

Antepartum embolization in management of labor induction in placenta previa

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Summary

The authors present a case of a 29-year-old woman, gravid 2 para 1, who experienced complete placenta previa and underwent vaginal delivery, after performing antepartum uterine artery embolization and rivanol amniotic injection due to contraindication of obstetric surgery. In this case, treatment was successful despite thromboembolism. Hypercoagulability in pregnancy needs to be addressed.

Key words: Uterine artery embolization; Placenta previa; Induction; Medical abortion; Antepartum embolization.

Introduction

Placenta previa poses a high-risk for massive hemorrhage, from the antenatal period until after cesarean section. This condition increases the risk of maternal and neonatal mortality and morbidity [1]. Therefore, vaginal delivery in the third trimester is not recommended for pregnant women with complete placenta previa. This places physicians with a dilemma when patients with placenta previa request termination of pregnancy due to complications in the third trimester. The authors present a case of complete placenta previa who had vaginal delivery with the antepartum uterine artery embolization (UAE).

Case Report

A 29-year-old woman (gravida 2, para 0) presented to this department at 29 weeks of gestation seeking termination of pregnancy. She had a complete placenta previa (Figure 1) and severe malformation of fetus (single atrium and ventricle). On admission, her laboratory tests were normal.

The patient underwent UAE to prevent hemorrhage during the process of labor and delivery. The procedure was performed with a 5Fr Cobra-catheter via a femoral artery. Embolization of the right and left uterine arteries was preferentially carried out with pledgets of absorbable gelatine sponge (Figure 2). Due to enlarged uterus, it took 3.5 hours to complete the embolization, during which bilateral femoral arterial punctures were performed.

Twenty minutes after the embolization, rivanol (ethacridine, 100 mg/4 ml) amniotic injection was given. The patient complained of mild pain on her left leg five hours after embolization, but the physical examination was normal at that time. On the first day of post-embolization, the pain worsened. During physical examination, skin temperature of left leg was low and the pulsation of the dorsal artery of foot could not be palpated. A color Doppler was performed and a thrombus was found.

After consultation with vascular surgeons, an emergency embolotomy was performed. A 15-mm thrombus was removed from the left femoral artery. During surgery two units of packed red blood cells were transfused. After the procedure, intravenous heparin sodium (100 mg/250 ml saline) was infused over 24 hours.

During this anticoagulant therapy, the prothrombin time (PT) was in normal range, D-dimer was positive, activated partial prothrombin time (APTT), and thrombin time (TT) were extended to more than 120 sec.

On first postoperative day of thrombectomy, the patient was febrile with a rise in temperature to 38.9°C. She was given cefazolin sodium (one gm Bid) to control the fever.

Uterine contractions began after 29 hours of rivanol amniotic injection. The cervix was not dilated even after eight hours of contractions. Hence, intravenous oxytocin infusion (0.5%) was initiated. When the patient was in labor, inj heparin sodium infusion was stopped. There was sudden vaginal bleeding of about 150 ml when the cervix was dilated to one cm. On vaginal examination, spongy tissue was felt. No special treatment was given except for keen monitoring. No further hemorrhage occurred. After full dilation of cervix, the fetus was expelled within 15 minutes.

Following spontaneous vaginal delivery, the placenta failed to expel within 30 minutes. Manual removal of placenta was performed. During the procedure, most of the placenta was removed and some parts were adherent to the uterine wall which lead to vaginal bleeding (around 600 ml). A balloon tamponade was inflated in the lower uterine segment to control the bleeding. Blood coagulation profile returned to normal 12 hours after the delivery.



Figure 1. — Ultrasonography depicting placenta previa. BL: bladder; CX: cervix; Pt: placenta.

