AUCTORES
Globalize your Research

International Journal of Clinical Case Reports and Reviews
Radheshyam Meena *

Open Access

Case Report

Interventional Radiology Management of Uterine AVM, bleeding into uterine cavity during Uterine Artery Embolization

Radheshyam Meena [1]*, Pankaj Sharma [2]

[1]Vascular Radiology Fellow, Department of Radiodiagnosis, AIIMS Rishikesh

[2]Additional Professor, Department of Radiodiagnosis, AIIMS Rishikesh

***Corresponding Author:** Radheshyam Meena, Vascular Radiology Fellow, Department of Radiodiagnosis, AIIMS Rishikesh.

Received Date: May 02, 2025 | **Accepted Date:** May 14, 2025 | **Published Date:** May 26, 2025

Citation: Radheshyam Meena, Pankaj Sharma, (2025), Interventional Radiology Management of Uterine AVM, bleeding into uterine cavity during Uterine Artery Embolization, *International Journal of Clinical Case Reports and Reviews*, 26(2); **DOI:10.31579/2690-4861/819**

Abstract:

Uterine Arteriovenous malformation (AVM) is a rare cause of fatal bleeding in female of childbearing age group. Acquired AVM being more common than congenital AVM, and can be diagnosed in a patient presenting with massive uterine bleeding, post - dilatation & curettage/molar pregnancy/pelvic trauma/cervical carcinoma/endometrial carcinoma. Uterine artery embolization (UAE) is preferred minimally invasive treatment option for females with Uterine AVM, if these women want to preserve their fertility. Preferred embolising agents depends on various factors, including user preference. We are presenting a rare complication of bleeding into uterine cavity during uterine artery embolization, which was successfully managed by minimally invasive UAE.

Key words: uae- uterine artery embolization; avm- arteriovenous malformation; dsa- digital subtraction angiography

Introduction

Uterine arteriovenous malformation (AVM) is a rare (0.10 %) cause of fatal bleeding in female of child bearing age group. [1-4] Acquired AVM being more common than congenital AVM, and can be diagnosed in patient presenting with massive uterine bleeding, post - dilatation & curettage/molar pregnancy/pelvic trauma/cervical carcinoma/endometrial carcinoma. Uterine artery embolization (UAE) is preferred minimally invasive treatment option for females with Uterine AVM, if these women want to preserve their fertility. Preferred embolising agents depends on various factors, including user preference. We are presenting a rare complication of bleeding into uterine cavity during uterine artery embolization, which was successfully managed by minimally invasive UAE.

Case Report

A 26-year-old female came to emergency with hypotension, and history of massive bleeding per vagina, for last 5 days. Thereafter, patient was admitted to ICU and three units of packed RBC were transfused. She had history of previous 2 abortions; one 4 years back which was diagnosed as molar pregnancy, managed by suction and evacuation. Thereafter patient was asymptomatic. She again had second abortion 10 months back, and this time also she was diagnosed with molar pregnancy (FIGO score - 4), which was managed by suction and evacuation, followed by six cycles of methotrexate. She also gave history of oral contraceptive intake after both abortions.

She was sent to the Radiology department for Ultrasonography (USG). USG pelvis revealed multiple dilated serpiginous vascular channels in anterior myometrium wall, with low resistance arterial waveform on Color Doppler suggestive of AVM. She then underwent Computed Tomography Angiography (CTA) of the abdomen and pelvis, which revealed multiple early arterial filling vascular channels in left lateral aspect of uterine wall (arising from the left uterine artery), and an enlarged dilated arterial filling aneurysmal sac in anterior myometrium. Multiple prominent draining veins were also seen on right side of uterus. Final diagnosis was Uterine AVM based on USG and Colour Doppler findings (Figure 1).

Figure 1 (a,b,c): Axial Ct-Angiography and VRT images Showing AVM from left uterine artery in anterior myometrium with aneurysmal sac.

The patient wanted to preserve fertility, so was given option of UAE by Department of Obstetrics & Gynecology, in consultation with Interventional Radiology Consultant with ten years' experience. Patient blood parameters before the procedure were in normal range (HB-10.8 gm, TLC-10,870/dl, PLT-1.8 lakh/dl, Negative serology for HBV, HCV, and HIV, Beta-HCG – 1,2 mIU/ml).

