Case Report

Intramural Ectopic Pregnancy: Treatment Using Uterine Artery Embolization

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ABSTRACT

Herein is described the case of a 28-year-old woman in whom uterine artery embolization (UAE) was performed to treat intramural ectopic pregnancy. The intramural ectopic pregnancy was diagnosed at magnetic resonance imaging, which showed a gestational sac surrounded completely by myometrium. The UAE procedure was uncomplicated, with satisfactory results. Intramural ectopic pregnancy may be treated using UAE, which aids in maintaining fertility.

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DISCUSS

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Intramural implantation is among the rarest sites of ectopic pregnancy. The gestational sac is located within the uterine wall, completely surrounded by myometrium and separated from the uterine cavity and fallopian tubes. Ultrasonography and magnetic resonance imaging (MRI) offer the possibility of preoperative diagnosis. Herein, we report a case of intramural ectopic pregnancy, confirmed at MRI and treated using uterine artery embolization (UAE).

Case Report

The patient was a 28-year-old, gravida 2 para 0 abortus 1, Chinese woman. Ten months previously, her first pregnancy was terminated via outpatient suction curettage at 8 weeks' gestation, without complication.

At admission, the patient was noted to be thin and in moderate distress with lower abdominal pain. Her last menstrual period had been 6 weeks previously. Her initial blood pressure was 110/75 mm Hg; pulse was 80 beats per minute; and she was afebrile. Findings at general physical examination were unremarkable. The patient’s abdomen was soft, with no tenderness. Pelvic examination revealed no evidence of bleeding; the cervix was closed; and the uterus was as large as 6 weeks of gestation, with slight tenderness. Quantitative β-human chorionic gonadotropin (hCG) at presentation was 12 250 mIU/mL. At presentation, transabdominal ultrasound revealed a gestational sac with a yolk sac distinct from the endometrial cavity. MRI revealed that the gestational sac seemed to be surrounded by myometrium of fundus uterus, and the gestational sac was located at approximately the midline of the fundus uterus (Fig. 1). The finding of a gestation distinct from the endometrium, yet within the myometrium, suggested an intramural ectopic pregnancy.

Usually at our hospital, we use systemic or local methotrexate injection to treat intramural pregnancy; however, the patient feared that the uterus would rupture and selected UAE. During the operation, a 5F cobra catheter was used to select the left uterine artery using the road-mapping technique. The tip of the catheter was placed in the transverse segment of the uterine artery. After digital subtraction angiography (Fig. 2), 3 vials of 500 to 700 μm Tris-acryl microspheres were used to embolize the vessels supplying the gestational sac. The same procedure was repeated to embolize the right uterine artery [1] (Fig. 3). There were no complications after UAE.
After 1 week, serum β-hCG concentration decreased to 1525 mIU/mL, and 2 weeks later further decreased to 3.2 mIU/mL. Ultrasonography showed an irregular gestational sac, consistent with a failed pregnancy. The patient was discharged. Cyclic menses resumed at 2 months after UAE. At 5-month follow-up, the patient reported no discomfort; the β-hCG concentration had decreased to undetectable; color Doppler ultrasound showed no gestational sac or abnormal blood flow signal in the uterine fundus; and the pregnancy had resolved completely.

**Discussion**

Intramural pregnancy is unusual and difficult to diagnose. The pathologic diagnosis of an intramural ectopic pregnancy requires that the gestational sac be surrounded by myometrium and separated from the endometrial cavity and fallopian tubes. Intramural pregnancy can have various causes. Many hypotheses have been proposed to account for this lesion, including cesarean section [2], microscopic sinus tracts associated with adenomyosis [3,4], invasion of the uterine wall by placenta accreta and subsequent growth of the fetus deep within the myometrium, in vitro fertilization and embryo transfer [5,6], or seral implantation of conceptus after external migration [7]. In our patient, the only identifiable risk factor was a previous dilation and curettage.

Typically, the diagnosis of intramural ectopic pregnancy is not made until uterine rupture [3]. Before rupture, intramural ectopic pregnancy is difficult to observe at ultrasonography and can mimic a degenerating myoma or pregnancy in a sacculation, diverticulum, or congenital uterine anomaly [8]. As in the present case, in which MRI was used to rule out an interstitial pregnancy, an intramural ectopic gestation sac was completely surrounded by myometrium and independent of the endometrial complex. MRI was instrumental in enabling the diagnosis of intramural ectopic pregnancy in this patient.

Treatment of intramural pregnancy depends on when it is diagnosed. With uterine rupture, emergency hysterectomy is often necessary [9]. If intramural pregnancy is discovered before rupture, conservative management can be considered,
including expectant management [10], surgical enucleation, injection of potassium chloride into the gestation, or systemic or local methotrexate injection. Studies comparing outcomes after embolization and local methotrexate injection are limited. In 1 study, the serum β-hCG concentration in the UAE group recovered more quickly than in the non-UAE group [11].

Uterine artery embolization is associated with few adverse effects, and preservation of reproductive function was achieved in our patient. Selective UAE has many advantages including short operation time, little trauma, fast recuperation, and few adverse effects. Compared with hysterectomy, UAE preserves the uterus and reproductive function. Whether UAE is a safe procedure in women desiring preservation of fertility is controversial; however, some women who have undergone UAE have become pregnant and delivered successfully [12]. We believe that UAE may be used to treat intramural ectopic pregnancy in selected hospitals.

Because intramural ectopic pregnancy is difficult to manage because of high risk of maternal hemorrhage and uterine rupture, patients with a history of previous uterine trauma should be observed, with a high index of suspicion, to detect this potentially catastrophic event in its earlier stages. Uterine artery embolization was used in our patient for the first time, and its success enabled the possibility of continued fertility.

References