

Case Report

Postpartum Hemorrhage Resulting from Internal Iliac Artery Pseudoaneurysm

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ABSTRACT

We describe a case of internal iliac artery pseudoaneurysm in a 38-year-old woman with postpartum hemorrhage following uterine artery ligation and uterine rupture repair. A 38-year-old female without any comorbid conditions or diseases who had previously given birth with a normal vaginal delivery was admitted to an external healthcare center with pain. The patient presented to our hospital on the 7th postoperative day with abdominal and side pain. We diagnosed the patient with ultrasonography and CT-angiogram imaging and she was treated with selective embolization. On the second day following the procedure, a regression in the previously identified hydronephrosis was observed using renal ultrasonography. The patient was discharged on the 14th day of hospitalization when she was clinically stable. Patients presenting with abdominal pain and hemorrhage after cesarean sections should be carefully evaluated for the possibility of uncommon complications, especially pseudoaneurysms, preferably with a multidisciplinary approach.

Keywords: Pseudoaneurysms, Postpartum hemorrhage, Uterine artery ligation.

INTRODUCTION

Identifying the underline cause of postpartum hemorrhage is important for proper treatment. The common causes of postpartum hemorrhages are uterine atony, infection, retained placental fragments, uterine inversion or rupture, genital laceration, endometriosis, and coagulation disorders.¹ However, vascular abnormalities including pseudoaneurysms, arterial aneurysms, and arteriovenous malformations are among the rare causes of postpartum hemorrhage. Pseudoaneurysms usually emerge following surgery, trauma, infection, neoplasm.¹ They are life-threatening because of the potential for rupture and subsequent severe hemorrhage; thus diagnosis should be performed without delay. Here we present a case of postpartum hemorrhage caused by a pseudoaneurysm of the internal iliac artery developing after uterine artery ligation and uterine rupture repair.

CASE PRESENTATION

A 38-year-old female (gravida 6, para 5) without any comorbid conditions or diseases who had previously given birth with normal vaginal delivery was admitted to an external healthcare center with pain. An informed consent form was taken from the patient of the case. She was taken to the delivery room; however, during delivery, she required to

transition to an urgent cesarean section due to fetal distress. During the cesarean section, the abundant hemorrhage from the uterine artery and expansion of a hematoma from the right uterine corner had been observed and right uterine artery ligation and uterine rupture repair were performed. When she had applied to the emergency room with pain, her laboratory examination findings including coagulation parameters, urinalysis, and biochemistry values had been measured and were within normal ranges. Hemoglobin (Hb) was 13.2 g/dl, platelet (PLT) count was 170.000/ μ l. After the surgery, the postoperative Hb value was 8.4 g/dl and the patient received a total of 3 units of packed red blood cells and 3 units of fresh frozen plasma replacement. Since the patient was hemodynamically stable, she was discharged on the 3rd postoperative day.

The patient presented to our hospital on the 7th postoperative day with abdominal and side pain. The abdominal examination revealed no tenderness, guarding, or rebound. The pelvic examination determined vaginal bleeding in lochia in the form of a collum multipart. The transvaginal ultrasonography showed a thin-walled 50 x 48 mm cystic lesion in a possible cavity near the uterine scar (cervical region of the uterus) with turbulent flow. There was no bilateral adnexal gross pathology and no fluid was found in the pouch of Douglas. A

transabdominal ultrasonographic examination revealed minimal fluid echogenicity below the liver and the spleen. Transabdominal ultrasonography also showed a right renal grade 3 hydronephrosis. The patient was hospitalized and her vital signs including body temperature and blood pressure were stable. On admission to our clinic, laboratory examination findings were as follows: Hb: 10 g/dl, PLT count: 413 x 103/ μ l, prothrombin time: 13.4 seconds, activated partial thromboplastin time: 20.3 seconds, international normalized ratio: 1.13, white blood cells: 12.3 x 103/ μ l, C-reactive protein: 110 mg/dl. Other biochemical analyses were within reference ranges. A 6x7 cm hyperdense mass on the right side of the pelvis was revealed using a computed tomography angiogram, creating very strong suspicion for the diagnosis of iliac artery pseudoaneurysm. The Hb values of the patient decreased from 8.7 to 6.7 g/dl and tachycardia developed; thus, the patient underwent internal iliac artery embolization that was performed by the cardiovascular surgery and interventional radiology units. Selective embolization was performed with micro coils and a liquid embolizing agent. The patient received two units of packed red blood cells and two units of fresh frozen plasma. Following the procedure, the turbulent flow was non-existent and thrombosis of the pseudoaneurysm was confirmed by color Doppler ultrasound examination. After the interventional procedure, the patient swiftly became hemodynamically stable and her serum blood urea nitrogen and creatinine levels were within reference values. On the second day following the procedure, a regression in the previously identified hydronephrosis (down to grade 1-2) was observed using renal ultrasonography. The patient was discharged on the 14th day of hospitalization when she was clinically stable.