Procedure details:

UAE was done in DSA lab after bilateral CFA access, using a 5F C-2 catheter. After catheterization of left internal iliac artery, an angiogram was taken which showed multiple enlarged vascular channels with enlarged contrast filling vascular pouch and enlarged draining vein (Figure 2). Initially, there was no evidence of contrast extravasation in uterine cavity. Thereafter, uterine artery was super-selectively catheterized using 2.8 F micro-catheter. Embolization of Uterine AVM was performed from left uterine artery using contrast mixed gelfoam slurry. During embolization, contrast mixed gelfoam was seen filling the uterine cavity (Figure 3), suggestive of contrast & gelfoam extravasation into uterine cavity.

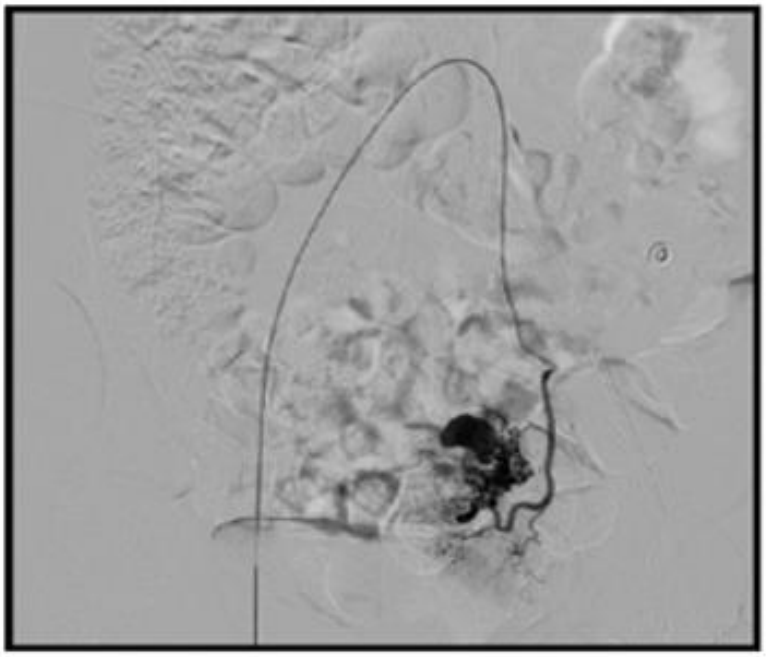

Figure 2: Catheter angiography run through left uterine artery showing filling of a large aneurysmal sac in myometrium with multiple enlarged vascular channels arising from left uterine artery.

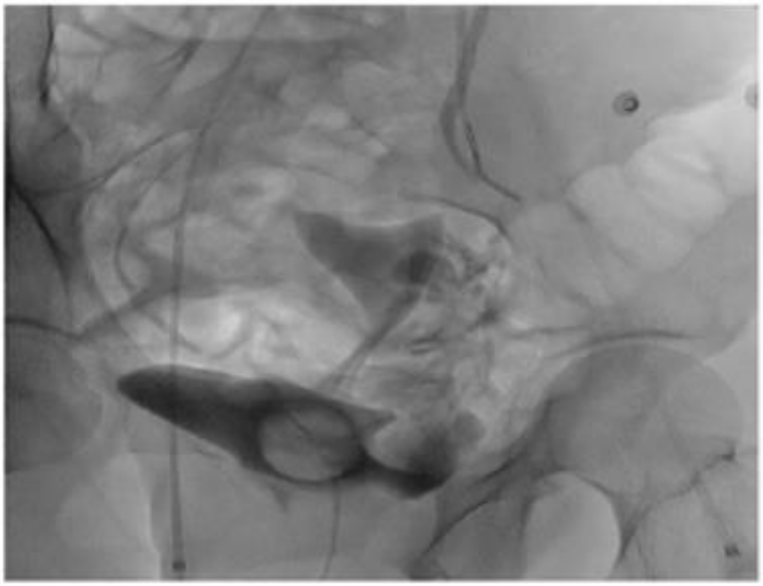

Figure 3: Catheter angiography run through left uterine artery showing filling seen filling the uterine cavity during gelfoam injection in left uterine artery.

Continuous injection of gel foam slurry was done which caused obliteration of vascular channels, with no evidence of contrast in uterine cavity (Fig 4). Right uterine artery injection did not show any significant arterial feeder to AVM. After completion of UAE, sheath was removed and manual compression at puncture site was done for 10 minutes. Two days post-UAE, the patient passed blood clots from uterine cavity. Follow-up USG shows an empty uterine cavity, with no evidence of color flow in uterine wall (Figure 5).

