CASE REPORT

Uterine Artery Pseudoaneurysm with AV Malformation: A Rare Cause of Secondary Post Partum Hemorrhage

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Abstract

Vascular malformations of uterus are a rare cause of delayed post partum hemorrhage (PPH). We discuss a case of a combined pseudoaneurysm with arteriovenous malformation as a cause of secondary PPH, which was diagnosed on doppler sonography and confirmed on angiography. It was successfully managed with uterine artery embolization.

Keywords

Arteriovenous malformation, Post partum hemorrhage, Pseudoaneurysm, Uterine artery embolization

Introduction

Post partum hemorrhage (PPH) occurs in 4% of vaginal deliveries and in 6% after caesarean section. Late PPH is often brief and self-limiting and the most common cause is retained placental fragments (1). Pseudoaneurysm of the uterine artery is an uncommon cause of delayed postpartum hemorrhage, which results from an accidental arterial injury during obstetric surgery (2,3). It may coexist with an arteriovenous malformation (4). Although Doppler ultrasound can aid in the assessment, definite diagnosis is made only on angiography. Embolization is the preferred treatment with a high success rate of >90% (5). We present a case of a combined uterine artery pseudoaneurysm and arteriovenous malformation presenting as secondary post partum hemorrhage and successfully managed with uterine artery embolization.

Case report

A 22 year old, P1L1 was referred to our hospital with bleeding per vaginum on postoperative day 37 of emergency cesarean section for meconium stained liquor. There had been no intraoperative or postoperative complications.

Prior to transfer she was admitted twice to another hospital with secondary PPH. On postoperative day 14 she had her first episode and had gone into shock. Four units of packed RBC's were transfused. Uterotonics were given and a dilatation and curettage was done which on histopathology showed retained products of conception. Ultrasound revealed a 2.2cm x 1.7 cm heterogeneous lesion in the anterior uterine wall, probably a hematoma. CECT showed a bulky uterus with low attenuating areas in the anterior wall. She had responded to treatment and was discharged on day 2 in a stable condition. A repeat episode of bleeding occurred on postoperative day 34 following which she received 4 units of fresh frozen plasma and 3 units of packed RBC's and was referred to our hospital.

On admission her vitals were stable. There was mild pallor and abdominal and vaginal examination was normal. Hemoglobin on admission was 9.0 gm/dl. Liver

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function tests, kidney function tests and coagulation profile were normal. A quantitative serum beta hCG was negative. A high vaginal swab grew Ecoli ESBL +ve and she was started on a combination of piperacillin tazobactum and metronidazole. A repeat transvaginal ultrasound showed a 5 mm clot in the cavity. As bleeding persisted she was started on medroxy progesterone acetate 10 mg twice daily. A hysteroscopy was performed on day 7 of admission, which was inconclusive due to clots present in the cavity.

As bleeding still persisted a repeat dilatation and curettage was done. It revealed only blood clots. Her progesterone was stopped and she was started on combined oral estrogen and progesterone pill. At this time a repeat ultrasound with doppler was done which revealed an arteriovenous malformation of the left uterine artery. Interventional radiology was sought as the patient was young and desired future fertility.

Angiography revealed a left arteriovenous malformation with a coexistent pseudoaneurysm with extravasation of contrast into the uterine cavity (fig 1). Left uterine artery embolization was done using 400 - 600 µm poly vinyl alcohol (PVA, Cook) particles (figure2). As spotting persisted on follow up, a repeat MRI was done which revealed abnormal vessels on the left side. A repeat uterine artery embolization was done after two months. Patient recovered completely after the second embolization.

