

Uterine artery pseudoaneurysm: A case of late intra-abdominal haemorrhage after caesarean section

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SUMMARY

Uterine artery pseudoaneurysm (UAP) is a rare acquired vascular malformation associated with vaginal bleeding or intraabdominal haemorrhage occurring after pelvic surgery. Pseudoaneurysm may present with delayed, severe haemorrhage after a seemingly uncomplicated initial postoperative period. Treatment is therefore necessary to prevent further complications. We describe here a case of a 32-year-old mother, who presented with abdominal pain and intraabdominal bleeding, 20 days after Caesarean Section. Computerised Tomography (CT) scan showed the presence of haemoperitoneum, suggestive of pseudoaneurysm at the right cervical artery which was successfully managed with emergency angiographic embolisation.

KEY WORDS:

Pseudoaneurysm; intraabdominal haemorrhage; embolisation; angiography

INTRODUCTION

Uterine artery pseudoaneurysm (UAP) is an uncommon postpartum or postoperative complication, with late presentation and potentially life-threatening. Pseudoaneurysm occurs when there is vascular injury due to inflammation, blunt or penetrating vascular trauma, and recent surgery. It has been reported that UAP is more common than previously thought, occurring in 2-3 per 1,000 deliveries, and may occur after non-traumatic delivery or abortion.¹ Spontaneous rupture results in unexpected postpartum haemoperitoneum, life-threatening vaginal bleeding or infected pelvic collection. Frequently, Caesarean delivery is implicated for development of pseudoaneurysm. UAPs may resolve spontaneously, or rarely, present with catastrophic bleeding requiring definitive treatment. High index of suspicion of UAP as a differential diagnosis is therefore vital for timely intervention and more favourable patient outcome.

CASE REPORT

A 32-year-old lady who delivered her first baby via emergency Caesarean Section (CS) for secondary arrest at 39 weeks 2 days period of gestation presented to the Emergency Department with a history of right hypochondriac pain, radiating to the back and left shoulder 20 days after surgery.

The pain was sharp in nature with a pain score of 7/10. There was no history of abnormal vaginal bleeding, urinary or bowel symptoms. She had had a laparotomy and left ovarian cystectomy three years ago for left endometrioma. During the CS, dense adhesions were noted between the omentum and anterior abdominal wall, and at the posterior and right lateral aspect of the uterus, such that the right fallopian tube and ovary were not visible. The left fallopian tube was reported as normal.

At presentation, she was afebrile with a temperature of 36.7°C, blood pressure (BP) was 116/85 mm Hg, pulse rate (PR) was 118/min and oxygen saturation of 99% on room air. There were tenderness and guarding at the right hypochondrium with voluntary guarding. Her haemoglobin level was 11.3g/dl, white cell count was 14.6 x 10³/μL, platelet was 606 x 10³/μL, blood urea was 3.6mmol/L and creatinine was 136μmol/L. She was initially diagnosed as acute cholecystitis with cholelithiasis and given parenteral analgesia. She developed an episode of hypotension with BP of 96/75 mmHg which was resolved with fluid resuscitation.

Further assessment showed that there was a lower abdominal mass about 18-week size gravid uterus, with tenderness at the right hypochondrium on deep palpation and rebound tenderness. Caesarean scar was clean and well-healed. Bedside ultrasound examination demonstrated that the uterus measured 7.8 x 4.6 cm with poorly-defined mass of mixed echogenicity around it, likely representing blood clots, especially at the Pouch of Douglas. Endometrium appeared thin measuring 5 mm, and free fluid was noted at the Morrison pouch and splenorenal region. Speculum and vaginal examinations were unremarkable, with no evidence of vaginal bleeding nor genital tract trauma. She was commenced on parenteral Ceftriaxone and Metronidazole. CT scan was suggestive of a pseudoaneurysm at the right cervical artery, measuring 0.6 cm at the parametrium with lower abdominal haematoma. A provisional diagnosis of massive intraabdominal bleeding secondary to UAP was made within 24 hours of admission.

Overnight, she developed tachycardia with PR of 112/min, though BP remained stable with haemoglobin level of 7.5 g/dl. She was transfused with two pints of packed cells overnight and angiographic embolisation was arranged for the next day. Emergency angiographic embolisation with

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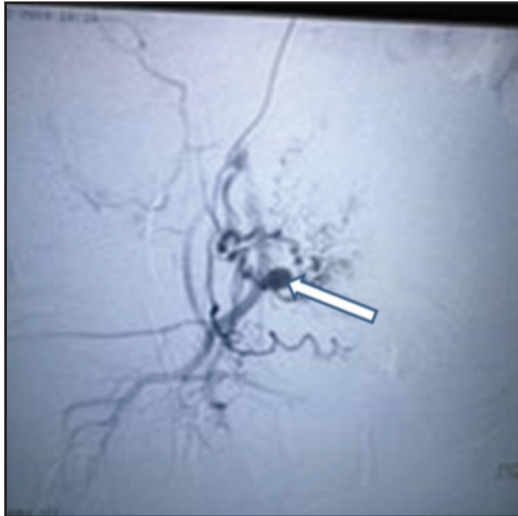


Fig. 1: Super-selective angiogram showing pseudoaneurysm at the right cervical artery, an inferior branch of uterine artery (arrow).