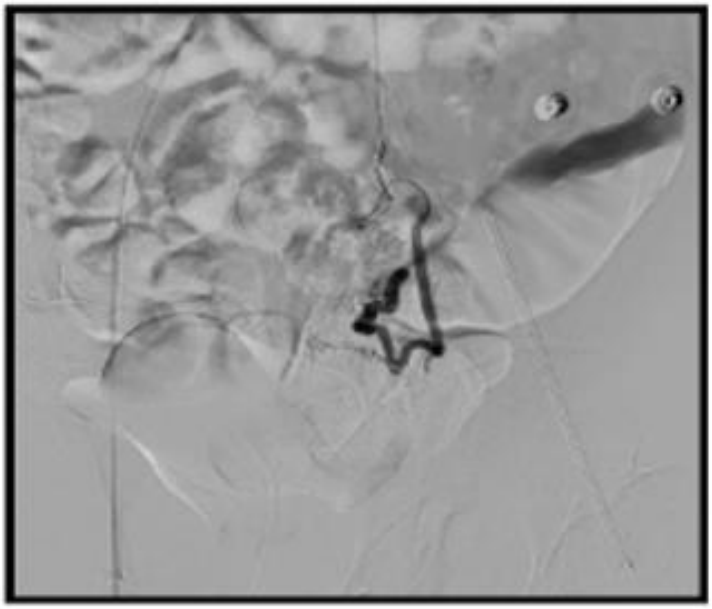

Figure 4: DSA Check angiography run showing successful embolization of uterine AVM with no e/o Contrast filling the uterine cavity.

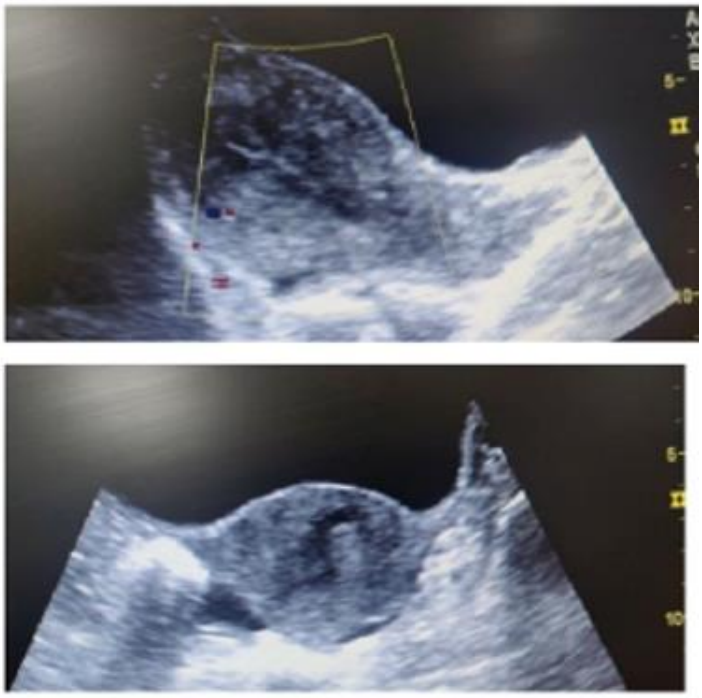

Figure 5 (a,b): Follow up USG shows empty uterine cavity with no evidence of colour flow in Uterine

The patient was discharged on 3rd post-procedure day. She got regular menstrual cycle after 8 weeks, with no h/o any recurrent bleeding per vagina.

Discussion

Uterine AVM is a rare cause of uterine bleeding, usually in women of reproductive age group. AVM is abnormal communication of intramural branches of uterine artery and myometrium venous plexus, without any intervening capillary channels.[5] Uterine AVM can be congenital or acquired. Congenital AVM is thought to be the result of the failure of embryonic capillary plexus differentiation. [6]

Acquired AVM being more common than congenital AVM, and can be d iagnosed in a patient presenting with massive uterine bleeding, post - dilatation & curettage/ molar pregnancy/ pelvic trauma/ cervical carcinoma/endometrial carcinoma.[7,8] The first line investigation is Pelvic USG which shows tangles of anechoic vascular channels with e/o Color flow on Color Doppler. Spectral waveform can help in diagnosis, and shows arterial waveform.[9] CTA/Magnetic Resonance Angiography (MRA) is next investigation for delineating vascular anatomy of the lesion. Catheter Angiography is gold standard for Uterine AMV diagnosis; however, it is more often performed with therapeutic intent for endovascular embolization.

