ORIGINAL RESEARCH PAPER

Obstetrics and Gynecology

# UTERINE ARTERY EMBOLIZATION AS A LIFE SAVING PROCEDURE FOR UTERINE ARTERY PSEUDO-ANEURYSM FOLLOWING OUTLET FORCEPS DELIVERY- A CASE REPORT

**KEY WORDS:** Pseudoaneurysm, Uterine artery embolization, Secondary PPH

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**ABSTRACT**

Uterine artery pseudoaneurysm is a rare but important cause for secondary postpartum hemorrhage which if inadequately treated can be potentially life-threatening. Herein, we report the case of a 25-year-old woman who developed secondary postpartum hemorrhage following outlet forceps delivery resulting from uterine artery pseudoaneurysm. Diagnostic iliac angiogram was done to confirm the diagnosis which was successfully managed by angiographic uterine artery embolization.

**Introduction:**

Among postpartum complications that can lead to mortality, postpartum hemorrhage (PPH) is an important cause. Though primary postpartum hemorrhage is common cause of PPH, one should not discount the possibility of secondary PPH, as it is often missed because by the time it happens patients are usually discharged. Secondary PPH is excess bleeding from the genital tract that can occur between 24 hours after delivery up to even 12 weeks later (Dewhurst,1966). Though retained placental products, placental polyp, placental site sub involution, infection and coagulopathy are common causes of secondary PPH, pseudo aneurysm of uterine artery is one among the rarest and potentially life-threatening (ACOG Practice Bulletin,2006).

Following caesarian or vaginal delivery uterine artery pseudo-aneurysm may develop due to laceration or injury of the uterine artery. Pseudo-aneurysm is differentiated from a true aneurysm by the absence of the 3-layered arterial wall lining. Here the wall is constituted by thrombus formed from the hematoma (Kwon et al, 2002).Rupture of the pseudo-aneurysm is the reason for the hemorrhage. Diagnosis of uterine artery pseudo-aneurysm is usually done by doppler ultrasound, and uterine artery angiography (Hidar et al, 2000). Transcatheter uterine artery embolization is an interventional radiological procedure that is strongly recommended as a safe and reliable intervention for controlling hemorrhage due to pseudo-aneurysms (ACOG Practice Bulletin,2006).

Herein, we report a case of uterine artery pseudo-aneurysm presenting with secondary PPH following outlet forceps delivery with episiotomy and complete perineal tear repair that was managed successfully by transcatheter uterine artery embolization.

**Case Report:**

A 25 year old primigravida who had delivered by outlet forceps with episiotomy and complete perineal tear repair got admitted 10 days postpartum with the complaints of excessive bleeding per vaginum with history of passing clots and giddiness.There was no history of abdominal pain or foul smelling discharge. Initial evaluation of the patient revealed pallor and tachycardia, with abdominal examination revealing firm and contracted uterus. Per speculum examination showed healthy vaginal vault, with no cervical or vaginal tears. On per vaginal examination episiotomy wound was found to be healthy with bleeding per vaginum. Ultrasound revealed postpartum state with empty uterine cavity and endometrial thickness of 10mm with no evidence of any retained products of conception.

Patient suddenly developed one episode of excessive bleeding on the second day of admission of about 500ml. Patient was managed with 2 units of packed cells transfusion, along with parenteral tranaexemic acid and oral regesterone. On day three also patient had bleeding episodes for which further two more units of blood was transfused. Investigations showed haemoglobin of 6.4gm%, protrombin time (PT) of 11.9, INR of 0.91 secs, and serum beta-HCG of 0.91 mIU/ml. Since bleeding was recurring doppler ultrasound was done which revealed no abnormal vasculature in endometrium or myometrium. Hence diagnostic iliac angiogram was done which showed pseudo aneurysm of left uterine artery. Both uterine arteries were hypertrophied like cork screw. Pseudo aneurysm was catheterised with micro catheter and embolised with micro coil and 3-5 fiber coils. The cork screw hypertrophied collaterals were embolised with gel foam to prevent recanalisation of aneurysm. Through this procedure a significant obliteration of aneurysm was obtained. The post procedure period was uneventful. Patient recovered well with bleeding controlled very well. Patient was discharged after 15 days.

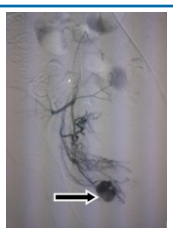

Fig.1 : Uterine artery psudoaneurysm shown by the arrow

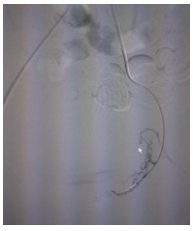

Fig.2: Uterine artery embolisation with micro coil

**Discussion:**

Maternal mortality is one of the challenges that we are facing even with the advancement in the overall medical care services and technology. Postpartum haemorrhage continues to be one of the common causes for maternal mortality. It is estimated that it can occur in about 5% of all deliveries and about 15% of all maternal deaths are due to it (Wald, 2003). Postpartum haemorrhage is classified into primary and secondary based on the time duration of onset of bleeding after delivery, with the former occurring within 24 hours and the later after it. The common causes of primary PPH are uterine atony, retained placental bits, genital laceration, uterine rupture, and coagulopathy. Retained products of conception, subinvolution of uterus, endometritis ,pseudoaneurysm of the uterine artery, arteriovenous malformations, caesarian scar dehiscence, and direct vessel rupture, usually following uterine curettage, cesarean section, hysterotomy and traumatic vaginal delivery are common causes for secondary PPH (Khong, 1993).

