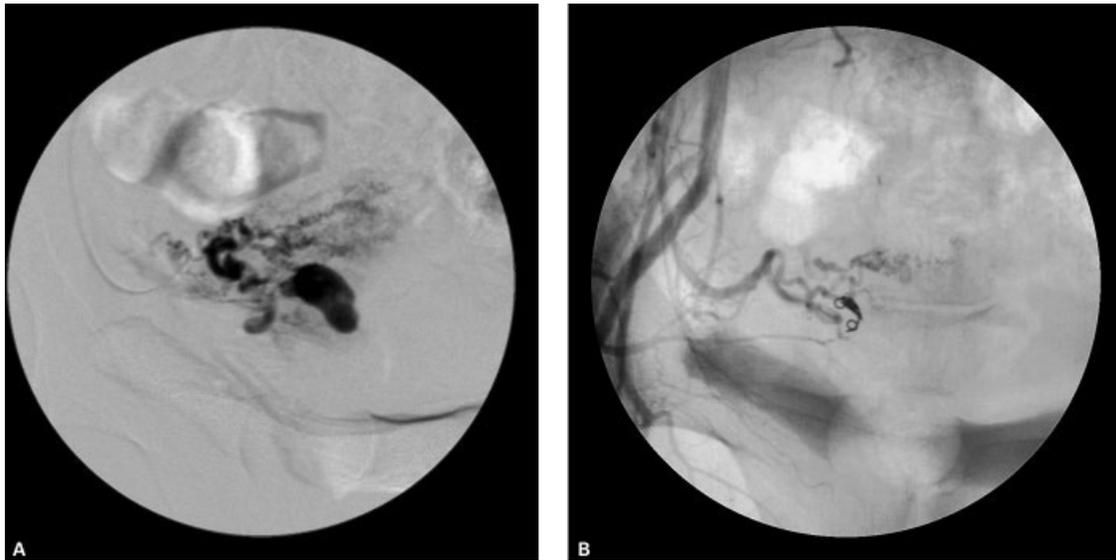


FIGURE 4. Selective iliac angiograms show (A) the pseudoaneurysm and (B) the absence of residual flow after successful coil embolization.

in the differential diagnosis. It is also easy to treat with selective arterial embolization of the uterine arteries.

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