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Case report

Embolization of iatrogenic uterine pseudoaneurysm

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ABSTRACT

Uterine artery pseudoaneurysms (UAPs) are rare vascular lesions that may be life threatening if not diagnosed and properly treated. The clinical presentation of UAPs includes a spectrum of symptoms that are often associated with other and more frequent gynecologic/obstetric pathologies, both with and without vaginal bleeding, and may span from postpartum hemorrhage to the absence of symptoms. We report cases of two patients with UAP, both of whom were diagnosed with ultrasonography and contrast-enhanced computed tomography and successfully treated with transcatheter embolization. The first patient presented delayed hypovolemic shock following surgery for endometriosis, whereas the second patient suffered from postpartum hemorrhage after cesarean section. Diagnosis of UAPs relies on noninvasive imaging; transcatheter arterial embolization is an effective treatment to control bleeding in both hemodynamically stable and unstable patients.

Introduction

Uterine artery pseudoaneurysm (UAP) is a rare and severe vascular anomaly resulting from inadequate sealing of a lacerated wall of a uterine artery; it accounts for approximately 3% of cases of postpartum hemorrhage.[1] The aneurysmal sac is typically walled by a single soft tissue layer and sustained by the arterial blood pressure; its rupture is unpredictable and represents a major complication.[1]

UAPs mainly occur after traumatic delivery or traumatic pregnancy termination, comprising 47% of cases of cesarean section, manual removal of placenta, forceps delivery and vacuum extraction, and cold knife conization; other recognized causes of UAPs include hysterectomy and myomectomy.[1,2]

A UAP is rare but not negligible cause of delayed or secondary postpartum hemorrhage[1,2]; a massive uterine hemorrhage from a UAP may require an emergency laparotomy unlike other conditions which may be conservatively treated.[3]

It is important to outline that a UAP may also show atypical clinical features that may be deceiving to obstetrics facing an emergency.[4,5] As previously stated, a UAP may be either asymptomatic or present with symptoms such as vaginal bleeding, abdominal pain, hypovolemic shock, or fever when infected.[4,6,7] Such a vast array of symptoms can make it difficult to diagnose a UAP, especially in case of a nontraumatic delivery, abortion, or pregnancy termination.[8] The wide spectrum of symptoms associated with a UAP that mimic other conditions makes it a "chameleon" pathology; as a result, UAPs should always be considered in differential diagnoses.[4,5]

In this context, contrast-enhanced computed tomography (CT) should always be considered in diagnostic work up, as it plays a key role in determining digital subtraction angiography (DSA) indication.

Traditional surgical management of UAPs includes revision with packing, bilateral internal iliac, or uterine artery ligation, and, when other treatments fail, hysterectomy. Transcatheter arterial embolization has recently emerged as a safe and highly effective alternative treatment.[1,2]

We report cases of two patients with UAPs, both of whom were successfully treated with transcatheter embolization. In the first case, the patient developed an extrauterine pseudoaneurysm without vaginal bleeding following pelvic surgery for endometriosis, whereas in the second case, the patient experienced a postpartum hemorrhage after Cesarean section.

Conflicts of interest: All contributing authors declare no conflicts of interest.

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Case Reports

Case 1

A 34-year-old woman diagnosed with pelvic endometriosis underwent right oophorectomy, left salpingectomy, sigmoid resection, and excision of an endometrioma in the Douglas pouch. Seven days after surgery, the patient suffered from acute abdominal pain and hypovolemic shock without any vaginal bleeding; the patient was transferred to the intensive care unit and stabilized.

A prompt contrast-enhanced CT of the abdomen revealed a left extrauterine UAP measuring 5 cm × 4 cm in diameter (Figure 1A); the diagnosis was thereafter confirmed with an abdominal DSA of the lumbar aorta and a selective catheterization of the left hypogastric artery (Figure 1B).

A superselective catheterization of the left uterine artery was performed for embolization with a coaxial microcatheter, the tip of which was advanced as close as possible to the UAP. Unfortunately, because of the rupture of the UAP during vessel negotiation, the patient became hemodynamically unstable, as demonstrated by an immediate arteriography (Figure 1C). Emergency intubation, fluid resuscitation, and a blood transfusion were immediately performed. Vascular occlusion was thereafter accomplished with polyvinyl alcohol particles (710–1000 μm in size) for distal embolization and with platinum microcoils for proximal embolization.

