

Uterine artery pseudoaneurysm presenting with subcutaneous hematoma and vaginal bleeding following cesarean delivery



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We present a rare case of uterine artery pseudoaneurysm (UAP) following an emergency cesarean section, which led to severe vaginal bleeding and subcutaneous hematoma. The patient, a 40-year-old woman with no history of hemophilia or hemostasis disorders, presented with sudden profuse vaginal bleeding and multiple subcutaneous hematomas at the site of the cesarean scar ten days postoperation. Ultrasound and CT scan confirmed the presence of a pseudoaneurysm in the right uterine artery. Due to the unavailability of radiological embolization, surgical ligation of the right internal iliac artery was performed. Postoperative follow-up showed successful resolution of the pseudoaneurysm and cessation of bleeding. This case highlights the importance of considering UAP in the differential diagnosis of postpartum hemorrhage and demonstrates the efficacy of surgical intervention when embolization is not available.

Key words: cesarean section complications, emergency surgery, internal iliac artery, postpartum hemorrhage, subcutaneous hematoma, surgical ligation, uterine artery pseudoaneurysm

We relate a case of a 40-year-old woman, gravida three, para one, with no history of hemophilia or hemostasis disorders who underwent an emergency cesarean section due to fetal distress. During the cesarean delivery, a tear occurred at the right angle of the hysterotomy, which was repaired with a simple suture using vicryl 1.

Ten days after the surgery, she consulted the emergency department with a complaint of sudden profuse vaginal bleeding. After being examined, it was observed that she had a pale skin tone. Her heart rate was 99 beats per minute, and her blood pressure was 120/80

mmHg. Multiple subcutaneous hematomas were visible at the site of the cesarean scar and on both thighs (Figure 1). The abdominal wall was soft and nontender. Moderate vaginal bleeding was observed. No signs of postoperative infection were observed.

The ultrasound examination revealed a 3.75 × 3.5 cm right uterine mass (Figure 2A) with internal “yin-yang” flow on color Doppler, suggesting a uterine artery pseudoaneurysm (Figure 2B).

An emergency blood cell count showed a hemoglobin level of 7.3 g/dL, platelets count was 189,000/mm³, and white blood cells = 9,200/mm³. The prothrombin time (PT), activated partial thromboplastin time (aPTT), and fibrinogen levels were all within normal limits.

Following the transfusion of 2 units of packed red blood cells and resuscitation, a pelvic CT scan with contrast injection confirmed the existence of a pseudoaneurysm measuring 5 centimeters in the right uterine artery.

Since radiological embolization was not available, the medical team decided to perform surgical management, and for the safety of our patient the ligation of the right internal iliac artery was done by a surgeon skilled in vascular procedures (Figure 3).

Postoperative follow-up revealed the complete disappearance of Doppler flow on ultrasound (Figure 4), as well as the absence of any further episodes of vaginal bleeding. The patient was subsequently discharged after six days.

Comments:

A true aneurysm involves the dilation of all three vascular wall layers. In contrast, a false aneurysm, or pseudoaneurysm, occurs when one or more layers, typically the intima and media, are damaged. Uterine Artery Pseudoaneurysm (UAP) predominantly occurs in a post-traumatic context, often postcesarean delivery.¹ However, UAPs can also develop following nontraumatic deliveries or procedures.² In our case, the tear in the right angle of the hysterotomy may have caused uterine artery trauma, and a selective homolateral uterine artery ligation could have prevented the risk of late UAP rupture.

We also noticed that our case is unique as the literature lacks reports of UAP complicated by subcutaneous hematoma, an aspect that remains unexplained in our case. This unusual presentation might be attributed to the rupture of the aneurysm into the surrounding soft tissue. According to the findings by Baba et al., the likelihood of aneurysm rupture is influenced by the balance between the internal blood

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FIGURE 1
Multiple subcutaneous hematomas at the site of the cesarean scar



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pressure within the aneurysm and the strength of the UAP wall.³ This interaction may be critical in understanding the pathophysiology behind the complications observed in our patient.

