Case Report

Heterotropic pregnancy: Rare occurrence of a 12-week ruptured right isthmo-cornual ectopic along with a viable intrauterine pregnancy

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ABSTRACT

Heterotropic pregnancy, although a rare condition, is associated with a greater frequency in assisted reproduction. It occurs in approximately 1 in 100 pregnancies conceived by *in vitro* fertilization (IVF) particularly when multiple embryos are transferred into the uterus. We report a case of heterotropic pregnancy following IVF with the rupture of an isthmo-cornual pregnancy at 12 weeks of gestation with uneventful progression of the intrauterine pregnancy. Laparotomy was performed for the excision of the isthmo-cornual pregnancy. The intrauterine pregnancy continued uneventfully. A female baby was delivered by elective cesarean section at 33 weeks.

KEY WORDS: Cornual, heterotropic pregnancy, intrauterine pregnancy, isthmus, laparotomy, rupture

INTRODUCTION

Heterotropic pregnancy, although a rare condition, is associated with a greater frequency in assisted reproduction. It is a rare clinical entity occurring in both spontaneous cycles as well as after assisted reproductive technology (ART). The incidence in the former is about 1 in 30,000 pregnancies[1,2] and as high as 1 in 100 after ART.[3] It is a potentially fatal condition that has high maternal morbidity or even mortality if there is a delay in diagnosis and management.

The majority of ectopic pregnancies usually implant in the ampullary region of the fallopian tube, followed by the isthmus and the cornua. When it implants in the isthmo-cornual portion of the fallopian tube, which occurs rarely, the resulting heterotropic pregnancy is more risky because it may escape detection. This may be due to the musculature allowing expansion of the pregnancy in this junction and suddenly undergoing rupture leading to massive hemorrhage and maternal death. We present a case of isthmo-cornual heterotropic pregnancy following *in vitro* fertilization and embryo transfer (IVF-ET), complicated with the rupture of isthmo-cornual pregnancy at 12 weeks. She underwent laparotomy and subsequently had an elective cesarean delivery of the intrauterine gestation.

CASE REPORT

Mrs. MG, a 25-year-old lady, presented at our center with 6 years duration of primary infertility. Her periods were regular except for history of congestive dysmenorrhea. She was a known case of severe endometriosis with history of endoscopic surgery done twice for the same (right ovarian endometriotic cystectomy with adhesiolysis). She had subsequently received oral danazol therapy for 4 months following surgery.

Her pelvic ultrasound revealed the size of uterus as 5.7 × 2.8 cm, right ovary 2.8 × 2.3 cm, and left ovary 3.5 × 2.5 cm. Hormonal analysis showed follicle stimulating hormone (FSH) level of 10.91 mIU/ml and luteinizing hormone (LH) level of 8.81 mIU/ml with normal thyroid and prolactin levels. She was advised a combination hormone replacement therapy with injectable estrogen and progesterone to grow the uterine size to normal (6.0 × 3.0 cm) prior to the ART program. Husband's semen analysis showed oligoasthenozoospermia.

The couple was counseled on all aspects of their IVF program, including the possibility of requirement for donor oocytes. But the couple was not ready for treatment and was lost to follow-up. They came back to us for treatment after 1½ years with recurrence of left-sided endometrial cyst measuring 5.0 × 5.0 cm. She opted for an outpatient procedure, and hence transvaginal aspiration of endometriotic cyst was done, along with injectable Lucrin depot (Abbott India Limited, Mumbai, India) 3.75 mIU administered to her intramuscularly. All along, her FSH continued to remain high and owing to recurrent endometriosis, previous poor response to treatment outside, and high hormonal levels, the couple was advised ART with option of a donor program. They were willing and wanted to attempt one cycle with their own gametes. Long protocol with gonadotropin releasing hormone (GnRh) analog and ovarian hyperstimulation with gonadotropins was used following which only two dominant follicles were seen and aspirated. Only one oocyte was retrieved and the couple immediately signed consent for use of donor oocytes. Intra Cytoplasmic Sperm Injection(ICSI) was done and four embryos were transferred using one of own and three with donor embryos. Her first b-human chorionic gonadotropin (b-hCG) was 163.3 mIU/ml and second b-hCG was 437.1 mIU/ml after 48 h.