Completion postprocedural DSA of both internal iliac arteries demonstrated the occlusion of the aneurysm and of the supplying artery (Figure 1D). The procedure was uneventful, and the patient rapidly recovered after the embolization and was discharged 1 week later. After an 18-month follow-up period, the patient was in good health. Serial transabdominal and transvaginal pelvic ultrasonographic examinations did not detect any signs of any further issue.

Case 2

A 21-year-old woman was referred to the Department of Radiology, San Bortolo Hospital for treatment for a UAP that was diagnosed in another hospital. The patient was hospitalized 1 month after a cesarean section for a metrorrhagia not controlled with a conservative treatment. A transvaginal ultrasonographic examination revealed an inhomogeneous fluid collection within the myometrium near the cesarean scar; the following arterial CT detected an intramural pseudoaneurysm measuring 1.5 cm in diameter. The diagnosis was then confirmed with DSA of the left internal iliac artery, performed via the ipsilateral femoral artery (Figure 2A).

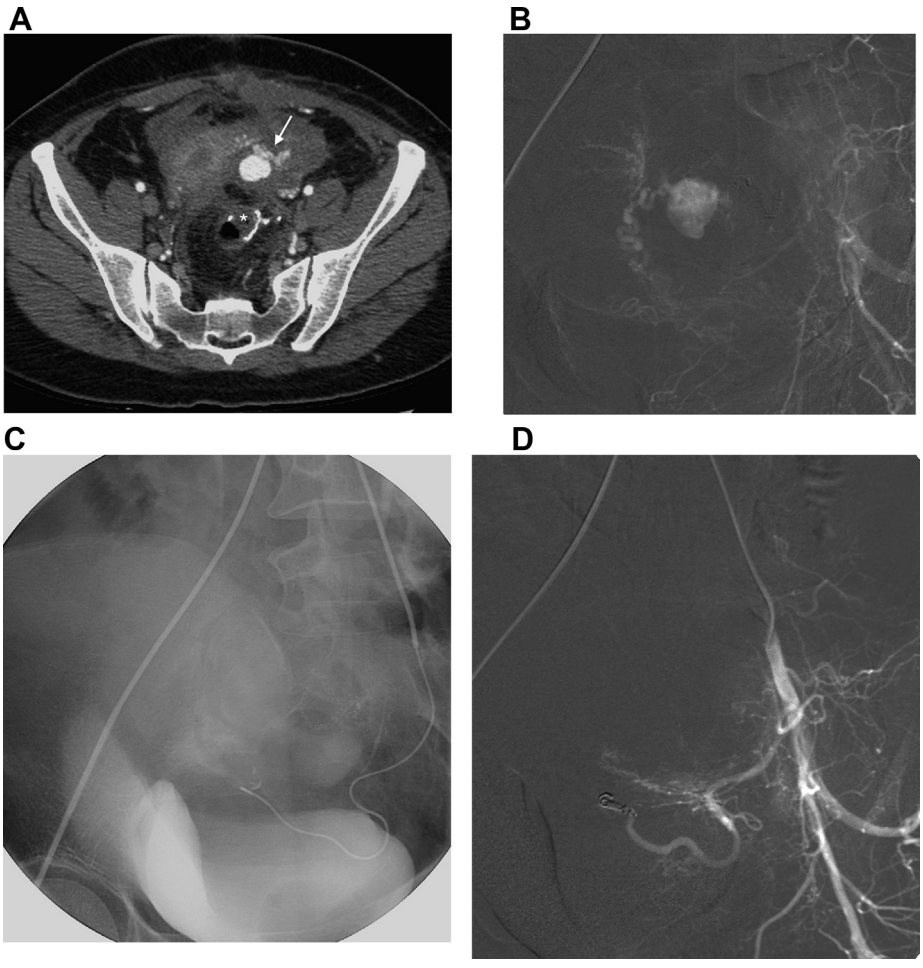

Figure 1. A 34-year old woman with hemorrhagic shock after pelvic surgery for endometriosis. (A) Contrast-enhanced computed tomography shows a pseudoaneurysm close to the left aspect of the uterus (arrow: enlarged left uterine artery; asterisk: circular stapling of sigmoid resection). (B) Digital subtraction angiography of the left internal iliac artery (left anterior oblique view, late phase) confirms the diagnosis of extrauterine pseudoaneurysm supplied by the left uterine artery. (C) Native X-ray direct image of the pelvis after manual superselective arteriography: intraperitoneal diffusion of the contrast medium without evidence of the pseudoaneurysm. (D) Postembolization digital subtraction angiography artery shows the persistent occlusion of the pseudoaneurysm.