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Sciatic nerve ischaemia after iliac artery occlusion balloon catheter placement for placenta percreta



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ABSTRACT

Placenta percreta is a complex obstetric condition and a cause of life-threatening peripartum haemorrhage. National guidelines advise preoperative placement of internal iliac artery occlusion balloon catheters in such cases to reduce haemorrhage, avoid caesarean hysterectomy and preserve fertility. Maternal complications of prophylactic occlusion balloon catheter insertion include puncture-site complications and arterial thrombosis, the signs of which are usually immediately clinically evident. Presentation of ischaemic nerve injury attributable to iliac artery thrombosis secondary to the presence of an occlusion balloon catheter is as yet unreported. Awareness of this possible complication and local unit guidelines may allow early detection and treatment.

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Keywords: Placenta percreta; Iliac balloon catheter; Interventional radiology; Complications; Nerve injury

Introduction

Placenta percreta is characterised by placental invasion through the full thickness of the myometrium, and possible infiltration of adjacent abdominal organs. It is a serious maternal condition and a major cause of maternal morbidity and mortality.¹ Abnormal placentation occurs in 1 in 533 pregnancies and its incidence appears to be rising secondary to increasing caesarean delivery rates.^{2–4} Risk factors include advanced maternal age, placenta praevia and previous caesarean delivery. At delivery it can cause life-threatening maternal haemorrhage and it continues to be one of the main reasons for undertaking caesarean hysterectomy.⁵ Current national UK guidelines recommend preoperative radiological insertion of balloon occlusion catheters into the iliac arteries, with

the intention of reducing blood loss and preventing caesarean hysterectomy.⁶ Femoral sheaths can be left in situ temporarily in case of further postpartum haemorrhage requiring uterine artery embolisation (UAE).⁷ Complications of iliac artery balloon occlusion catheter (IABOC) placement have been reported but are usually immediately evident. We report the atypical presentation of lower limb and sciatic nerve ischaemia, which was attributable to iliac artery balloon occlusion, and discuss strategies to prevent similar complications.

Case report

A 34-year-old G2P1 woman was booked for elective caesarean delivery at 39 weeks of gestation for placenta percreta. Her past obstetric history included an elective caesarean delivery for placenta praevia three years previously, which had been complicated by a 5000 mL postpartum haemorrhage (PPH) that required management with recombinant factor VIIa, UAE and intensive

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care admission for two days. Recovery was uneventful and she had been discharged home after five days.

In this pregnancy, she presented with a booking body mass index of 30 kg/m² and developed gestational diabetes mellitus that was diet-controlled. Routine 21-week ultrasound scan showed a low-lying placenta, which was confirmed as placenta percreta at 36 weeks of gestation. The obstetric plan was for elective caesarean delivery at 39 weeks with prophylactic IABOC placement before surgery.

Following local unit guidelines, on the day of surgery she had an epidural catheter sited uneventfully at the L3-4 interspace. In the radiology suite, bilateral occlusion balloon catheters were introduced via the common femoral arteries and positioned in the anterior division of each internal iliac artery. After transfer to the obstetric theatre and before starting surgery, radiological screening confirmed correct balloon catheter positioning and no dislodgement. Surgery was performed under epidural anaesthesia and the presence of placenta percreta was confirmed. Following delivery of a live female infant, the occlusion balloon catheters were inflated. The placenta was excised using the Triple-P procedure.⁸ This is a surgical technique used at our unit which involves perioperative placental localisation and delivery of the fetus above the upper border of the placenta; pelvic devascularisation using IABOC and placental non-separation with myometrial excision and reconstruction of the uterine wall. The uterus and abdomen were closed and estimated blood loss was 2900 mL. Haemodynamic stability was maintained throughout and the woman was transferred to the obstetric high dependency unit. The IABOC were kept inflated for 5 h at the request of the obstetricians. Epidural analgesia was continued for 18 h postoperatively using intermittent bolus doses of 0.1% bupivacaine and fentanyl 2 µg/mL. Two units of red blood cells were transfused.

The next day, arterial patency was assessed angiographically in the interventional radiology suite before removal of the IABOC. The left catheter was in its original position; however, the right catheter had migrated into the common iliac artery (CIA) and was removed over a wire. Contrast injection through both common femoral arterial sheaths confirmed patency of the external iliac arteries and no complications were noted.

Ten hours after removal of the arterial catheters (15 h after the last epidural top-up), the patient complained of decreased sensation to her right foot. Mild foot drop, altered sensation to the dorsal, plantar and lateral aspect of the foot and a red band below the knee were noted. Peroneal nerve compression, secondary to a tight thromboelastic deterrent (TED) stocking, was thought to be the cause, and the stocking was adjusted. Continuing symptoms prompted a formal neurological examination, which confirmed the previous findings. A partial sciatic nerve lesion was diagnosed and outpatient magnetic res-

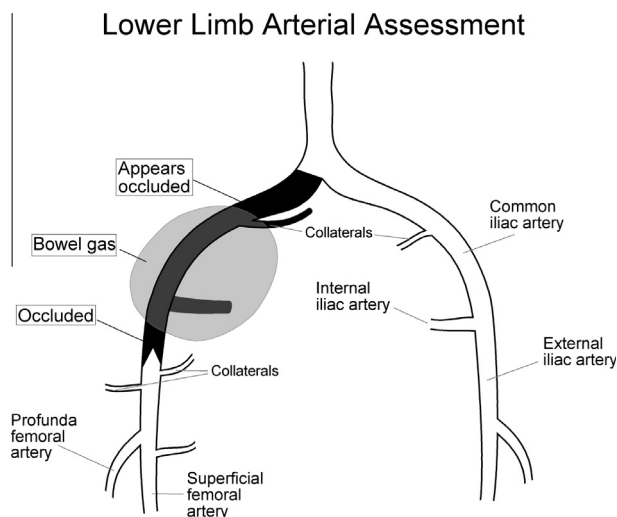


Fig. 1 Arterial duplex demonstrating common iliac artery occlusion and collateral flow

onance imaging (MRI) and nerve studies arranged. The patient was discharged home four days after surgery.

Two weeks later she returned to hospital complaining of severe pain and altered sensation in the right foot. Neurological findings were as before, but a dark ring around the toes prompted an assessment of arterial supply. This revealed absent arterial pulses throughout the right leg; despite this, the leg was warm and appeared well perfused. Duplex assessment of the lower limb demonstrated right CIA and external iliac artery occlusion, with blood supply to the limb maintained by collateral vessels (Fig. 1). Since the suspected injury was two weeks old and limb perfusion was maintained, conservative treatment and follow-up were recommended. The patient was discharged home the following day on dalteparin and analgesia.

On-going symptoms of foot pain and weakness were initially attributed to poor limb perfusion and claudication. Three months later, vascular duplex demonstrated recanalisation of the CIA and external iliac artery and objective reperfusion of the leg. Neurological symptoms persisted despite a normal lumbar MRI. Nerve conduction studies confirmed a persistent partial proximal sciatic nerve lesion, thought to be of ischaemic origin. Motor and sensory functions improved over four months, but persisting neuropathic pain has required treatment with amitriptyline and TENS.

Discussion

Elective insertion of IABOC in cases of placenta percreta was first described in 1997.⁹ Our unit, a tertiary obstetric and national referral centre with over 5000 deliveries per year and a caesarean delivery rate of 23%, has been using the technique routinely since 2007. Twenty-eight cases have been performed with no arterial complications,

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