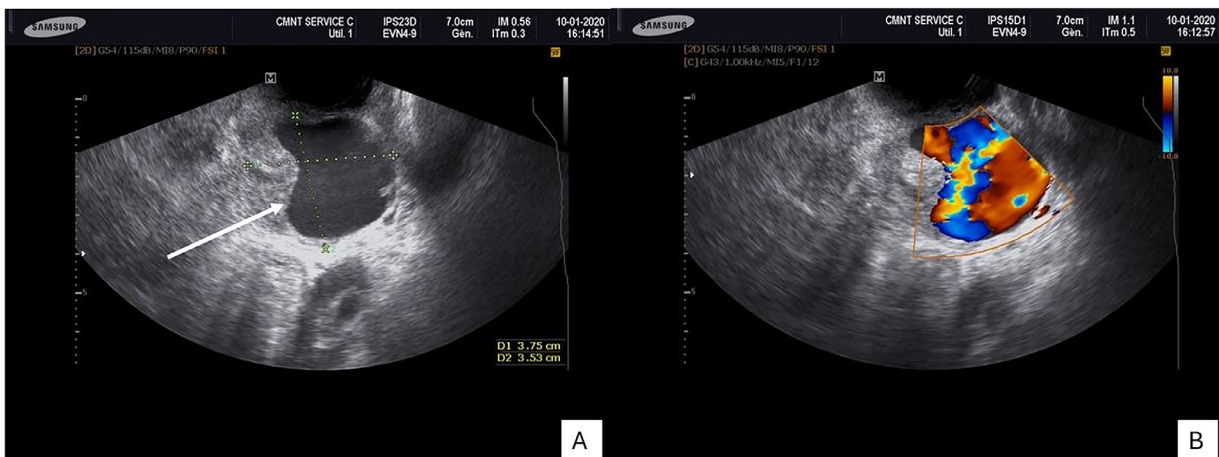
Diagnosis of UAP is feasible via ultrasound, computed tomography (CT), or

angiography. Ultrasound typically reveals a hypoechoic mass at the artery trajectory. Color Doppler ultrasound is beneficial, showing a to-and-fro or yin-and-yang pattern indicative of arterial flow into the pseudoaneurysm during systole and reverse flow during diastole.⁴

Awareness of UAP is crucial, as its enlargement or rupture can lead to late severe vaginal bleeding and potentially hemorrhagic shock.

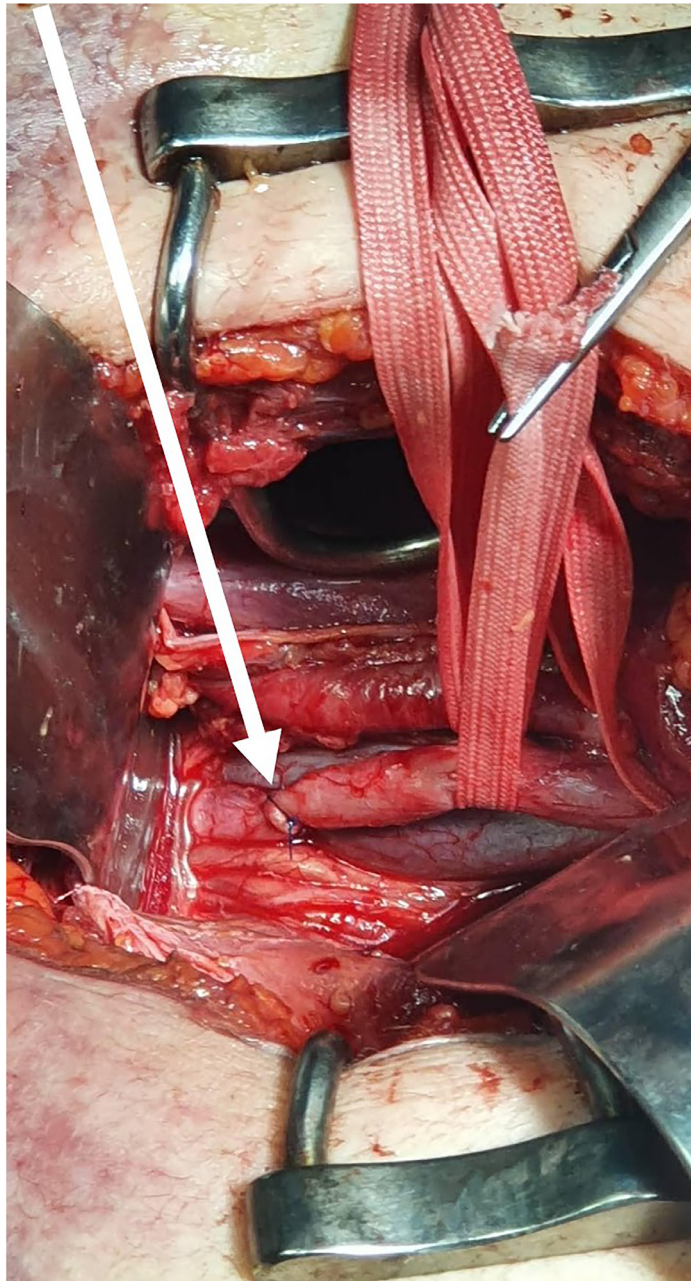
For ruptured UAP, management involves resuscitation and interventional radiology. Uterine artery embolization is

FIGURE 2
(A) 3.75 * 3.5 cm right uterine mass, (B) internal “yin-yang” flow on color Doppler



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FIGURE 3
Blood extravasation and selective ligation of the internal iliac artery



