

Spontaneous Uterine Artery Pseudoaneurysm Rupture Following Cesarean Section: A Case Report

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Abstract

A pseudoaneurysm, also known as false aneurysm, is a collection of blood in perivascular soft tissue. Iatrogenic cause such as arterial catheterization and abdominopelvic surgery is one of the most common etiologies of pseudoaneurysm formation. Pseudoaneurysm in pelvic vessels is a complication of pelvic surgery or vessel catheterization. Cesarean section is the most common reported cause. In this article we introduced a 25 years old woman presented with abdominal pain and vaginal bleeding 1 week after Cesarean section. Imaging modalities confirmed the diagnosis of left uterine artery pseudoaneurysm. Patient was admitted to treat by endovascular intervention. Several hours after admission blood pressure decreased and abdominal pain became more severe, ultra sound study showed evidence of free fluid in abdominopelvic cavity suggestive of pseudoaneurysm rupture. Emergence laparotomy surgery and hysterectomy were done due to active bleeding secondary to pseudoaneurysm rupture. Patient was discharged from hospital 5 days after surgery without any new complication.

Keywords

Pseudoaneurysm, Ultrasound, Cesarean Section

1. Introduction

A pseudoaneurysm, also known as a false aneurysm, is a collection of blood around vessel which is confined by the adventitia or perivascular soft tissue. One of the most common etiologies of pseudoaneurysm formation is iatrogenic cause, for example arterial catheterization and abdominopelvic surgery. And blunt or

penetrating trauma, vasculitis, regional inflammatory process (for example acute pancreatitis) and fibromuscular dysplasia are other etiologies of formation a pseudoaneurysm [1] [2]. Pseudoaneurysm occurs most commonly in arteries but there are some reports of pseudoaneurysm formation in vein [3].

Pseudoaneurysm in pelvic vessels is rare but reported a complication of pelvic surgery or vessel catheterization. Cesarean section is the most common reported cause but this complication has also been reported in association with abortion, repeated curettage, myomectomy, hysterectomy, uncomplicated vaginal delivery and even oocyte retrieval for IVF [4] [5].

Uterine artery pseudoaneurysm may be asymptomatic or may thrombose spontaneously but patients usually present as delayed postpartum hemorrhage which can occur up to several weeks in postpartum period and can cause life threatening bleeding that need emergence therapy [6] [7].

Different imaging modalities include ultrasound, computed tomography, MRI and angiography can be applied to confirm diagnosis.

In color ultrasound study the “yin-yang” sign indicates turbulent blood flow within the false aneurysm sac. The pulse Doppler study shows that “to and fro” pattern, which is obvious in communicating channel or neck of pseudoaneurysm, is not the sac. The “to” component is caused by enter of blood during systole and the “fro” component is seen during diastole when the blood stored in cavity is ejected in to the artery. Color Doppler ultrasound has sensitivity of 94% and specificity of 95% in different parts of the body for diagnosis of pseudoaneurysm [8].

Pseudoaneurysm in CT is demonstrated as hypoattenuating (non-contrast) or hyperattenuating (contrast-enhanced) smooth walled sac adjacent to a vessel and contrast enhanced MRI which shows high signal sac of pseudoaneurysm [1].

Uterine artery embolization is preferred treatment but ligation of affected uterine artery by surgery and hysterectomy are alternative treatments.

In this case report we present a uterine artery pseudoaneurysm diagnosed one week after Cesarean section and ruptured before endovascular therapy.

2. Case Presentation

A 25 years old gravid 2 woman presented with abdominal pain and vaginal bleeding 1 week after Cesarean section surgery. She was asymptomatic during 1 week after operation. Mild tenderness in left lower quadrant on abdominal examination was detected. Laboratory data showed Hb: 10.5 and WBC count 10,000 at time of admission. Blood pressure and temperature was 110/70, 37/5 respectively.

In Ultrasound study there was a round hypoecho mass measured 4 cm with echo free center in left adnexa. Color Doppler demonstrated typical “ying-yang” sign in center of mass which is characteristic for pseudoaneurysm (Figure 1).

Pulse Doppler at the neck of mass showed “to and fro” pattern (Figure 2).

Following ultrasound study CT angiography of pelvis and MRI was requested to confirm diagnosis of pseudoaneurysm.