Pseudoaneurysm, a well known complication of vascular injury, is formed when there is extra luminal collection of blood which communicates with the parent artery that occurs mainly due to disruption in the arterial wall. There is absence of the arterial wall lining in the pseudoaneursym as result of which blood flows extra luminally in a turbulent manner, rupture of which results in heavy bleeding. Pseudoaneurysm of uterine artery forms due to surgical trauma, inflammation, neoplasia, and infarction when there is leakage of blood into the surrounding tissue with a continuing communication (Chitra et al, 2011). Doppler ultrasonography and CT angiography are often used to diagnose this condition. Color Doppler examination often reveals the aneurismal sac as a cystic area filled with a turbulent, multidirectional, mosaic type of blood flow pattern. CT angiography shows the location of the pseudoaneurysm and is used to identify feeding vessels through three-dimensional reformatted images (Marnela et al, 2010). Angiography, however remains the gold standard in diagnosing and treating vascular malformations.

Embolotherapy is the treatment of choice wherever the facility for the same exists as the success rate of it is as high as 97% and it also preserves the reproductive function (Vedanatham et al, 1997). Ultrasound guided injection of thrombin directly into the pseudoaneurysm is under consideration as a substitute for arterial embolization whose effectiveness have not yet been determined (Kovo et al, 2007). The surgical approaches like uterine artery ligation and excision of aneurysm and hysterectomy can be tried in cases of acute and massive bleeding when there is no time for embolization or facilities are scarce (Dasari et al, 2011). Laparoscopic coagulation of the uterine artery is recently recommended in some centers (Ciebiera et al ,2017).

There have been many case reports of uterine artery pseudoaneurysm following caesarian section deliveries (Kodey, 2015). However literature search revealed very limited instances of uterine artery pseudoaneurysm following outlet forceps delivery.

**Conclusion:**

Uterine artery pseduaneurysm should be considered as one of the important cause for secondary PPH not only following caesarian section deliveries but can occur even after forceps assisted delivery. And angiographic embolization remains the gold standard treatment for it with excellent success rate.

**Source of Support:** Nil

**Conflict of Interest:** None declared.

**References:**

1) Dewhurst CJ. Secondary PPH. J Obstet Gynaecol Br Commonw. 1966;73:53–58. doi: 10.1111/j.1471-0528.1966.tb05120.x.
2) ACOG Practice Bulletin, "Clinical Management Guidelines for Obstetrician-Gynecologists Number 76, October 2006: Postpartum hemorrhage," Obstetrics and Gynecology, vol. 108, p. 1039, 2006.
3) Kwon JH, Kim GS. Obstetric iatrogenic arterial injuries of the uterus: Diagnosis with US and treatment with transcatheter arterial embolization. Radiographics. 2002;221:35–46.
4) Hidar S, Bibi M, Atallah R, Essakly K, Bouzakoura C, Hidar M. Pseudoaneurysm of the uterine artery: Apropos of 1 case. J Gynecol Obstet Biol Reprod (Paris) 2000;29:621–4
5) D. A. Wald, "Postpartum hemorrhage resulting from uterine artery pseudoaneurysm," Journal of Emergency Medicine.2003; 25(1):57–60
6) T. Y. Khong and T. K. Khong, "Delayed postpartum hemorrhage: a morphologic study of causes and their relation to other pregnancy disorders," Obstetrics and Gynecology.1993;82(1):17–22
7) Chitra TV, Panicker S. Pseudoaneurysm of uterine artery: a rare cause of secondary postpartum hemorrhage. J Obstet Gynaecol India. 2011;61:641–644.
8) Marnela K, Saarelainen S, Palomaki O, Kirkinen P. Sonographic diagnosis of postpartum pseudoaneurysms of the uterine artery: a report of 2 cases. J Clin Ultrasound. 2010;38:205–208.
9) Vedanatham S, Goodwin SC, McLucas B, et al. Uterine artery embolization. An underused method of controlling pelvic haemorrhage. Am J Obstet Gynaecol. 1997;176:938–948. doi: 10.1016/S0002-9378(97)70624-0.
10) M. Kovo, D. J. Behar, V. Friedman, and G. Malinger, "Pelvic arterial pseudoaneurysm—a rare complication of Cesarean section: diagnosis and novel treatment," Ultrasound in Obstetrics and Gynecology.2007;30(5): 783–785
11) Dasari P, Maurya DK. Uterine artery Pseudoaneurysm: a rare cause of secondary postpartum haemorrhage following caesarean section. BMJ Case reports.2011;doi:10.1136/bcr.01.2001.3709.
12) Ciebiera M, Słabuszewska-Jóźwiak A, Zaręba K, Jakiel G. Management of uterine artery pseudoaneurysm: advanced ultrasonography imaging and laparoscopic surgery as an alternative method to angio-computed tomography and transarterial embolization. Videosurgery and other Miniinvasive Techniques. 2017;12(1):106-109. doi:10.5114/wiitm.2017.66503.
13) Kodey PD, Koneru GR, Kota LN, Kuchibatla S. Pseudoaneurysm of uterine artery: as a cause of secondary post partum haemorrhage. Int J Reprod Contracept Obstet Gynecol 2015;4:1821-4.