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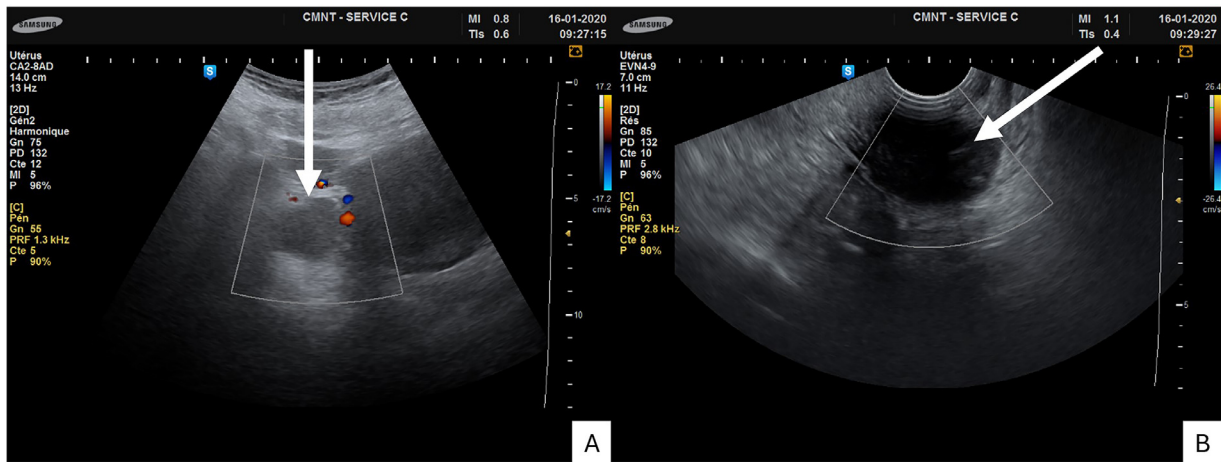
the preferred treatment.⁵ If an embolization platform is unavailable, conservative treatments, such as bilateral iliac artery ligation, have been described.⁶ In our case, however, emergency surgical management by unilateral ligation of the right internal iliac artery conducted to a

successful treatment with complete disappearance of Doppler flow without recurrence.

As mentioned, regarding to success rates, radiologic vascular embolization outperforms surgical uterine artery ligation. However, this case highlights the

effective surgical treatment of a pseudoaneurysm in the uterine artery. It demonstrates the efficacy of surgical management in treating a uterine artery pseudoaneurysm, particularly in situations where embolization is not an option or is contraindicated. ■

FIGURE 4
Postoperative Doppler ultrasound with complete disappearance of Doppler flow



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CRediT authorship contribution statement

Hatem Frikha: Investigation. **Haithem Aloui:** Writing – original draft. **Abir Karoui:** Conceptualization. **Rami Hamami:** Methodology. **Sana Menjli:** Software. **Hassine Saber Abouda:** Validation. **Mohamed Badis Chanoufi:** Visualization.

REFERENCES

1. Chummun K, Kroon N, Flannelly G, Brophy D. Severe postcoital bleeding from a uterine artery pseudoaneurysm 4 months after cesarean deliv-

ery. *Obstet Gynecol* 2015;126(3):638–41. <https://doi.org/10.1097/ACG.0000000000000849>.

2. Baba Y, Takahashi H, Ohkuchi A, et al. Uterine artery pseudoaneurysm: its occurrence after non-traumatic events, and possibility of “without embolization” strategy. *Eur J Obstet Gynecol Reprod Biol* 2016;205:72–8. <https://doi.org/10.1016/j.ejogrb.2016.08.005>.

3. Baba Y, Takahashi H, Morisawa H, et al. A potentially useful addition to predict spontaneous resolution of uterine artery pseudoaneurysm: absence of diastolic flow. *Case Rep Obstet Gynecol* 2018;2018:2158248. <https://doi.org/10.1155/2018/2158248>.

4. Polat P, Suma S, Kantarcıy M, Alper F, Levant A. Color Doppler US in the evaluation of

uterine vascular abnormalities. *Radiographics* 2002;22(1):47–53. <https://doi.org/10.1148/radiographics.22.1.g02ja0947>.

5. Lee WK, Roche CJ, Duddalwar VA, Buckley AR, Morris DC. Pseudoaneurysm of the uterine artery after abdominal hysterectomy: radiologic diagnosis and management. *Am J Obstet Gynecol* 2001;185(5):1269–72. <https://doi.org/10.1067/mob.2001.117974>.

6. Dasari P, Maurya DK, Mascarenhas M. Uterine artery pseudoaneurysm: a rare cause of secondary postpartum haemorrhage following caesarean section. *BMJ Case Rep* 2011;2011:bcr0120113709. <https://doi.org/10.1136/bcr.01.2011.3709>.