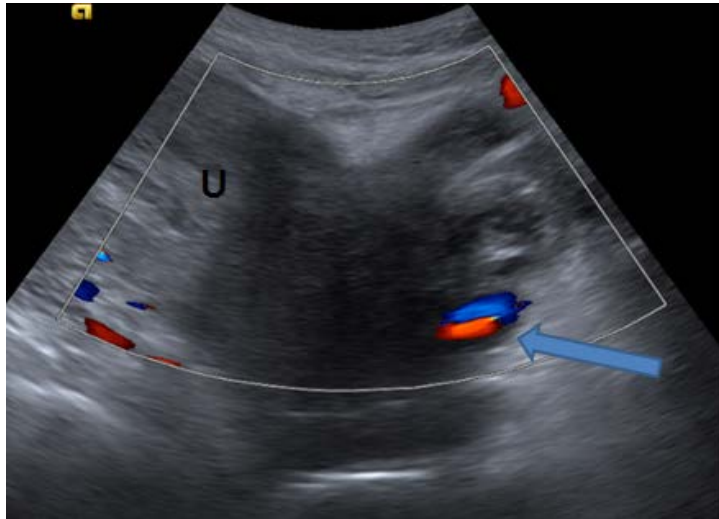


Figure 1. Saggital ultrasound image of uterus use concurrent color Doppler demonstrates typical “ying-yang” sign at left adnexa characteristic for pseudoaneurysm (arrow), (U) uterus.

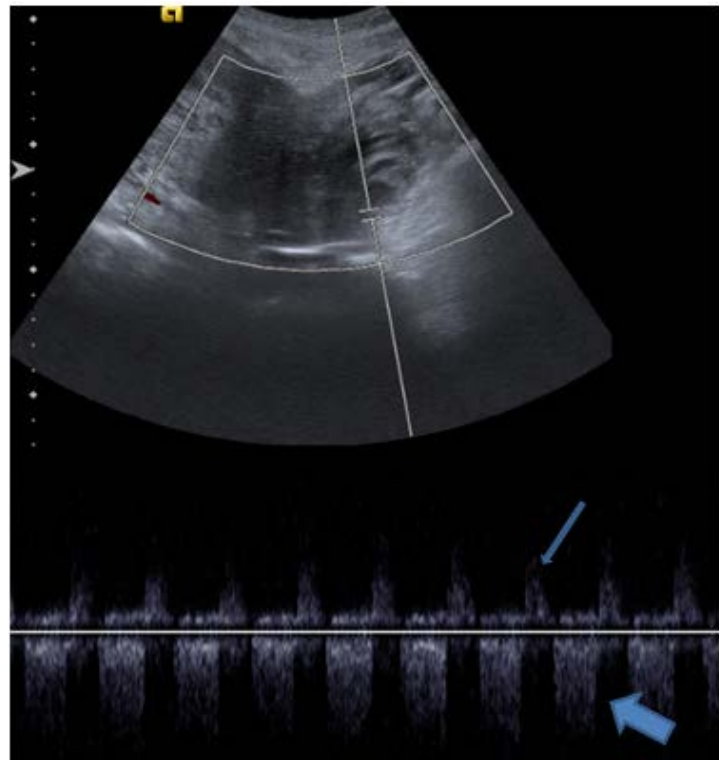


Figure 2. Pulse Doppler at the neck of pseudoaneurysm shows typical “to and fro” pattern, to component (small arrow), fro component (large arrow).

CT angiography showed a collection of contrast adjacent to left internal iliac artery suggestive of pseudoaneurysm (**Figure 3**).

Contrast enhanced MRI demonstrated enhanced center of pseudoaneurysm and peripheral hematoma (**Figure 4**).