DISCUSSION

Pseudoaneurysm is a rare condition that forms between the two outer layers of an artery and is usually caused by local trauma with penetrating injury to the arterial wall, resulting in locally contained hematoma with turbulent blood flow. Pseudoaneurysms are often iatrogenic; however, vasculitis, collagen tissue diseases, anatomical variations, elastic tissue disorders, and substance use may also have a role in etiology. A wide variety of interventional procedures including arterial catheterization and surgery may trigger the formation of pseudoaneurysms.²

According to the World Health Organization, maternal deaths from postpartum hemorrhage occur in 25% of patients.³ To date, many risk factors and associated conditions have been identified. Intrapartum risk factors of postpartum hemorrhage, including induction of labor, intrapartum pyrexia, prolonged labor, placental abruption, operative vaginal delivery, episiotomy, and cesarean delivery have been shown in the literature.^{4,6} Pseudoaneurysm of pelvic arteries is an uncommon cause of postpartum hemorrhage and has been reported as a result of a cesarean section, hysterectomy, myomectomy, dilatation and curettage, oocyte retrieval for in vitro fertilization, and even uncomplicated vaginal delivery.⁷ Yi and Ahn revealed leakage of pseudoaneurysm at the fundal region of the uterus following the cesarean delivery, indicating the placenta has an important role in the impairment of arterial wall continuity.⁸ Dohan et al. demonstrated in a series of 588 consecutive patients managed with arterial embolization that 18 of these patients had pelvic arterial pseudoaneurysm, indicating an incidence of 3.06%. Their results suggest that pseudoaneurysm is uncommonly related to postpartum hemorrhage.⁹ They also revealed that 11 of these 18 cases developed following cesarean section. Langer and Cope reported a patient with uterine artery pseudoaneurysm that was diagnosed 14 days after hysterectomy.¹⁰ Consistent with the literature, we observed that our case of in-

ternal iliac artery pseudoaneurysm manifested as delayed postpartum hemorrhage and had developed following cesarean section surgery that included uterine artery ligation and uterine rupture repair. We believe that, despite the rarity of the condition, the relationship between internal iliac artery pseudoaneurysm and cesarean section suggests that it should be listed as a differential diagnosis of postpartum hemorrhage after cesarean section and interventional procedures.

Pseudoaneurysm of pelvic arteries may cause urethral involvement including hydronephrosis as a secondary effect, albeit uncommonly. There are only a few studies that have evaluated the relationship between hydronephrosis and pseudoaneurysm. Amano et al. showed severe hydronephrosis and urethral obstruction secondary to uterine artery pseudoaneurysm in the early second trimester of a pregnancy in a case study.¹¹ Leocadio et al. showed a case who presented with urethral obstruction secondary to uterine artery aneurysm in the third trimester of pregnancy.¹² We demonstrate a grade 3 hydronephrosis due to internal iliac artery pseudoaneurysm following uterine artery ligation. In our case, the grade of hydronephrosis decreased after artery embolization was performed. This indicates that a pseudoaneurysm with hematoma may compress the urinary tract, leading to obstruction and hydronephrosis. Diagnostic evaluation can help to detect urethral involvement in patients with pseudoaneurysm.

In conclusion, iatrogenic internal iliac artery pseudoaneurysm may develop postoperatively in patients managed with uterine rupture repair and uterine artery ligation. Patients presenting with abdominal and side pain after Cesarean sections should be carefully evaluated for uncommon complications, especially pseudoaneurysm, with a multidisciplinary approach.

ETHICS

Informed consent form was taken from the patient of the case.

FINANCIAL DISCLOSURE

No financial support was received.

CONFLICTS OF INTEREST

None.

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