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Case Report

A silent vascular threat: uterine artery pseudoaneurysm in secondary postpartum haemorrhage

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ABSTRACT

Secondary postpartum haemorrhage (SPH) is an important cause of postpartum morbidity occurring between 24 hours and 6 weeks after delivery. While retained products of conception and endometritis are common causes, rare conditions such as uterine artery pseudoaneurysm (UAP) can result in life-threatening haemorrhage and diagnostic difficulty. We report a case of recurrent SPH caused by UAP following caesarean section. A postpartum woman presented on the eighth postoperative day with massive vaginal bleeding and haemorrhagic shock after caesarean delivery for second-stage arrest. Initial ultrasonography suggested retained products of conception, and she underwent stabilization with blood transfusion followed by check curettage. Despite treatment, the patient developed two further episodes of recurrent haemorrhage requiring repeated admissions. MRI findings suggested scar hematoma, scar dehiscence, or endometritis, while diagnostic laparoscopy was inconclusive. Repeat Doppler ultrasonography by a senior radiologist raised suspicion of UAP, which was confirmed by CT angiography. Selective angiography revealed a pseudoaneurysm arising from the right uterine artery, and successful uterine artery embolization using NESTER coils achieved immediate control of bleeding. UAP should be considered in recurrent or severe SPH. Early diagnosis and timely uterine artery embolization provide effective, fertility-preserving management with excellent outcomes.

Keywords: Secondary postpartum haemorrhage, Uterine artery pseudoaneurysm, Caesarean section, Uterine artery embolization, Postpartum haemorrhage, CT angiography

INTRODUCTION

Secondary postpartum hemorrhage (SPH) is an important cause of postpartum morbidity which may warrant admission in postpartum mothers. SPH is defined as any significant per vaginal bleeding occurring after 24 hours post placental delivery up to 6 weeks postpartum.[1] The incidence accounts to about 0.2-0.8%.[2,3] The most common causes of SPH include endometritis retained placenta or delayed involution of placental bed.[1] However management of SPH becomes difficult when some rare cause of hemorrhage is involved. These include submucous fibroid, cervical cancer, scar dehiscence or uterine artery pseudoaneuysm (UAP). UAP is extremely rare but can cause potentially life-threatening hemorrhage. The rupture of the aneurysm causes massive hemorrhage warranting urgent admission and treatment. UAP is caused by various traumatic pelvic procedures may it be obstetrics or gynaecology.[4]

The diagnosis of UAP is challenging and undue prolongation in correct diagnosis can lead to poor outcome. Hence awareness about the condition to raise suspicion of UAP and a good radiological diagnosis is very crucial to manage this patient uneventfully. We hence report a case of UAP at our institution which caused diagnostic dilemma leading to an inappropriate treatment at initial stage and repeated admissions in emergency ward. Patient was then diagnosed as UAP by our senior Radiologist and treated accordingly.

CASE REPORT

Patient XYZ was referred to our institute from a private hospital with hemorrhagic shock on her eight postpartum days of cesarean section done in view of second stage arrest. Her pulse was 130 beats per minute and blood pressure of eighty systolic. Patient was drowsy with massive bleeding per vaginum. Her ultrasonography (USG) was suggestive of retained products of conception. Complete hemogram (CBC) showed hemoglobin level of 6.5 mg/dl and platelets were within normal limits. Blood and blood products were transfused and patient was stabilized followed by check curettage. She was discharged on day 3 as she had no fresh complains.

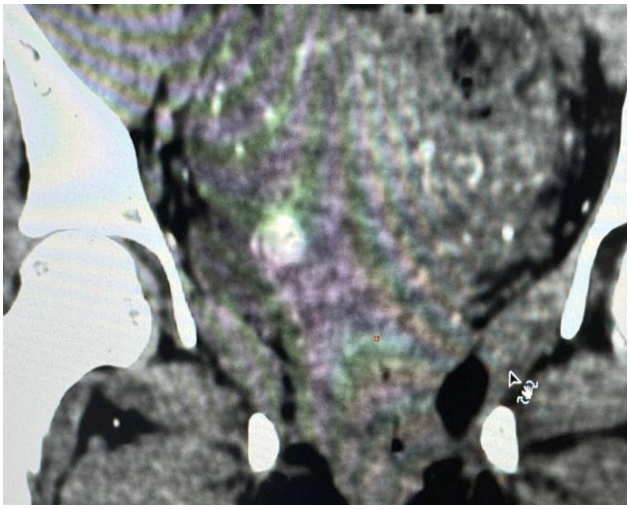

Figure 1: CT angiography showing uterine artery pseudoaneurysm.

Patient again presented to the emergency department with a similar episode of secondary hemorrhage lesser in intensity, after 10 days of discharge. A clot volume of about 80-100 cc was removed USG was suggestive of blood clots in cavity. Her laboratory investigations were within normal limits. She was given hemostatic drugs and stabilized. She was discharged after two days with no complains.

Patient again came with 3rd episode of massive SPPH after 5 days. Magnetic resonance imaging (MRI) of the patient was reported as hematoma at scar site possibility suggestive of scar dehiscence or endometritis. Patient was treated with antibiotics for endometritis and diagnostic laparoscopy was done which was negative. A small soft boggy mass was felt in the cervical canal which bled torrentially and was controlled with pressure tamponade. Patients USG was repeated by a senior radiologist and the diagnosis of UAP was suspected which was then confirmed on computed tomography angiography (Figure 1 and 2). Trans arterial embolization of the uterine artery was planned. Selective catheterization of right uterine artery was done with PROGREAT microcatheter and DSA performed which revealed a rent in the terminal segment of the right uterine artery filling up a pseudoaneurysm of 3 cm in diameter. Embolisation was done successfully (Figure 3) with 2 mmx2 cm/3 mmx3 cm/3 mmx3 cm NESTER coils from COOK. Patient had immediate relief from bleeding and was discharged on the day 2 of the procedure.

