Postpartum Uterine Artery Embolization in a Patient with Uncontrolled Hemorrhage

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Postpartum hemorrhage remains a major cause of maternal morbidity and mortality. We report a case of postpartum haemorrhage which was successfully controlled with embolization of the uterine artery. A 28-year-old woman was admitted in active labor at 39 weeks gestation. A Caesarean section was performed without complication, and a live female infant weighing 3200 g was delivered. After delivery, the uterus remained atonic. Hemorrhage was reduced with bimanual compression following intravenous oxytocin and intramuscular injection of ergometrine. In the recovery room, there was minimal uterine bleeding from cervical os, the vagina was full of clots. The uterus was always well contracted, but bleeding from the cervical os was continued. After consultation with an interventional radiologist, bilaterally uterine artery embolization was performed. Angiographic embolisation should be considered as the treatment of choice for intractable primary postpartum haemorrhage in appropriate selected cases.

Key Words: Uterine artery embolization, Postpartum haemorrhage

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Introduction

Postpartum hemorrhage remains a major cause of maternal morbidity and mortality. Causes of haemorrhage include uterine atony, retained products of conception, coagulopathies, abnormal placentation and lacerations to the birth canal. Uterine atony is the most common cause of primary post partum haemorrhage. Arterial embolization may be performed as alternative management to the traditional techniques including bilateral uterine or hypogastric artery ligation or hysterectomy to control bleeding. However, uterine artery embolization has several advantages over other more traditional techniques, because of the extensive collateral circulation in the pelvis, the success rate of this traditional approach may be as low as 42 %.[1] We report a case of postpartum haemorrhage which was successfully controlled with embolization of the uterine artery.

Case Report

A 28-year-old woman (gravida 2 and para 1) was admitted to our clinic in active labor at 39 weeks gestation with a decision of cesarean section. She had 1 previous caesarean delivery. The patient's prenatal course was entirely unremarkable. Two hours later, a lower segment Caesarean section was performed without complication, and a live female infant weighing 3200 g was delivered with an Apgar score of 9 at one minute and at five minutes. In the operation, there were colonic and omental adhesions in adnexial regions. The urinary bladder was densely adherent to uterine fundus due to the previous operation. After delivery, the uterus remained atonic. Hemorrhage was reduced with bimanual compression following intravenous oxytocin and intramuscular injection of ergometrine. The uterus was well contracted and the bleeding was controlled after an estimated blood loss of 1500 mL. Totally, 2 U of blood were given during the operation. In the recovery room, the patient was initially stable with a blood pressure of 110/60 mm Hg, pulse 88 per min. Later she complained of vaginal bleeding and examination revealed light bleeding from the vagina with a tonic uterus and blood pressure of 100/60 mm Hg, pulse 82 per min. The uterus was packed with sterile gauze and the patient received a total of 1 unit of blood and two units of fresh frozen plasma while the oxytocin infusion was continued. Despite this, there was minimal uterine bleeding from cervical os, the vagina was full of clots. The uterus was always well contracted. Because of the bleeding from the cervical os was continued, after consultation with an interventional radiologist to perform a diagnostic angiogram with possible arterial embolization, the patient was transferred to the X-ray department. Informed consent was obtained from the present case and their family had received an explanation of the potential risks and benefits of procedures. Noncontrast-CT revealed intraabdominal and pelvic hemorrhages (Fig. 1). Through the left femoral artery, bilateral inter-

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nal iliac and uterine artery angiograms obtained. Right IIA angiograms showed active extravasations from the right uterine artery. A catheter was positioned within the anterior trunk of bilateral IIAs just before uterine arteries. The anterior division of the both internal iliac artery was then embolized by coils Fig. 2, 3. The patient was transferred to the ITU. A series of haematological investigations were taken and showed finally haemoglobin 10.6 g/dl, no more blood products were given. The next day, she trasferred to our clinic. Continued improvement resulted in her discharge from hospital 7 days after her operation.

