

A Case of Primary Postpartum Bleeding due to Vaginal Laceration after Vaginal Delivery: Successful Management with Transcatheter Arterial Embolization

Vajinal Doğum Sonrası Gelişen Laserasyona Bağlı Bir Primer Postpartum Kanama Vakası: Transkateter Arteriyel Embolizasyonla Başarılı Tedavi

Metin Ingec¹, Akin Levent², İlhan Bahri Delibas¹, Alparslan Pulur¹, İbrahim Karaca¹

¹Department of Obstetrics and Gynecology, School of Medicine, Ataturk University, Erzurum, Turkey

²Department of Radiology, School of Medicine, Ataturk University, Erzurum, Turkey

Abstract

Postpartum hemorrhage is one of the major causes of maternal mortality. There are medical and surgical options to control the bleeding, some of which can impair future fertility. Transcatheter arterial embolization might be a useful option in the management of intractable postpartum bleeding before the consideration of more invasive and radical methods. In this report, we report a 33-year-old patient who presented with primary postpartum hemorrhage due to vaginal laceration and was eventually treated with transcatheter arterial embolization.

Key Words: Catheter, Postpartum hemorrhage, Therapeutics, Uterine artery embolization

Özet

Postpartum kanama maternal mortalitenin en sık nedenlerinden birisidir. Kanamanın durdurulmasında, gelecekteki fertilitiyi etkileyebilen çeşitli medikal ve cerrahi tedavi seçenekleri mevcuttur. Durdurulamayan postpartum kanamanın yönetiminde, daha invazif ve radikal yöntemler göz önüne alınmadan önce, transkateter arteriyel embolizasyon kullanışlı bir seçenek olabilir. Bu olgu sunumunda, kliniğimize vajinal doğum sonrası gelişen vajinal yırtığa bağlı primer postpartum kanamayla başvuran, lokalizasyon nedeniyle vajinal sütün ile durdurulamayan arteriyel vajinal kanamalı 33 yaşındaki bir hastanın transkateter arteriyel embolizasyonla tedavisini sunuyoruz.

Anahtar Kelimeler: Kateter, Postpartum kanama, Terapötik, Uterin arter embolizasyonu

Introduction

Postpartum hemorrhage is one of the major causes of maternal mortality worldwide and is the most common reason for blood transfusions after delivery [1]. Postpartum bleeding that is encountered within the first 24 hours following delivery is termed primary postpartum bleeding, whereas secondary postpartum bleeding is defined as excessive vaginal bleeding that occurs between the first 24 hours of delivery and the 6th week of the puerperium [2]. Genital tract trauma is the second leading cause of postpartum bleeding, followed by uterine atony [3]. The interventions to control the bleeding include vaginal packing, surgical repair of the lacerations, vascular ligation and hysterectomy. To preserve future fertility, transcatheter arterial embolization might be a useful option for the management of intractable postpartum

bleeding before the consideration of more invasive methods. Herein, we report a 33-year-old patient who presented with primary postpartum hemorrhage following vaginal delivery and was treated with pelvic transcatheter arterial embolization after vaginal suturing attempts failed to stop the arterial vaginal bleeding.

Case Report

A 33-year-old primigravid patient who had a vaginal delivery with a mediolateral episiotomy at a local maternity hospital was referred to our clinic because of intractable vaginal bleeding, despite efforts to repair the episiotomy and the vaginal lacerations in the operating room. The patient had delivered a 3100 g healthy baby at term, and neither forceps delivery nor postpartum curettage had been performed.

Received: August 19, 2010 / **Accepted:** November 21, 2010

Correspondence to: İlhan Bahri Delibas, Department of Obstetrics and Gynecology, School of Medicine, Ataturk University, Erzurum, Turkey

Phone: +90 422 316 63 33 e-mail: delibashi@hotmail.com

doi:10.5152/eajm.2011.12

On admission to our clinic three hours after delivery, she was somnolent and pale. Her blood pressure was 60/40 mmHg with a pulse rate of 108/min. Laboratory data were as follows: hemoglobin 9.6 g/dl, white blood cell count $28.2 \times 10^9/L$, and platelet count $153 \times 10^9/L$. Transvaginal ultrasound revealed a 9-mm-thick regular endometrium and normal ovaries bilaterally, with no pelvic or vaginal masses or hematomas. The uterus was in tonic contraction, and the vaginal examination revealed active vaginal bleeding.

The patient was urgently transferred to the operating room for a detailed vaginal examination, which revealed an actively bleeding area that extended from the right lateral vaginal wall towards right lateral vaginal fornix. The bleeding area was repaired with vicryl sutures, and vaginal packing was applied. Two units of packed red blood cells were transfused, and vigorous intravenous fluid therapy was administered in the operating room. One hour after the vaginal repair, her blood pressure was 90/60 mmHg with a pulse rate of 88 / min. Her hemoglobin was 5.8 g/dl, and the amount of vaginal bleeding was 500 ml during the first hour after the repair, despite the vaginal packing and good uterine tonus. After the failure of the attempts to stop the bleeding, arterial embolization was performed. A 4.0 F microcatheter (Simmons 1, Cordis) was introduced through the right femoral artery and selective angiography revealed extravasation from a vaginal branch of the right uterine artery. Superselective embolization of this arterial branch was performed with a 3.0 F catheter (Excelsior SL-10, Microcatheter) by infusion of a mixture of embolizing agents: lipiodol, cyanoacrylate and polyvinyl alcohol (PVA). Post-embolization angiography confirmed that the bleeding had stopped (Figure 1). The entire procedure was completed within 1 hour, and there were no complications encountered during or after the procedure until she was discharged on postoperative day 3.

