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Uterine arteriovenous malformation: An obstetrician's nightmare!!

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Abstract
Secondary post partum hemorrhage (PPH) is usually defined as excessive vaginal bleeding in the first 24 hours following delivery up to 6 weeks postpartum. There are multiple causes for secondary PPH, rarest of rare being an arteriovenous malformation (AVM). Most cases of secondary PPH are associated with minor morbidities but may still require re-admission to hospital. Uterine AVM as a cause of secondary PPH can lead to severe morbidity and mortality in the mother if not managed immediately. Therefore, an accurate diagnosis and rapid treatment can have a significant impact on a patient's prognosis. In the present case, the patient approached the casualty for torrential vaginal bleeding three weeks after an uncomplicated normal delivery. She was diagnosed with an AVM by an urgent Doppler ultrasonography and treated with super selective uterine artery embolization (UAE) leading to a full recovery. Here the authors report the usefulness of Interventional Radiology in treatment of uterine AVM causing delayed PPH with the idea of uterus sparing modality in the light of this case.

Keywords: Arteriovenous malformation, embolization, secondary postpartum hemorrhage, Doppler ultrasound

Introduction
Uterine Arteriovenous malformations are rare diagnosis of secondary PPH in most clinical practice.
AVM consists of proliferation of vessels of different sizes connected with fistulas which have characteristics of both arteries and veins on histology. Uterine AVMs can be congenital or acquired. Most often they are thought to be asymptomatic but can present with irregular or heavy vaginal bleeding as are associated with increased blood flow. Acquired AVM are reported to be caused by pelvic trauma, iatrogenic, neoplasm, inflammation, diethylstilbestrol exposure or trophoblastic disease.
During pregnancy uterine AVMs are known to proliferate and thus have a high propensity of post-partum hemorrhage. Being so rare with an incidence of 0.47-1.44%, it should be kept in mind while intractable secondary post-partum bleeding.

Case Report
A twenty nine year old, Gravida 2 Parity 1 Living 1 with an uneventful normal pregnancy had a full term normal vaginal delivery. Placenta was delivered immediately after birth. She had no other co-morbidities. She developed immediate post-partum hemorrhage (PPH) for which a thorough clinical examination was done. Patient was given uterotonic agents to which she responded well. She was discharged on post-partum day 3 with no complaints.
On post-partum day 24, she presented in the casualty with profuse bleeding per vaginum and shock since last 20 mins with a thready pulse rate of 120/min and systolic blood pressure of 70 mmHg. Her on admission hemoglobin dropped to 8.6 mg/dl.
On examination, per abdomen uterus was well involuted, per speculum bleeding with clots were noted from os. All local causes were ruled out.
She was resuscitated with general measures and an urgent Ultrasonography with Doppler (Figure1) was done which revealed a cluster of dilated anechoic vascular channels with bidirectional low resistance high flow and confirmed the rare diagnosis of right uterine arterio venous malformation (AVM) and with no retained products of conception.
She was advised an emergency uterine artery embolization procedure. 2 pint PRBC and 4 FFP were transfused.

A repeat color Doppler was done after 24 hours which showed no residual AVM. The patient was discharged after 48 hours, vitally and hemodynamically stable on oral antibiotics and with a hemoglobin of 10.1gm/dl.

Surgical technique

The patient was shifted to the Cath lab and treated under local anesthesia. The right uterine arteriogram confirmed the diagnosis of right uterine AVM (Figure 2) and the left uterine arteriogram did not reveal any supply to the lesion. Thus, a super selective catheterization of the right uterine artery was done.

A micro catheter was introduced via femoral access into the culprit vessel via the contralateral internal iliac artery. The lesion was embolized with glue (n-butyl cyanoacrylate) and lipiodal mixture which in contact with blood solidifies and embolizes the lesion.

A post embolization angiogram was done which revealed complete obliteration of AVM with preservation of rest of the blood supply to the uterus (Figure 2).