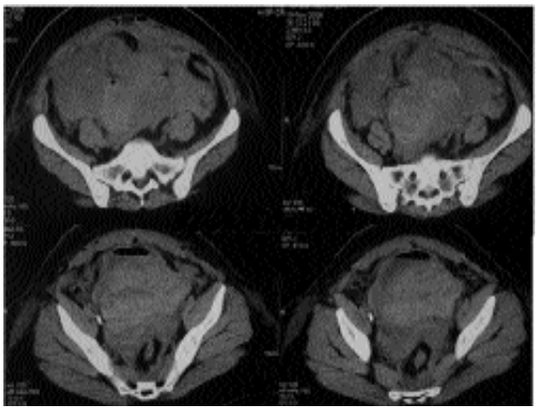

Figure 1: Noncontrast-CT revealed intraabdominal and pelvic hemorrhages

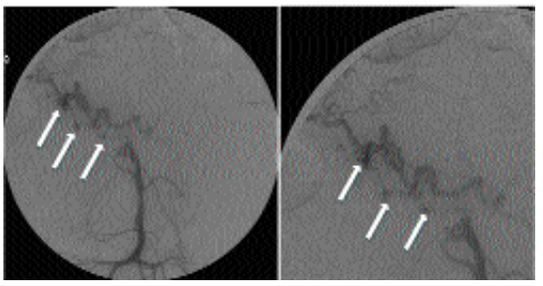

Figure 2: Angiogram showing active extravasations from the right uterine artery. (arrows from uterine artery branches)

Figure 3: DSA after embolization shows complete treatment of active extravazastions and abnormal vascularization

Discussion

Postpartum haemorrhage occurs in 2–11% of deliveries and is defined as greater than 500 ml blood loss after a vaginal delivery, and greater than 1000 ml blood loss after Caesarean delivery.[2] Postpartum hemorrhage may occur immediately or several hours or days after delivery. Uterine atony, which accounts for 75% of reported cases, is the main cause of primary postpartum hemorrhage, which is often associated with life-threatening situations.[3] Other causes of immediate PPH include lower genital tract trauma or hematoma, retained placental tissue, and congenital or acquired coagulopathy.[3,4] Rare causes include pseudoaneurysm of a uterine vessel, arteriovenous malformations, and choriocarcinoma.[5] In most cases, postpartum hemorrhage can be managed with conservative treatment by using uterotonic drugs. However, the patient's uterus was well contracted, and no source of bleeding was to be found as the causality. If uterine atony persists despite pharmacological intervention or if excessive bleeding continues in the face of adequate uterine tone, more aggressive methods of haemostasis may be required. Packing and other forms of uterine tamponade (urological hydrostatic balloon catheters) may be used but vascular ligation with or without hysterectomy may be needed.[6] Ligation of the uterine arteries or hypogastric arteries require laparotomies or re-laparotomies. For these reasons, transcatheter embolization of the uterine arteries may be an alternate treatment for intractable bleeding. In the present case, selective arterial embolization of the uterine arteries was effective and safe for the control of postpartum hemorrhage. Complications of pelvic embolization for postpartum haemorrhage occur at a rate of 8.7%. The commonest complication is low-grade fever and rarer ones include pelvic infection, groin haematoma, iliac artery perforation, transient buttock ischaemia, transient foot ischaemia or necrosis in small myometrial and endometrial areas and bladder gangrene.[7,8]

In conclusion, angiographic embolisation is a safe and effective method and should be considered as the treatment of choice for intractable primary postpartum haemorrhage in appropriate selected cases.

Kontrol Edilemeyen Kanamalı Bir Hastada Postpartum Uterin Arter Embolizasyonu

Postpartum kanama halen maternal morbidite ve mortalitenin en önemli sebebidir. Uterin arter embolizasyon yöntemiyle başarılı bir şekilde kontrol altına alınan postpartum kanamalı bir olgu sunuyoruz. Aktif eylemde olarak 39. gebelik haftasında bize başvurdu. Tek canlı, 3200 g, kız bebek komplikasyonsuz olarak sezaryen seksiyo ile doğurtuldu. Doğumdan sonra uterus atonik idi. Bimanuel kompresyon ve intravenöz oksitosin ile intramüsküler ergometrin injeksiyonu takiben kanama azaldı. Uyanma odasında, servikal ostan minimal uterin kanama mev-

cut, vajen tamamen pıhtı ile dolu idi. Uterus hep kontrakte idi, ancak servikal ostan kanama devam etti. Girişimsel radioloğu ile yapılan konsültasyon sonrasında, bilateral uterin arter embolizasyon gerçekleştirildi. Uygun seçilmiş vakalarda anjiografik embolizasyon tedaviye dirençli primer postpartum kanama için tedavi seçeneği olarak düşünülmelidir.

Anahtar Kelimeler: Uterin arter embolizasyon, Postpartum kanama

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