

# Bilateral Uterine Artery Embolization for the Management of Bilateral Uterine Artery Pseudoaneurism during Puerperium

## Abstract

**Background:** Uterine artery Pseudoaneurysm is a rare cause of secondary postpartum hemorrhage (PPH) and can develop after various gynecological or obstetric procedures. The delayed diagnosis of such cases often results in life threatening situations. We report a rare case of bilateral uterine artery pseudoaneurysm that led to life threatening secondary PPH after Caesarean section in a patient who had several Caesarean sections before.

**Case description:** A 35 years old multiparous woman, who had all her four deliveries by Caesarean sections, presented with recurrent massive attacks of secondary PPH 35 days after her last delivery. Rupture of aneurysm of the uterine artery was suspected and CT angiography showed that the left uterine artery seemed more dilated and was probably the source of the PPH. The bleeding site was successfully tackled by selective arterial embolization. About three weeks later the patient presented again with severe recurrence of PPH. Repeat of CT angiography showed that the source was the right uterine artery this time, which was again selectively embolized. No further bleeding events occurred up to two years follow-up.

**Conclusion:** Rupture of aneurysm of the uterine artery can be a life-threatening condition. Clinical suspicion is essential for a prompt diagnosis. Definitive diagnosis can be achieved by CT-angiography. Treatment by selective embolization can effectively stop the bleeding.

**Keywords:** postpartum hemorrhage, pseudoaneurysm, angiography, embolization

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Sally Damra Elnour Mohammed,<sup>1</sup>  
Mohammed Khidir Tayfor,<sup>2</sup> Isra Mutasim  
Hamad,<sup>3</sup> Mashaar Osama<sup>3</sup>

<sup>1</sup>Assistant Professor of Obstetrics and Gynaecology, Nahda College, Sudan

<sup>2</sup>Consultant Interventional vascular radiologist, Consultant Interventional neurologist, Sudan

<sup>3</sup>Assistant professor of Obstetrics and Gynecology, Nahda College, Sudan

**Correspondence:** Sally Damra Elnour Mohammed, Assistant professor of Obstetrics and Gynecology, Nahda College, Khartoum, P.O. Box 12810, Sudan, Tel 00249912690390, Email d.sally222@gmail.com

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## Introduction

Pseudoaneurysm is an extra-luminal assortment of blood that is contained by the adventitia or close perivascular soft tissue. It may communicate with the flowing arterial blood vessel through a defect within the arterial wall. It causes repeated hemorrhages once it connects with the uterine cavity.<sup>1</sup> The etiology of uterine artery pseudoaneurysm includes vascular trauma throughout various obstetric or gynecological interventions such as Caesarean delivery, vaginal delivery, hysterectomy or ablation.<sup>1</sup> Pseudoaneurysm is susceptible to spontaneous rupture and often leads to life-threatening situations; and the risk of rupture corresponds to its dimensions and intramural pressure.<sup>2</sup> The most commonly used diagnostic modalities are ultrasonography and computed axial tomography (CT) imaging. Doppler ultrasound and arteriography, however are also highly reliable diagnostic tools.<sup>3</sup> Transcatheter arterial embolization is usually an extremely effective technique for treating both the obstetric and gynecological hemorrhage, when associated with pseudoaneurysms.<sup>4</sup> We here report a case of arterial pseudoaneurysm presenting as secondary PPH on the first week, and once again at 3 weeks after Caesarean section delivery.

## Case report

A 35-year-old Sudanese woman presented to Ibrahim Malik's teaching hospital with profuse secondary PPH. She underwent an emergency Caesarean section (CS) 35 days before the presentation; that being her fourth time to be delivered by CS. The Caesarean section was performed at another hospital and according to the obstetrician who did the procedure, he did not notice any abnormalities intra-operatively, and she was discharged well on the third post-operative

day. At this presentation, she complained of heavy vaginal bleeding of one-day duration. On physical examination, her temperature was 37.8°C, blood pressure was 100/60 mmHg, and her pulse rate 120 beats per minute. Her breasts did not emerge; her abdomen was soft and non-tender and her uterus was about 14–16-week size. On vaginal examination, the cervix was opened with just a slight amount of blood. Speculum examination was normal. There were no other significant findings or adnexal masses. She was admitted as a case of secondary PPH for evaluation and management.

A full blood count, coagulation profile, and renal function profile were performed. Significant findings were a raised white cell count of 18.0 x 1000/L and a haemoglobin level of 7.0 g/dL. She was diagnosed as having endometritis which could explain her secondary PPH. Intravenous ceftriaxone, metronidazole, and gentamicin were instituted and she was transfused with two units of blood. She improved dramatically and was discharged in good condition. One day later (day 35 post CS) she presented again with massive PPH. Full blood count revealed haemoglobin level 5 gm/dl. An ultrasound scan was performed and no abnormality was detected. Quantitative beta HCG was normal. The diagnosis of uterine artery aneurysm with arteriovenous fistula was suspected. This was confirmed at the left uterine artery by CT angiography. The lesion was successfully treated by selective embolization and the patient discharged home after due supportive management. Twenty-four days later the patient developed a third attack of PPH. This time CT angiography showed that there was bleeding from the contralateral right uterine artery. Again, the lesion was successfully closed by selective embolization. The patient did well and was discharged on good condition. Follow-up, up to two year showed no further complications.

## Discussion

Postpartum haemorrhage is a leading cause of maternal morbidity and mortality in developing countries. Secondary PPH is excessive haemorrhage from 24 hours post-delivery and up to six weeks postnatal. Causes include retained products of conception, endometritis, placental bed subinvolution, pseudoaneurysm of the uterine artery, arteriovenous malformations, and choriocarcinoma.<sup>5</sup> Uterine vascular lesions are rare, nevertheless they should always be considered when discussing PPH due their life-threatening consequences. True arterial blood vessel aneurysms are a rare congenital entity; and may be classified as either fusiform or saccular.<sup>6</sup> Occasionally they may be a result of trauma to the uterine vessels throughout caesarean delivery.<sup>7</sup>

Arteriovenous fistulas are thought to result from mass ligation of the artery or the passage of the transfixing needle through the two vessels. The secondary development of the aneurism may result from a peri-arterial increasing intumescence or drain into the vein, or both. The secondary aneurism would be a pseudoaneurysm, which cannot embrace all 3 layers of blood vessel wall.<sup>8</sup> Pseudoaneurysm patients classically present with painless, but critical PPH.<sup>8,9</sup> Considering the diameter of uterine vessels, such aneurisms are associated with high risk of rupture once they reach a diameter of >1 cm.<sup>10</sup>

## Conclusion

For a woman with unexplained vaginal bleeding after Caesarean section delivery, pseudo-aneurysms are potentially life-threatening complications and should be considered in the differential diagnosis of secondary PPH. Selective blood vessel embolization is an effective means of management in such conditions.

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## Conflicts of interest

The author declares there are no conflicts of interest.

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