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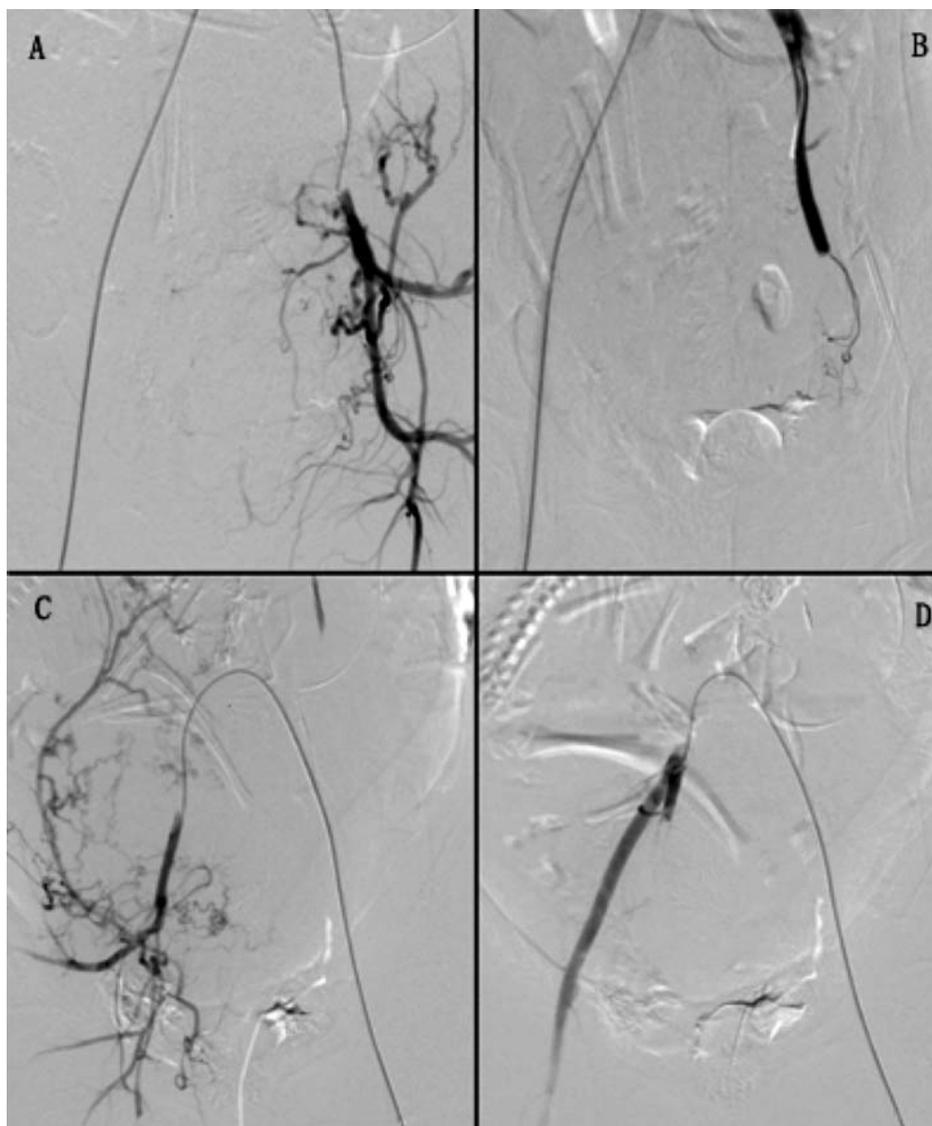


Figure 2. — Contrast images of the right femoral arterial punctures before (A) and after right uterine artery embolization (B). Contrast images of the left femoral arterial punctures before (C) and after left uterine artery embolization (D).

After two days of the delivery, ultrasonography (USG) depicted a mixed echo mass about 56 x 32 x 18 mm in size in the lower segment of the uterus, and its borderline was clear without abnormal vascular activity. The retained placenta was removed with uterine curettage and about 150 ml blood was lost. On fourth day, the patient was in stable condition with normal lab tests and ultrasonography. Menstruation resumed two months after the surgery.

Discussion

Despite the rarity to terminate pregnancy in the third trimester, there are circumstances where such practice is indicated for those with complications such as maternal medical indications, stillbirths, and fetal defects. Medical termination of mid-trimester pregnancy with placenta previa has also been reported [2-4]. In an optimal setting, patients at high-risk for hemorrhage are referred to tertiary care centres

where multidisciplinary teams are prepared to care for and deal with known potential complications [5]. This poses a prominent challenge in developing countries, where a sophisticated peripartum and maternal care system is not in place. Arterial embolization is a safe and effective treatment for persistent post-partum hemorrhage that is unresponsive to conservative management [6].

The arterial embolization in this case was performed in anticipation of antepartum and postpartum bleeding [2, 3]. The authors managed this case of 29 weeks of gestation with complete placenta previa by antepartum embolization followed by vaginal delivery. Uterine artery embolization blocks the main blood supply to the placenta, which prevents bleeding by preventing rupture of vessels during uterine contraction. From this experience, the authors conclude that cesarean section can be avoided by antepartum embolization in women

with placenta previa in third trimester. Medline research (English language; 1966-2012; search terms: “uterine artery embolization”, “placenta previa”, “induction”, and “antepartum embolization”), showed that this is the first report conducting antepartum embolization to manage labor induction for patient with placenta previa in the third trimester.

Patients in late pregnancy with hypercoagulability are prone to thromboembolic events. Thromboembolic occurrence has been reported in embolization therapy [7, 8]. Femoral artery thrombus occurred in this case, although the exact cause is unclear. However, this may be resulted from the pre-existing hypercoagulability together with the vascular damage incurred by repeated puncture in UAE. With increased pelvic vessel pressure caused by the enlarged uterus, catheterization may be a challenge and multiple attempts may be required. Therefore, it is crucial to be cautious about thromboembolism and take immediate intervention to prevent the occurrence of such complications.

Although data are scanty, antepartum UAE may serve as another option for those patients with complete placenta previa who require to terminate pregnancy with medical complications in late second and even third trimesters of pregnancy.

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