Discussion

Pelvic transcatheter arterial embolization is a useful technique for the treatment of severe postpartum hemorrhage, which may be due to uterine atony, genital tract lacerations, placental retention, abnormal placentation or coagulopathy. Because vaginal and cervical lacerations are generally controlled with the appropriate emergency surgical repair and vaginal packing, these methods should be applied before considering embolization. If angiography reveals active bleeding based on the extravasation of contrast medium outside the vascular space, a number of embolic materials, including PVA, lipiodol, Gelfoam particles, cyanoacrylate, coils, autologous clots and balloons, can be used to occlude the bleeding vessel. The reported success rate of transcatheter arterial embolization at stopping postpartum bleeding varies between 85-100% [4]. Other obstetric indications of its use include ectopic pregnancy, abnormal placentation and bleeding due to arteriovenous malformations [5]. Arterial embolization is not free of complications, which mostly depend on the operator's expertise and skill; serious potential complications include anaphylaxis and renal toxicity from the angiographic agents and tissue necrosis due to displacement of the embolic agent. The following complications have also been reported: post-procedural fever, infection, vaginal fistula, transient ovarian failure, bladder wall necrosis, muscle pain, perforation or occlusion of the external iliac artery and ischemic complications, such as uterine or muscle necrosis [25]. C. Pinard, J. Squifflet, A. Gilles and J. Donnez, Uterine necrosis and sepsis after vascular embolization and surgical ligation in a patient with postpartum hemorrhage, *Fertil Steril* 78 (2002) (2), pp. 412-413. [4]. In a published case series of uterine artery embolization for postpartum hemorrhage, the



Figure 1. Pelvic angiograms showing extravasation from the vaginal branch of the right uterine artery (A), and after the embolization (B).

procedure mostly involved both uterine arteries even though the laceration was unilateral [6, 7]. There are no prospective studies that compare bilateral to unilateral embolization, but because bleeding can continue through anastomoses of the collateral pelvic vessels after unilateral embolization, it is widely accepted that the procedure should be performed bilaterally. Thus, unilateral embolization is performed only in a minority of patients with postpartum bleeding [8]. However, the best approach should be to limit the procedure to the specific vessel branches. The present case report shows that unilateral superselective artery embolization may successfully stop postpartum bleeding without complications, which avoids embolization of the contralateral artery and further interventions. In conclusion, transcatheter arterial embolization therapy seems to be an effective, reasonable alternative treatment for postpartum hemorrhage, especially in patients with uncontrollable bleeding and difficult vaginal surgical exposure and repair.

Conflict of interest statement: The authors declare that they have no conflict of interest to the publication of this article.

References

1. Gilbert L, Porter W, Brown VA. Postpartum haemorrhage-a continuing problem. *Br J Obstet Gynaecol* 1987; 94: 67-71. [\[CrossRef\]](#)
2. Majumdar A, Bird A. A case of recurrent secondary postpartum haemorrhage treated by uterine artery embolisation. *J Obstet Gynaecol* 2010; 30: 412-3. [\[CrossRef\]](#)
3. Clinical Management Guidelines for Obstetrician-Gynecologists: Postpartum hemorrhage, In: ACOG Practice Bulletin. Number 76. *Obstet Gynecol* 2006; 108: 1039-47. [\[CrossRef\]](#)
4. Vegas G, Illescas T, Muñoz M, Pérez-Piñar A. Selective pelvic arterial embolization in the management of obstetric hemorrhage. *Eur J Obstet Gynecol Reprod Biol* 2006; 127: 68-72. [\[CrossRef\]](#)
5. Baum. S. and Pentecost MJ (eds). In: *Abrams' Angiography*, 2nd Edn. 2006; Lippincott Williams & Wilkins; pp.176-86.
6. Pelage JP, Soyer P, Repiquet D, Herbreteau D, Le Dref O, Houdart E, et al. Secondary postpartum hemorrhage: treatment with selective arterial embolization. *Radiology* 1999; 212: 385-9.
7. Fargeaudou Y, Soyer P, Morel O, Sirol M, le Dref O, Boudiaf M, et al. Severe primary postpartum hemorrhage due to genital tract laceration after operative vaginal delivery: successful treatment with transcatheter arterial embolization. *Eur Radiol* 2009; 19: 2197-203. [\[CrossRef\]](#)
8. Deux JF, Bazot M, Le Blanche AF, Tassart M, Khalil A, Berkane N, et al. Is selective embolization of uterine arteries a safe alternative to hysterectomy in patients with postpartum hemorrhage? *AJR Am J Roentgenol* 2001; 177: 145-9.