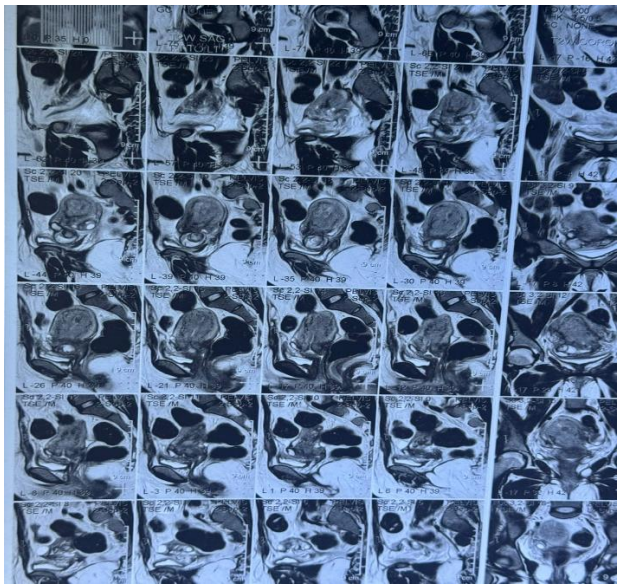

Figure 2: CT angiography showing uterine artery pseudoaneurysm.

Figure 3: Embolisation done with nester coils.

DISCUSSION

The incidence of Secondary postpartum hemorrhage is highly under reported as minor amount of bleeding are usually taken care at the primary health center. Amongst the causes the most common cause is retained bits of

placenta accounting for 36.5-55% followed by endometritis as another common etiology.[1] However the intensity of the haemorrhage is not that severe to cause haemorrhagic shock in these two cases. We are reporting a rare cause of SPH where patient can bleed torrentially leading to haemorrhagic shock. Uterine artery pseudoaneurysm is extremely rare condition accounting to about 3-6/1000 deliveries though the exact incidence is not known.[5]

Any trauma to the uterine artery during a pelvic surgery can lead to the pseudo aneurysm of the Uterine artery (UAP). Histologically UAP comprises of a single layer of connective tissue compared to a true aneurysm where all the three layers of the vessel wall are present.[4] In case of UAP there is accumulation of blood outside the uterine artery which is content by the surrounding loose tissue which causes delayed rupture and presents as massive haemorrhage.[6] If the UAP communicates with the uterine cavity it presents as vaginal bleeding, whereas if there is no communication it can present as uterine artery hematoma.in our case patient presented with massive vaginal bleeding.

Diagnosing UAP is quiet challenging. A good experienced sonologist with expertise is needed in order to suspect the diagnosis. USG will show an intrauterine mass with swirling blood flow, with a to-and-fro or yin-and-yang pattern on colour doppler.[4] CT angiography helps to confirm the diagnosis and also determine the artery of origin. Thus, making it is the investigation of choice.

In case of an acute presentation as in our case patient has to be first stabilised by fluid replacement and compression to stop the bleeding however conservative management should be restricted only to emergencies and a definitive treatment should be done once the patient is stabilised as the rupture of the pseudoaneurysm is unpredictable.

Definitive treatment has to be individualized according to the available resources, patients age and desire for fertility. In our case we posted the patient for uterine artery embolization on the affected side as the patient wanted to preserve her fertility. Post embolization patient was completely relieved of symptoms. Embolization was first reported successfully by brown et al in 1979 to treat extra pelvic hematoma.[7] The safety and efficacy of this procedure is well documented with a success rate of 97%.[6] Embolisation has minimal associated morbidity with high potential for fertility preservation. Bilateral embolization is warranted to prevent reperfusion and better effectiveness.[6] Other treatment options include laparoscopic uterine artery ligation or internal iliac ligation which could be a more suitable option in case of acute hemorrhage not controlled by tamponade. In extreme cases hysterectomy may be done. Thus, in patients with SPPH uterine artery pseudoaneurysm should always be considered as a differential diagnosis and should be rules out. Treatment options depend on the available resources. However, if available bilateral uterine artery embolization is the most effective treatment with good outcome.

CONCLUSION

Secondary postpartum hemorrhage (PPH) is a devastating obstetric emergency and remains a significant cause of maternal morbidity and mortality worldwide. The diagnosis is often challenging, and delays in recognition and treatment can rapidly lead to severe hemodynamic compromise and life-threatening consequences. While common etiologies should always be considered, rare causes may be overlooked, resulting in significant diagnostic and therapeutic difficulties. Preservation of the uterus and future fertility should remain the primary goal whenever clinically feasible. Successful management of uncommon causes of secondary PPH requires a high index of suspicion, multidisciplinary teamwork, and expertise in advanced diagnostic modalities. Interventional radiology plays a crucial role in selected cases, particularly in the management of post-caesarean pseudoaneurysms, which represent an uncommon but important iatrogenic cause of hemorrhage. Timely diagnosis and appropriate intervention, including selective arterial embolization, can effectively control bleeding, avoid hysterectomy, preserve fertility, and ultimately save the patient's life.

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