Fig. 2: Super-selective angiographic embolisation of the inferior branch of right uterine artery showing no further blood flow beyond the right cervical artery (arrow).

super-selective embolisation of the inferior branch of right uterine artery was successfully performed (Fig. 1 & 2). After the embolisation, her condition remained stable and she was discharged well seven days after the embolisation.

DISCUSSION

UAP is an uncommon, albeit important differential diagnosis to consider when patients present with postoperative or postpartum bleeding. UAP may occur in abortion, uterine curettage, cervical conization, myomectomy, hysterectomy, traumatic deliveries and even in uncomplicated vaginal delivery. True aneurysm is surrounded by three arterial layers composed of tunica intima, media and adventitia whereas in pseudoaneurysm, the boundaries are formed by peripheral thrombus and perivascular tissues. Arterial injury causes incomplete vessel occlusion giving rise to extraluminal collection of blood with turbulent flow through the defect. This extraluminal blood collection continues to communicate with the flowing arterial blood, resulting in formation of pseudoaneurysm. Over time, pseudoaneurysm expands, causing unpredictable rupture and catastrophic bleeding.² Other differential diagnosis of pseudoaneurysm includes acquired arteriovenous malformation, arteriovenous fistula and direct vessel rupture.

Pseudoaneurysm takes time to develop, leading to delayed presentation after the precipitating event. It has been reported to occur 112 days after the precipitating event.³ Our patient presented with right hypochondriac pain, tachycardia and peritonism 20 days after Caesarean Section. The atypical nature of her presentation led to a diagnosis of acute cholecystitis and cholelithiasis. However, ultrasound detected the presence of intraabdominal bleeding and subsequent CT scan was suggestive of a pseudoaneurysm of the right cervical artery.

UAPs can be diagnosed with ultrasound, CT, or Magnetic Resonance Imaging, though angiography remains the gold

standard for diagnosis. In recent years, transvaginal ultrasound with colour Doppler has become the diagnostic modality of choice.⁴ A UAP is seen as a pulsatile hypoechoic mass attached to an artery on grey-scale ultrasound.⁵ On colour Doppler examination, turbulent arterial flow with 'to-and-fro' pattern or 'yin-and-yang' sign can be visualised, due to blood flowing into the pseudoaneurysm during systole and reversed flow during diastole. A UAP can also be seen on CT scan as a round pelvic mass that shows similar enhancement as arteries during the arterial phase, with or without active extravasation.⁵ CT angiography, on the other hand, is useful in identifying the location of the pseudoaneurysm and its feeding vessels.

In our patient, UAP was unexpectedly diagnosed with CT scan. As she was haemodynamically stable, she was managed with angiographic embolisation. During the embolisation, the site of bleeding was identified, and haemostasis was successfully achieved with super-selective embolisation of the inferior branch of the right uterine artery, without the need for laparotomy, vessel ligation or hysterectomy. Post-embolisation angiogram verified haemostatic control. In some cases, bilateral embolisation may be needed, but our patient only required unilateral embolisation.

Angiographic embolisation of the uterine artery is the treatment of choice for haemodynamically stable patients diagnosed with UAP and is successful in 93-96% of cases.⁴ Embolisation is safe and effective, well tolerated, minimally invasive, with reduced length of hospital stay, and avoids the need for general anaesthesia. In addition to reduced morbidity, it allows identification of bleeding site, achieving a more distal occlusion than the usual surgical vessel ligation. Moreover, embolisation preserves future fertility as compared to traditional hysterectomy.

In contrast, surgical repair is associated with increased blood loss, difficulty in locating the site of the pseudoaneurysm, risk

of re-bleeding and inadvertent ureteric or bladder injury. In our case, surgical repair would be technically challenging owing to the history of surgery for endometriosis and recent pelvic surgery, with increased operative and febrile morbidity, as well as longer duration of hospital stay and recovery time.

CONCLUSION

UAP is an important differential diagnosis in a woman with unusual presentation of late intraabdominal bleeding or vaginal bleeding after recent pelvic surgery. Inaccurate diagnosis may lead to delayed management and results in poor patient outcome. Transvaginal Doppler ultrasonography or CT angiography is the diagnostic modality of choice in the management of such patients prior to embarking on surgical intervention. Angiographic embolisation, where available, may be considered as first-line therapeutic option in haemodynamically stable patients.

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