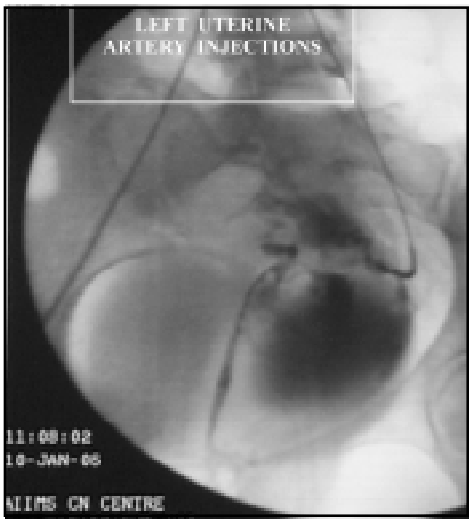

Fig 1: Left Uterine Artery on Angiography

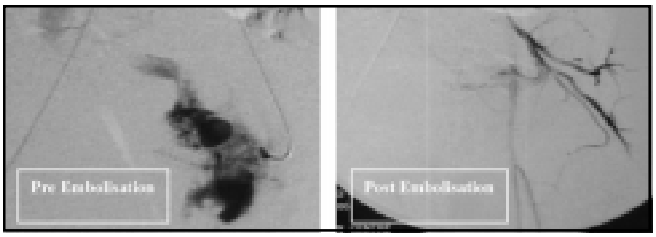

Fig 2: Left Uterine Artery Pre and Post Embolisation

Discussion

Secondary PPH has received little attention, probably because of its low incidence and lower maternal mortality. Common causes include retained products, sub involution and less commonly endometritis (1). Uterine vascular malformations including pseudoaneurysms, acquired av malformations, arteriovenous fistula and direct vessel rupture are a rare but an important cause of secondary PPH. They are usually acquired following uterine curettage, cesarean section, hysterotomy and traumatic vaginal delivery and rarely congenital (4). Under the influence of sustained arterial pressure, blood dissects the wall around the damaged artery and forms a perfused sac that communicates with the arterial lumen. Hence it differs from a true aneurysm as it does not contain the three layers of the parent vessel (3).

On gray scale sonography arteriovenous malformations appear as multiple small anechoic spaces focally or asymmetrically distributed in the thickened myometrium or endometrium. On doppler these spaces appear as two color mosaic patterns with juxtaposed reds and blues flowing in different directions (4,6). Pseudoaneurysm on gray-scale ultrasound appears as an anechoic sac which on doppler appear as a blood-filled cystic structure with turbulent arterial flow (4). Angiography remains the gold standard imaging technique in diagnosing vascular malformations. Arteriovenous malformations appear as a complex tangle of vessels supplied by enlarged feeding arteries with early venous drainage during the arterial phase (7).

Treatment of secondary PPH depends on the cause. It includes antibiotics and evacuation of the retained products. On failure we opt for surgical management in form of uterine packing, uterine artery ligation, internal iliac artery ligation, compression sutures and the final

resort is hysterectomy. The reported success rates for hypogastric artery ligation vary from 42% -100% because of the extensive pelvic collateral circulation (1).

Uterine artery embolization is another effective alternative to surgery with a success rate of > 90% in controlling post partum hemorrhage (8,9). It has a several advantages over surgery, which include higher success rate, less morbidity, avoidance of anesthetic complications and preservation of fertility. Success can be immediately verified by a repeat angiogram and on failure hysterectomy can be performed (5). Complications include fever, neurological complications, puncture site hematomas, abscess, ischemic complications like vesicovaginal fistulas, endometrial atrophy (5,10).

Our patient had a pseudoaneurysm with a coexistent arteriovenous malformation (2,4). There are only sporadic reports of combined uterine vascular malformations presenting as delayed hemorrhage (2,4). Pelage et al had managed 14 cases of secondary PPH with embolization of the uterine artery in which there were 2 pseudoaneurysms and one arteriovenous fistula (10). These obstetric arterial injuries are successfully diagnosed on angiography and managed with uterine artery embolization (4,11).

Hysterectomy can be avoided in patients with delayed post partum hemorrhage with the advent of embolization. This is important in women of the reproductive age group. Only a few studies have studied the fertility outcome after embolization for PPH. The pregnancy outcome was successful apart from placental complications (12).

Arteriovenous malformations or pseudoaneurysms should be considered in patients with unexplained post partum hemorrhage. Doppler has a high sensitivity and should be performed early in patients with recurrent PPH not responding to standard treatment. Angiography is diagnostic with embolization as an effective treatment, which also preserves fertility.

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