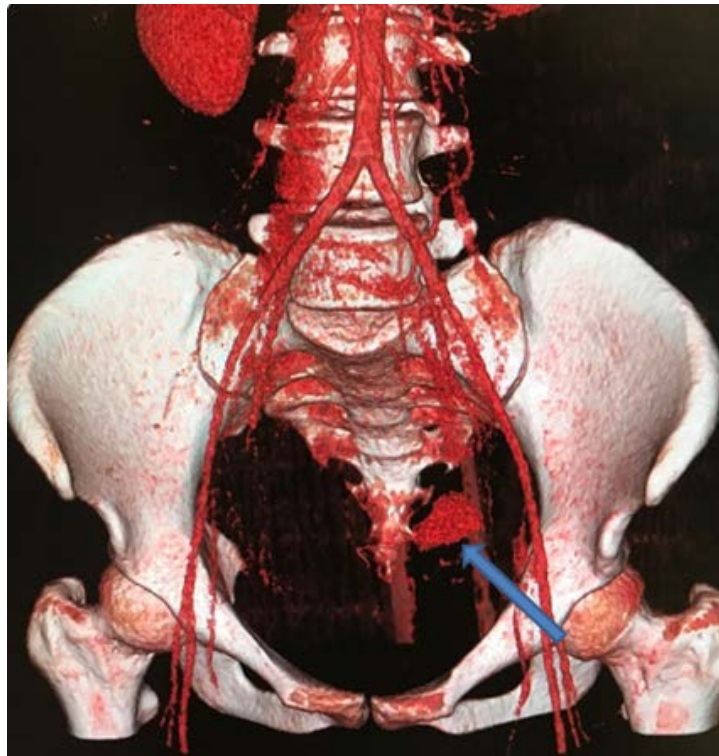


Figure 3. CT angiography of pelvic arteries using volume rendering technique demonstrates contrast pooling at the pseudoaneurysm site (arrow).

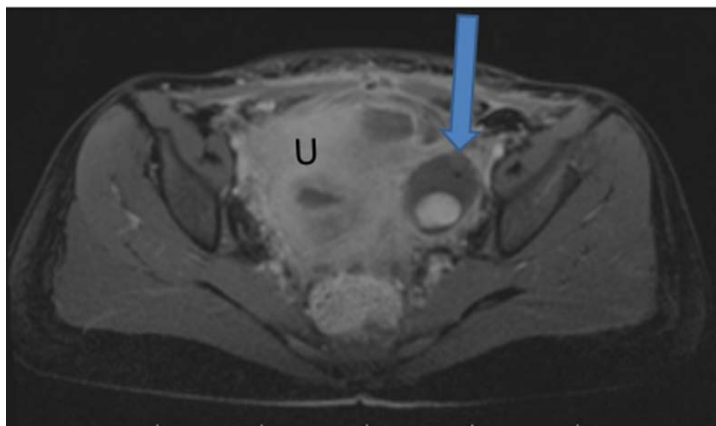


Figure 4. Axial T1 weighted fat suppressed contrast enhanced MRI demonstrates enhanced center of pseudoaneurysm and peripheral hematoma (arrow), (U) uterus.

Patient was admitted to treat by endovascular intervention. Several hours after admission blood pressure decreased and abdominal pain and vaginal bleeding became more severe. Ultrasound study showed evidence of free fluid in abdominopelvic cavity which was suggestive of pseudoaneurysm rupture. Although hysterectomy is the last choice in treatment of uterine artery pseudoaneurysm, due to rupture of pseudoaneurysm and because ligation of internal iliac artery was not effective, hysterectomy was done to control bleeding. Patient was dis-

charged from hospital 5 days after surgery without any new complication.

3. Discussion

Pseudoaneurysm in pelvic vessels is a rare complication of pelvic surgery. Cesarean section is the most common cause but this complication has also been reported in association with abortion, repeated curettage, myomectomy, hysterectomy and even uncomplicated vaginal delivery [4].

Ultrasound, CT angiography, MRI and angiography are modalities applied to diagnosis of this complication [1].

Pseudoaneurysm of uterine artery is a rare cause of delayed postpartum hemorrhage. Delayed postpartum hemorrhage is defined as bleeding from 24 hours after delivery up to 6 weeks postpartum and most commonly occurring between 8 and 14 days postpartum. Retained products of conception, subinvolution of the placental bed and endometritis are more Common causes of delayed postpartum hemorrhage [9].

Treatment includes ligation of uterine artery by surgery or endovascular embolization but endovascular embolization of involved artery is preferred treatment. Hysterectomy is the last choice if uterine artery ligation by surgery or embolization is not effective to control bleeding [4]. The first case of selective arterial embolization that used successfully to treat uncontrollable postpartum bleeding was reported by Brown *et al.* in 1979 [10]. Angiographic embolization has the advantages of decreased morbidity, ability to localize the bleeding site and provide a more distal occlusion than surgical ligation, and preservation of future fertility compared to hysterectomy [9].

4. Conclusion

Uterine artery pseudoaneurysm should be considered in the differential diagnosis of delayed postpartum hemorrhage. It occurs most commonly after Cesarean section but is also associated with abortion, repeated curettage, myomectomy, hysterectomy and vaginal delivery. Ultrasound, CT angiography and MRI are modalities applied to diagnosis of this complication. Uterine artery embolization is preferred treatment but ligation of uterine artery by surgery and hysterectomy are alternative treatments.

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