Discussion

Secondary PPH can be caused by retained placental tissue, endometritis, lower genital tract trauma and hematoma, caesarean scar dehiscence, adherent placenta, coagulopathies and the rarest being vascular abnormality like AVM.

It can be managed by medical, surgical and radiological techniques.

Uterine artery embolization is a safe and effective uterus sparing procedure to control obstetric hemorrhage. It is a minimally invasive non-surgical procedure performed under local anesthesia.

UAE has an advantage of being done in a hemodynamically unstable patient, not fit for surgery, patients with altered coagulation profile and with easy re-exploration.

It offers an almost bloodless field and hence decreases the complications and need for blood and blood products. It offers the best option for couple seeking to preserve fertility. It is an alternative for major operative morbidity associated with Obstetric hysterectomy.

The uterine artery is a branch of anterior division of internal iliac artery and has a distinctive radiographic appearance. The ipsilateral uterine artery is selected by formation of a loop and subsequent embolization is performed. It is done with utmost precaution to avoid cervical and vaginal branches, which is usually avoided by super selective catheterization of the uterine artery distal to the origin of these branches. Embolization endpoint is stasis of the main uterine artery trunk. The ovarian arteries may also be interrogated and if vascularity is detected these may also be embolized.

In our case, we had the opportunity of being in a tertiary care hospital and with the privilege of an In-house Interventional vascular radiologist, it could be quickly diagnosed and considering the age and parity of the patient, decision of supper selective UAE could be taken. An excellent result was obtained with no post-operative complications and an early discharge in 2 days.

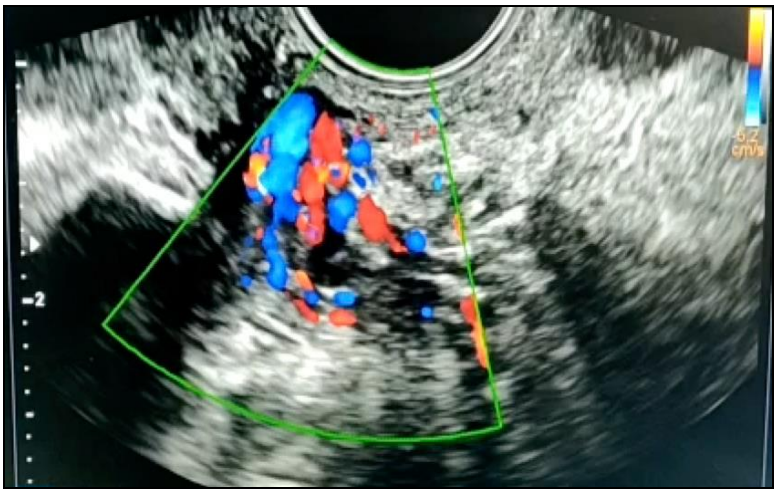

Fig 1: Ultrasonography with Doppler

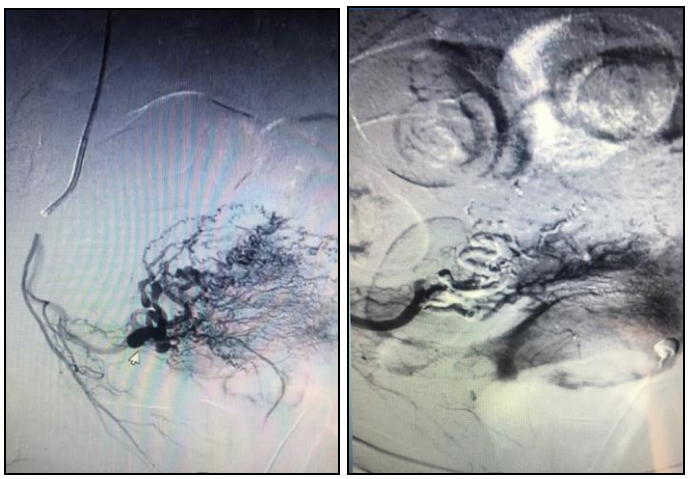

Fig 2: Pre and Post Embolization

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