



## Challenging Diagnosis in Secondary Post-Partum Hemorrhage: A Case Report

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### Abstract

Secondary postpartum hemorrhage is a deadly complication of postpartum period. However, often in few cases, proper diagnosis of the cause is made only at a critical stage due non-anticipation of the rare causes, which endangers the mother's life. A uterine artery pseudoaneurysm is a rare but serious complication following uterine surgery or delivery both cesarean and traumatic vaginal delivery. These pseudoaneurysms are prone to rupture even without any procedure, resulting in rapid exsanguinations. Uterine artery pseudo aneurysm, if not diagnosed promptly and treated inadequately can be catastrophic, it can lead to life-threatening postpartum hemorrhage. Herein, we report the case of a 37-year-old woman who developed recurrent secondary postpartum hemorrhage resulting from uterine artery pseudoaneurysm. Angiographic embolization is a safe and effective procedure for treating postpartum hemorrhage resulting from pseudoaneurysm in hemodynamically stable patients. However, individual circumstances such as non-availability of the procedure and suspicion of infection and for hemodynamically unstable patients, it may not be possible to undertake arterial embolization, and hysterectomy may be still a safe option in the treatment of this life-threatening complication. However, Uterine Artery ligation may be opted when fertility preservation is desired.

**Keywords:** Post-Partum Haemorrhage; Pseudoaneurysm; Embolization; Uterine Artery; Hysterectomy

### Introduction

Death due to hemorrhage remains an important cause of maternal mortality worldwide, it is estimated that Post-Partum hemorrhage may occur in 1-5% of deliveries in both developed as well as in developing countries and it is still the most common cause of maternal morbidity and mortality [1].

Secondary PPH is defined as any abnormal or excessive bleeding from the birth canal occurring between 24 hours and 12 weeks following delivery. Unlike primary postpartum hemorrhage, it is difficult to estimate its frequency because, only severe secondary PPH needs hospitalization. In developed countries, two per cent of postnatal women are admitted to the hospitals with this condition, among whom, half of them undergoing uterine surgical evacuation; where as in developing countries it is a major contributor to maternal death [1]. Most studies report the peak incidence is at one to two weeks postpartum. While primary PPH is an acute life threatening condition, which usually occur in the facility and receive immediate care, the bleeding in secondary PPH usually occur at

home, receive delayed care and become severe in few cases.

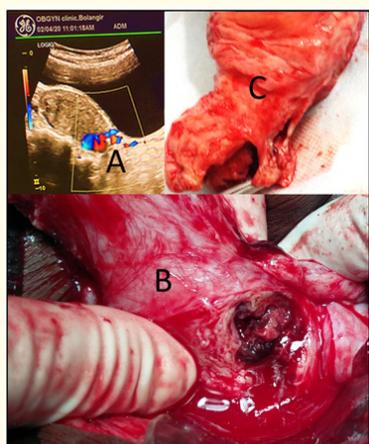
The diagnosis can be challenging, as the most common cause of the secondary postpartum haemorrhage (PPH) is the postpartum endometritis, with or without retained products of conception (RPOC). These patients would usually be treated with antibiotics and even an evacuation of suspected RPOC, which could be devastating, ending with a fulminant intractable haemorrhage resulting in an emergency hysterectomy or even death.

### Case Report

We report a case of 37 years-old female (P4L3) who presented on 36th post-partum day with severe secondary PPH. She has had three episodes of postpartum haemorrhage following delivery. First episode was a primary PPH due to cervical laceration following spontaneous vaginal birth. The haemorrhage was successfully treated with repair and transfusion of 3 units of blood. The patient recovered quickly and was discharged on day 4 postpartum with minimal bleeding and a Hb of 8.1 Gm%.

Two weeks postpartum she was again admitted to the District Hqrs Hospital with heavy vaginal bleeding. She was diagnosed as Endometritis and treated with uterotonics, intravenous (IV) fluids, blood transfusion and antibiotics. The bleeding settled after couple of hours. 24 hour later, she was sent back home with a Hb of 7.8 GM/L.

