



A RARE CASE OF COMPLICATION FOLLOWING INTERNAL ILIAC ARTERY BALLOON OCCLUSION PRIOR TO CESAREAN HYSTERECTOMY IN MORBIDLY ADHERENT PLACENTA

Obstetrics & Gynaecology

Dr. Anjali Gitte*	Junior Resident, Department of Obstetrics and Gynaecology, LTMMC and LTMGH, sion, Mumbai. *Corresponding Author
Dr. Archana Bhosale	Associate Professor, Department of Obstetrics and Gynaecology, LTMMC and LTMGH, sion, Mumbai.
Dr. Shweta Khade	Assistant Professor, Department of Obstetrics and Gynaecology, LTMMC and LTMGH, sion, Mumbai.
Dr. Arun Nayak	Professor and head of the unit, Department of Obstetrics and Gynaecology, LTMMC and LTMGH, sion, Mumbai.

ABSTRACT

A planned cesarean hysterectomy is the most commonly recommended management for pregnancy with a morbidly adherent placenta. Internal iliac artery balloon occlusion done prior to this can reduce the mother's risk of life-threatening hemorrhage. Like any procedure, internal iliac artery balloon occlusion also has potential risks. It can sometimes develop complications like arterial blockages requiring stent placement or bypass, thromboembolic events, fistulae, and rupture of arteries. Our case is a 27-year-old G3P2L1IUFD1 patient with previous LSCS with history of uterine scar rupture in last pregnancy with ultrasonography and magnetic resonance imaging suggestive of complete placenta previa with accreta percreta complex. she underwent an elective cesarean hysterectomy with preop internal iliac artery balloon occlusion. Postoperatively, she developed a thrombus in the right external iliac artery, which was detected by immediate post-operative bilateral lower limb doppler and managed successfully with thrombus aspiration. Detection of arterial thrombosis in immediate postoperative period following such procedures and its prompt management by thromboaspiration or embolectomy is important to prevent further complications. while reporting this complication, we wish to raise awareness regarding the importance of taking cautious efforts while doing this procedure, and establishing safety protocols to reduce its complications, and for proper monitoring of the patient during the immediate post-operative period.

KEYWORDS

Placenta previa, morbidly adherent placenta, Accreta percreta complex, Arterial balloon occlusion.

INTRODUCTION

Placenta previa is defined as abnormal localization of the placenta close to the internal os or partially or completely covering it [1]. Placenta accreta spectrum (PAS) was first described by Chattopadhyay et al [2] in 1993 as the main cause of obstetric hemorrhage and perinatal hysterectomy [3,4]. The Placenta accreta spectrum, formerly known as morbidly adherent placenta refers to a range of pathologic adherence of the placenta, including placenta accreta, placenta increta, and placenta percreta [5].

For pregnant women diagnosed with placenta previa with accreta percreta complex, a planned cesarean hysterectomy is the most commonly recommended management. Internal iliac artery balloon occlusion done prior to this can further reduce the mother's risk of life-threatening hemorrhage. like any procedure, balloon occlusion has potential risks. It can sometimes develop complications like blockages requiring stent placement or bypass, thromboembolic events, fistulae formation, hematoma at puncture site and rupture of arteries.

Case Description

We report a case of a cesarean hysterectomy in a 27-year-old G3P2L1IUFD1 female with previous 1 cesarean section followed by a history of uterine rupture in second pregnancy at 37 weeks gestation, with complete placenta previa with placenta accreta complex in present pregnancy. She was admitted at 36 weeks of gestation for elective cesarean hysterectomy. A well written, valid and informed consent was taken from the patient and relatives before the procedure.

The patient was vitally stable with no history of per vaginal bleeding in antenatal period. her hemoglobin level was 10.7 gm/dl, with the rest of the ANC profile within normal limits.

Ultrasound (US) imaging revealed total placenta previa with multiple vascular lacunae within the placenta. The placenta in the anterior wall reached the serous layer of the uterus, and thinning of the uterine serosa-bladder wall interface was observed. Scar's thickness was 3mm. The anomaly scan was normal. Magnetic resonance imaging (MRI) revealed Grade 4 placenta previa and placenta accreta complex with focal placenta percreta.

The placenta was located mainly on the anterior side. A T2 dark band, uterine bulging, myometrial thinning of the anterior wall, and

myometrium loss between the placenta and bladder wall were observed. Multiple linear processes that had invaded the myometrium were observed.

Pre-procedure, bilateral internal iliac artery cannulation was done by an interventional radiologist, by puncturing bilateral femoral arteries under local anaesthesia using the Seldinger technique and placing 7F arterial catheter sheaths along with 11.5mm sized balloon at its tip in bilateral internal iliac arteries under minimal fluoroscopic guidance after placing lead shield over the parturient to prevent radiation exposure to the fetus, and the patient was shifted to OT.

The right sided dorsalis pedis artery was not palpated, and the skin over the right lower limb was cold. Interventional radiologists confirmed the occlusion to be due to the indwelling catheter and reassured that it will be recovered after the procedure. An infraumbilical midline skin incision was made for broader access.

