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Case Report

Fertility-Preserving Management of a Uterine Arteriovenous Malformation: A Case Report of Uterine Artery Embolization (UAE) Followed by Laparoscopic Resection

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ABSTRACT Herein is presented a fertility-preserving approach in the management of a uterine arteriovenous malformation (AVM) resistant to endovascular management. The patient had a documented AVM and underwent 2 uterine artery embolization procedures, with subsequent recurrence of symptoms. Doppler ultrasound demonstrated recanalization of the AVM. Ultimately, laparoscopic resection of the AVM was performed after laparoscopic ligation of the uterine arteries. Postoperatively, the patient has remained asymptomatic. Laparoscopic resection of a uterine AVM may offer a fertility-preserving alternative to hysterectomy in patients in whom endovascular management has failed. Journal of Minimally Invasive Gynecology (2015) 22, 137–141 Published by Elsevier Inc. on behalf of AAGL.

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Abnormal uterine bleeding (AUB) is one of the most common gynecologic conditions evaluated in emergency settings. Uterine arteriovenous malformations (AVMs) are rare but can be a life-threatening cause of AUB. Before development of endovascular embolization, treatment of uterine AVMs centered on hysterectomy [1]. Subsequently, computed tomography (CT) and magnetic resonance angiography and arterial embolization performed by interventional radiologists have become of the mainstay of diagnosis and treatment of uterine AVMs in patients who desire fertility preservation [2–4]. However, in some cases AVMs recanalize or develop neovascularization despite embolization, causing recurrence of symptomatic bleeding necessitating surgical intervention.

Herein is presented the case of a young premenopausal patient with a uterine AVM that recanalized despite 2 presumptively successful uterine artery embolization (UAE) procedures. The patient highly desired fertility preservation. The patient underwent successful definitive treatment of the uterine AVM using a combination of laparoscopic uterine artery ligation and AVM resection.

Case Report

A 34-year-old woman, gravida 3 para 1, with a history of 1 cesarean section performed because of breech presentation and 2 spontaneous abortions came to the reproductive endocrinology office for evaluation of AUB. The patient had undergone uncomplicated dilation and curettage after a

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missed abortion 3 months before her initial consultation at the clinic. The patient reported several intermittent episodes of AUB before her clinic visit and had been evaluated at a local community hospital on 2 occasions. Evaluation performed before the clinic consultation included transvaginal ultrasound (TVUS) and magnetic resonance imaging (MRI), which yielded results consistent with a uterine AVM. MRI results revealed a 3.8-cm lesion in the anterior body of the uterus, superior to the previous cesarean section scar. This lesion contained numerous vessels with an approximately 1.4-cm enhancing submucous (or intracavitary) component. The serum pregnancy test yielded normal results. The patient arrived for the scheduled clinic visit in a wheelchair because as she entered the lobby of the clinic building she experienced acute onset of spontaneous profuse bleeding per vagina, similar to her previous episodes. She was therefore taken immediately to the emergency room for evaluation. The patient was stabilized in the emergency room. Interventional Radiology was consulted, and the patient underwent angiography via superselective catheterization of both uterine arteries, which revealed rapid arterial flow with arteriovenous shunting into a possible false aneurysm or varix. Subsequent embolization of each side via injection of embospheres was performed without complication. A post-embolization angiogram revealed occlusion of the AVM and the branches supplying the false aneurysm.

The patient recovered well after the procedure and was admitted overnight for observation. The following morning, the patient had no further AUB and was discharged to home in stable condition. The hemoglobin concentration at discharge was 9 g/dL.

Two weeks after UAE, the patient experienced another episode of profuse bleeding at home, prompting medical attention at the nearest emergency room. The patient was evaluated and stabilized and was subsequently transferred to our hospital for consultation regarding a second UAE. TVUS confirmed recanalization of the uterine AVM in the anterior uterine wall. After consultation with the Interventional Radiology team, the patient underwent a second UAE with embospheres the following morning, after transfusion of 2 units of packed red blood cells to treat symptomatic anemia (Fig. 1). Bilateral obliteration of the AVM was observed at the conclusion of the second UAE. The patient was discharged to home the following day in stable condition.

One month after the initial embolization, the patient reported recurrent AUB. TVUS performed at the clinic revealed increased flow in the area of the previously embolized uterine AVM, consistent again with recanalization, although it was unclear why recanalization had recurred. At this time, treatment options were discussed extensively with the patient, including surgical intervention because of the history of 2 unsuccessful UAEs. The patient expressed a strong wish for fertility preservation if possible. Therefore, both a fertility-sparing laparoscopic approach using intraoperative ultrasound, laparoscopic ligation of the uterine arteries with subsequent laparoscopic resection and closure of the AVM bed, and laparoscopic hysterectomy were discussed in detail. The patient understood that laparoscopic hysterectomy would be performed if fertility-sparing approaches were not successful or achievable on the basis of intraoperative findings. The patient was taken to the operating room, where an intraoperative formal TVUS was performed, and the AVM was localized via Doppler flow studies. The size of the AVM seemed

Fig. 1

Embolization procedure demonstrates extent of uterine arteriovenous malformation before instillation of embolization beads.

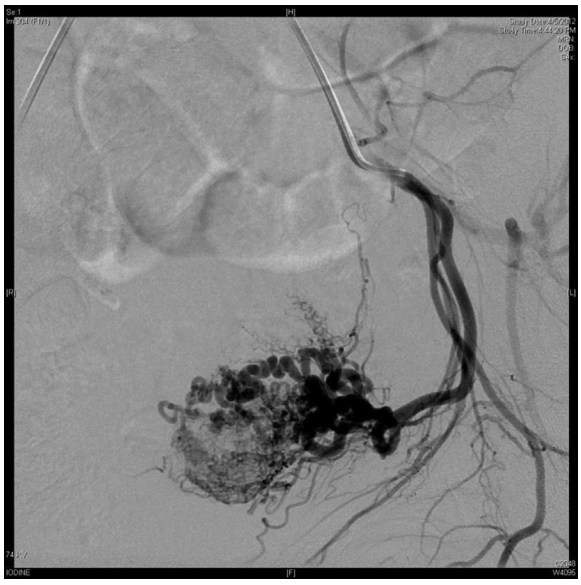

Fig. 2

Intraoperative transvaginal ultrasound performed before resection demonstrates color Doppler flow to the arteriovenous malformation above a previous hysterotomy scar.