On the 36th day post-partum, she had another episode of massive haemorrhage and was brought to our hospital with the Blood Pressure of 74/46mmHg and Pulse rate of 122 bpm. She was successfully resuscitated with IV fluids and uterotonics and one unit of blood. All hematological investigations were done. Haemoglobin 5.8 g/dL, platelet count was 235,000 per microliter and her coagulation and biochemistry profile were normal. Ultrasound Doppler study during Transabdominal ultrasound scan (TAUSS) detected an anechoic structure (3.5 x2.6cm) with turbulent blood flow within the left lower uterine wall continuous with the uterine artery (Figure 1A). A Diagnosis of a uterine artery pseudoaneurysm (UAP) was made and decision was taken to send her to higher center for CT angiogram and urgent embolization. But minutes later she developed massive vaginal bleeding and was unfit for transfer. Total Abdominal Hysterectomy was planned after proper counselling. During surgery continuous flow of blood from within the collection of clots around the left uterine artery (Figure 1B) having a vertical rent (Figure 1C) was found, Total Abdominal Hysterectomy was done. Perioperatively she received 2 units of blood. Post-operative period was uneventful. And was discharged on 4th postoperative day.



**Figure 1:** A: Trans abdominal Ultrasonographic Color Doppler signals representing the typical turbulent arterial flow pattern. B: Hemorrhagic necrotic area measuring 4.2 cm at its Greatest diameter, communicating with both the uterine cavity and the wall. C: Dissection of the cavity showing rent in left uterine artery.

## Discussion

Abnormal involution of the placental site is the most common cause of secondary postpartum hemorrhage [4], but rarely, cesarean wound dehiscence or nonunion of the incision site after cesarean section may also cause severe bleeding [3]. Risk factors include diabetes, emergency surgery, infection and suturing technique.

However, the exact cause of secondary postpartum hemorrhage sometimes cannot be identified [3]. In these cases, ultrasound, blood culture and beta-HCG test (to rule out choriocarcinoma) are usually performed. It is recommended to directly perform exploratory laparotomy in cases with uterine scar dehiscence, shock and severe infection [4]. In addition, pelvic arteriography is suggested for evaluation of vascular dysfunction [3].

Pseudoaneurysm of uterine artery (UAP) is a collection of blood in the myometrium, fully covered by the adventitia or the surrounding tissues, with turbulent flow that is fed by arterial blood flow through a defect in the wall of uterine artery. Hormonal and haemodynamic changes and injuries are the triggers of this complication in postpartum [3]. If the diagnosis is delayed it can result in a sudden life threatening haemorrhage, even many weeks after delivery. The diagnosis can be challenging, as the most common cause of the secondary postpartum haemorrhage (PPH) is the postpartum endometritis with or without retained products of conception (RPOC). In the setting of an emergency the patient would usually be treated with antibiotics and even an evacuation of suspected RPOC which could be devastating, ending with a fulminant intractable haemorrhage resulting in an emergency hysterectomy or even death.

## Conclusion

Secondary postpartum hemorrhage is a deadly complication of postpartum period. However, often in few cases, proper diagnosis of the cause is made only at a critical stage due to its low incidence, which endangers the mother's life in absence of appropriate management. A uterine artery pseudoaneurysm is a rare but serious complication of uterine surgery or delivery both cesarean and traumatic vaginal delivery. These pseudoaneurysms are prone to rupture even without any procedure, resulting in rapid exsanguinations.

Pseudoaneurysm of uterine artery should be considered as a differential diagnosis, when the patient presents with recurrent massive secondary PPH after both, caesarean and traumatic vaginal delivery. It is suspected if anechoic structures in the uterine wall are present on sonography. Color Doppler imaging plays an

important role in confirming the diagnosis. A turbulent arterial flow pattern and high-velocity flow in pulsed wave Doppler analysis are the typical sonographic images.

Arterial embolization of the uterine artery represents an effective, safe and primary treatment of pseudoaneurysms, which allows preservation of reproductive function. However, individual circumstances such as non-availability and suspicion of infection after surgery might be relative contraindications to undergo arterial embolization, and hysterectomy may be still a safe option in the treatment of this life-threatening complication. At present here are no guidelines in India for the management of secondary PPH. Introduction of such guidelines would be helpful for early diagnosis and management.

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