The lower segment of the uterus presented an atypical vascular pattern. Hence incision was taken above the placental edge to avoid this area. After the baby was delivered, placenta was left in situ, bilateral internal iliac artery cannulas were inflated in order to occlude the uterine blood supply and cesarean hysterectomy was performed.

Intraoperative Findings



Figure 1: Total placenta previa with increased vascularity of the uterine serosa-bladder wall interface, myometrial thinning of the anterior wall, and penetration of the placenta close to the serous layer were observed.

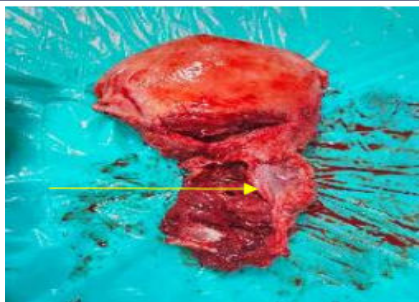


Figure 2: Total placenta previa with placenta-penetrating invasion and a large invasive area were observed. No boundary between the uterus and the placenta was seen.

Postoperatively, the right sided dorsalis pedis artery was still not palpable, and the skin over the right lower limb was still cold. Hence, the patient was immediately shifted to the interventional radiology department. A bilateral lower limb doppler scan revealed a 6 cm thrombus in the right external iliac artery. Emergency mechanical thromboaspiration with a guiding aspiration catheter was done under all aseptic precautions. A post-aspiration check scan revealed good flow in bilateral lower limb vessels, and the patient was shifted to the ward. Strict limb immobilization was advised for the next 6 hrs, compression stockings were given following which the patient was started on injection heparin 5000 IU qid for 3 days with continuous PT-INR monitoring and was later shifted to tablet rivaroxaban 2.5 mg BD.

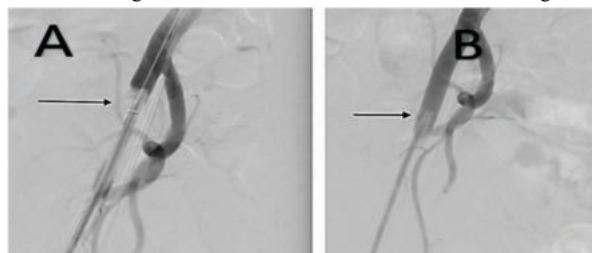


Figure 3: Angiography of the right external iliac artery. A: Thrombus in the external iliac artery (arrow). B: Thrombus removed, and flow restored after thromboaspiration.

The patient was discharged on day 22 and was given a tablet of rivaroxaban 2.5 mg BD for the next 3 months, and was advised to follow up once in 3 months. The patient was vitally stable on postoperative follow-up, and a repeat bilateral lower limb doppler revealed good flow in bilateral lower limb vessels.

DISCUSSION

Placenta accreta and its variants, increta or percreta, represent one of the most challenging situations confronted by obstetricians. The traditional standard management for this potentially life-threatening condition is temporary balloon occlusion to temporarily occlude the internal iliac arteries in order to reduce uterine perfusion and decrease the rate of blood flow, thereby reducing blood loss, improving visualization during surgery, allowing for urgent arterial embolization (if required), and possibly preventing hysterectomy [8]. However, until now, there is still a lack of significant evidence showing the benefit in terms of hemorrhage control and uterus preservation.

Like any Procedure, Balloon occlusion Has Potential Risks. It can sometimes develop complications like blockages requiring stent placement or bypass, thromboembolic events, fistulae, hematoma at puncture sites, and rupture of arteries. Iliac artery thrombosis has been reported to be the most common complication, with a risk of approximately 5% [9,10], which may occur due to changes in maternal blood flow, vascular injury during puncture and the hypercoagulable state of blood during pregnancy [10]. In a review of previous literature, arterial thrombosis associated with balloon catheter placement occurred in 3 Of 19 (15.8%) (Shrivastava et al., 2007), 2 Of 13 (15.4%) (Chou et al., 2015), 1 Of 27 (3.7%) (Teixida Vinas et al., 2014), and 2 of 21 subjects (9.5%) (Carnevale et al., 2011). The size of the balloon, the size of the arterial sheath and the time of balloon occlusion are also important factors. If the balloon is too large, arterial injury may occur. If the balloon occlusion time is too long, thrombosis and reperfusion injury of lower limbs may occur. Although the radiation exposure is

minimal, fetal exposure to radiation might turn out to be excessive in difficult cases such as obese patients, patients with abnormal anatomy and preexisting anasarca. Failed occlusion of the internal iliac arteries which is often due to extensive anastomosis in the pelvic vasculature and technique-related complications have contributed to the controversy over this procedure.

CONCLUSIONS

Early postoperative detection of arterial thrombosis and its immediate removal by thromboaspiration or embolectomy is important to prevent further complications. While reporting this complication, we do not wish to discredit the potential benefits of this procedure; rather, we wish to raise awareness regarding the possible and potential complications associated with its use, the importance of taking cautious efforts, using sheaths of sizes appropriate to the vessel and establishing safety protocols to reduce its complications, and for proper monitoring of the patient during the immediate postoperative period. The benefits of reducing blood loss must be balanced with the invasiveness of this procedure and the risk of maternal adverse events.

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