Case Report

Uterine artery embolization, not cesarean section, as an option for termination of pregnancy in placenta previa

Lingling Huanga, Reenu Awalea, Hui Tanga, ZhiShan Zengb, FuRong Lib, Yue Chena, *

a Department of Obstetrics and Gynecology, The First Affiliated Hospital of GuangXi Medical University, Nanning, GuangXi, China
b Department of Radiology, The First Affiliated Hospital of GuangXi Medical University, Nanning, GuangXi, China

A R T I C L E   I N F O

Article history:
Accepted 7 April 2014

Keywords:
labor induction
placenta accreta
placenta previa
pregnancy
uterine artery embolization

A B S T R A C T

Objective: To summarize our experiences in the treatment of labor induction in placenta previa using uterine artery embolization.

Case report: We retrospectively analyzed the clinical data of seven patients with placenta previa who underwent antepartum uterine artery embolization before vaginal delivery. After antepartum embolization, five patients with placenta previa had successful vaginal deliveries and two cases of placenta previa with accreta underwent emergency hysterectomy. Some complications were reported in this experience. The follow-up study showed that most patients resumed their normal menstruation and some of them were able to conceive.

Conclusion: For the management of placenta previa, uterine artery embolization is a minimally invasive technique that helps to avoid cesarean section. The impact on menstruation and fertility is yet to be seen.

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Introduction

The placenta begins to develop after blastocyst implantation into the endometrium. In some cases, the placenta is implanted in the lower uterine segment close to or even covering the internal cervix os, or invades through the endometrium and myometrium, which causes placenta previa and placenta accreta, respectively [1], which may lead to hemorrhage when vaginal delivery is attempted. Arterial embolization was first described by Brown et al [2] to control postpartum bleeding. We present our experiences with induction of labor for placenta previa with the help of antepartum uterine artery embolization (UAE).

Material and methods

A retrospective analysis of UAE performed for the management of abnormal placental implantation was carried out from November 2007 to December 2012. Abnormal placental implantation was preoperatively diagnosed using ultrasonography (USG), magnetic resonance imaging (MRI) or both. According to the diagnosis, all the patients were divided into two groups: placenta previa (PP) and placenta previa with accrete (PP+PA). In the PP group, all patients were diagnosed with total placenta previa using USG, within gestational age 22–29 weeks. These patients chose the vaginal route to terminate their pregnancy because of fetal death and serious fetal malformations. In the PA+PP group, gestational age was within 21–22 weeks, and was diagnosed as total placenta previa with placenta accreta with the aid of USG and MRI; patients desired to terminate the pregnancy because of persistent vaginal bleeding. All patients gave informed consent for their management.

Ethacridine lactate (Rivanol) amniotic induction was performed in five patients with placenta previa and in two patients with placenta previa with accreta soon after they received antepartum embolization. The contractile effect of ethacridine lactate is mediated through the activation of mast cells in the myometrium that release mediators, such as prostaglandin F2a, prostaglandin E2, prostacyclin, and thromboxane A2 [3].

This procedure was performed using a 5-Fr Cobra catheter (TERUMO, HangZhou, China) via a femoral artery approach. Embolization of both uterine arteries was carried out preferentially using pledgets of absorbable gelatin sponge (Elatine Sponge, NanJing, China), as well as Fibre Steel Coil (Cordis Corporation). For the PP and PP+PA groups, ethacridine lactate amniotic induction...
was performed after antepartum embolization. For the PP+PA group, methotrexate was injected into the uterine arteries before blocking the vessels with gelatin sponge. We confirmed all the patient’s vital signs were stable and that coagulation profiles were normal before embolization.

Results

All the placenta previa cases, who received antepartum embolization and ethacridine lactate amniotic induction, had successful vaginal deliveries without excessive blood loss (Cases 1–5; Table 1). In the PP+PA group, one case of placenta accreta with previa (Case 6) also had vaginal delivery but with retained placenta. Case 7 underwent cesarean section because of uncontrolled bleeding during labor. Eventually, Cases 6 and 7 underwent emergency hysterectomy because of massive hemorrhage (total blood loss during labor. Eventually, Cases 6 and 7 underwent emergency hysterectomy because of massive hemorrhage (total blood loss during labor.

With regard to the two cases of placenta previa with accreta, conservative management was unsuccessful, even though supported with adjuvant therapy, methotrexate, which acts by inducing placental necrosis and expediting placenta involution [7–10]. During the operation, we found that the placenta had already invaded the uterine wall, leading to placenta percreta. The reason for this may be the invasion of the uterine wall and posterior bladder wall by the placenta, and perfusion from the bladder artery. In this situation, UAE is not sufficient to block the blood supply completely to the placenta. Another possible reason may be due to continuous vascularization after embolization. Sherer et al [8] reported multiple bilateral UAE in patients with placenta previa percreta and the successful conservative management confirms this point.

Although UAE is effective for control of hemorrhage caused by placenta previa, a serious complication has been reported, namely, femoral artery thrombosis. We consider that the skilled technique described in the present study might be a measure to reduce this complication [11]. Infection was reported in our study, which can be controlled by prophylactic broad-spectrum antibiotic therapy.

With regard to the effect of embolization on the menstrual cycle, we showed that patients resumed their normal menstruation after 1–3 months, which was similar to the study of Descargues et al [12]. UAE provokes obliteration and reduction in uterine perfusion, thus, it is possible that uterine hypovascularization can induce some pregnancy complications later. In our study, there was the limitation of subsequent pregnancy after UAE, but it does not confirm that it was because of uterine hypovascularization that there was limitation of subsequent pregnancy. Randomized trials would be desirable to quell any future controversy [13].

In conclusion, the advantages of UAE in the management of placenta previa have been established. Our study indicates that a woman who undergoes arterial embolization can resume her normal menstruation and reproduction. As long as long-term effects are concerned, more cases need to be studied.

Conflicts of interest

The authors have no conflicts of interest relevant to this article.

Acknowledgments

The authors thank Gowreesunkur Purvarshi Devi for her assistance in writing the article in English.

References