Management of uterine AVM is decided based on clinical status and age of the patient, desire for preservation of fertility in the future. Treatment

option for uterine AVM includes surgical management in a patient with completed family, or not willing to preserve fertility, UAE is now an established available treatment option in a patient who desires to preserve the fertility. There are many embolic agents available for UAE including platinum coil, NBCA glue, PVA particles, and gelfoam.[10-11]

In our case, we used gelfoam as the embolizing agent, which is a temporary embolizing agent. Gelfoam is a biological substance obtained from purified skin gelatin. Studies have shown a good success rate by gelfoam in UAE with preservation of menstruation in up to 92 % and fertility in up to 82 % of the cases.[12]

Commonly encountered complications post-UAE are endometritis (0.5 %), pyo-myoma, pulmonary embolism (0.25%), ovarian dysfunction (< 5% in women less than 45 years of age), minor complications like hematoma, UTI, retention of urine during and after UAE.[13] In present case, we encountered an unknown complication of intra-procedural bleeding in the uterine cavity. Uterine cavity was filled with contrast mixed gelfoam, and was managed with continuous gelfoam embolization of the Uterine AVM.

Conclusion

This case highlights a rare complication of bleeding in uterine cavity during UAE (not described earlier in literature), and managed successfully by gelfoam embolization.

References

1. Easton-Carr RB, Durant EJ, Nguyen AH. (2022). Uterine Arteriovenous Malformation (AVM) – a Potentially Life-Threatening Cause of Post-Partum Vaginal Bleeding. *Am J Case Rep*; 23: e938559.
2. Yazawa H, Soeda S, Hiraiwa T. (2013). Prospective evaluation of the incidence of uterine vascular malformations developing after abortion or delivery. *J Minim Invasive Gynecol;* 20(3); 360-67.
3. Giurazza F, Corvino F, Silvestre M, et al. Uterine arteriovenous malformations. Semin Ultrasound CT MR. 2021;42(1):37-45.
4. Rosen A, Chan WV, Matelski J, et al. (2021). Medical treatment of uterine arteriovenous malformation: A systematic review and meta-analysis. *Fertil Steril*;116(4):1107-1116.
5. O'Brien P, Neyastani A, Buckley AR, et al. (2006). Uterine arteriovenous malformations: from diagnosis to treatment. *J Ultrasound Med.*; 25:1387–1392.
6. Kasznica J, Nisar N. (1995). Congenital vascular malformation of the uterus in a stillborn: a case report. *Hum Pathol;*26(2):240–241.
7. Timmerman D, Wauters J, Van Calenbergh S, et al. (2003). Color Doppler imaging is a valuable tool for the diagnosis and management of uterine vascular malformations. *Ultrasound Obstet Gynecol.;* 21:570–577.
8. Meilstrup JW, Fisher ME. (1994). Women's health case of the day. Uterine arteriovenous malformation. Am J Roentgenol.; 162:1457–1458.
9. Wiebe ER, Switzer P. (2000). Arteriovenous malformation of uterus associated with medical abortion. *Int J Gynecol Obstet*; 71:155-158.
10. Lubarsky M, Ray CE, Funaki B. (2009). Embolization agents-which one should be used when? Part 1: large-vessel embolization. *Semin Intervent Radiol.* ;26(4):352–357.
11. Camacho A, Ahn EH, Appel E, Boos J, et al. (2019). Uterine Artery Embolization with Gelfoam for Acquired Symptomatic Uterine Arteriovenous Shunting. *J Vasc Interv Radiol.* Nov;30(11):1750-1758.
12. Touhami O, Gregoire J, Noel P, Trinh XB, et al. (2014). Uterine arteriovenous malformations following gestational trophoblastic neoplasia: a systematic review. *Eur J Obstet Gynecol Reprod Biol.;* 181:54–59.
13. Kitamura Y, Ascher SM, Cooper C, Allison SJ, et al. (2005). Imaging manifestations of complications associated with uterine artery embolization. *RadioGraphics.* ;25: S119–132.

DOI:10.31579/2690-4861/819