Her antenatal scan at 38 days showed a single intrauterine gestational sac with both adnexae normal. Patient was followed up with weekly antenatal scan. In the initial two to three scans, adnexae were also scanned owing to our previous experience with both concurrent cervical and tubal pregnancies. At 12 weeks of pregnancy, the patient came to us with acute lower abdomen pain.

A repeat scan of the adnexae revealed an organized sac with a fetus corresponding to 11–12 weeks. Patient's general condition and vitals were stable. A decision was made for laparotomy and to our disbelief, it was a ruptured isthmo-cornual ectopic with the fetus floating freely in the peritoneal cavity [Figures 1 and 2]. Right salpingectomy was performed and hemostasis was secured. Postoperative evaluation revealed a viable intrauterine pregnancy and no compromise to existing condition.

Patient progressed uneventfully until 10/02/2009, when she came to us with preterm labor on 13/02/2009 and was immediately taken up for *Lower segment Cesarian section* (LSCS). Patient delivered a healthy female child weighing 1.96 kg at her 33 weeks [Figure 3].

DISCUSSION

Ectopic pregnancies involving the isthmus and corpus are very rare and are a potentially life-threatening condition.

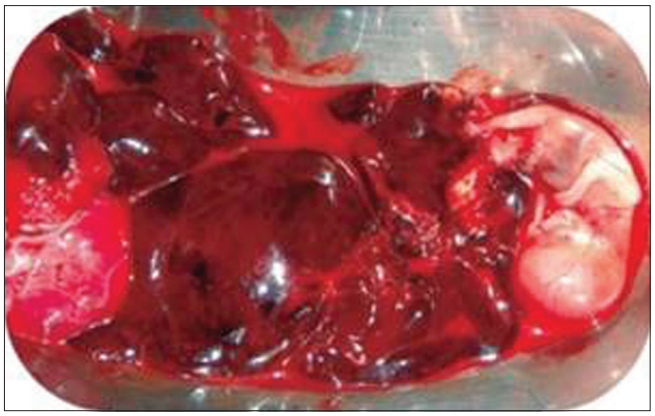

Figure 1: Fetus with few clots floating in the peritoneal cavity

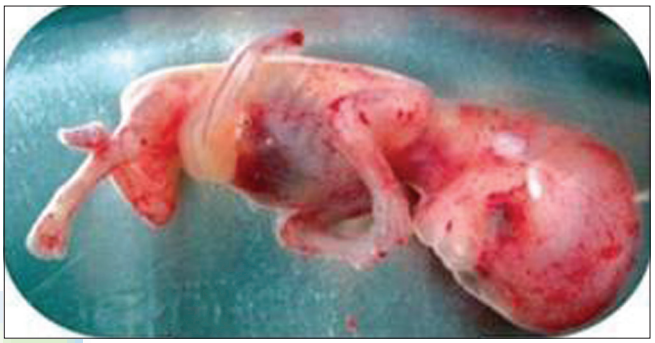

Figure 2: Aborted fetus

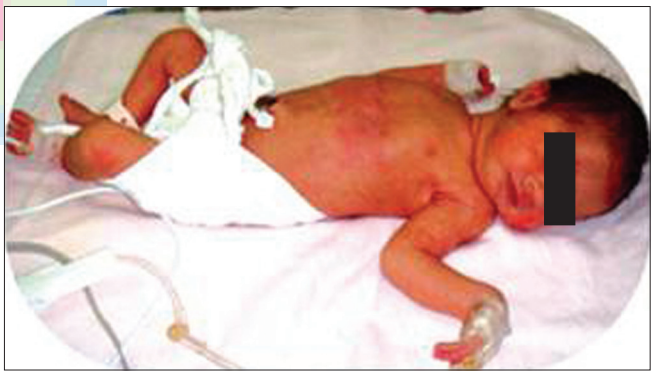

Figure 3: At birth

It often ruptures later than other tubal pregnancies because the myometrium is more distensible than the rest of the fallopian tube. They are significant because placental involvement of the cervix can cause erosion of the uterine arteries and massive bleeding when placental removal is attempted.

It has been believed that increased risk of heterotropic pregnancy after IVF cycles is largely due to high number of transferred embryos in a given cycle and possible tubal damage in infertile women. The other possible reasons for the ectopic pregnancy include perforation of the cervix or uterus at embryo transfer, migration of the embryos from the uterus to the broad ligament via the contralateral fallopian

tube, and recanalization of the post-tubectomy stump of the fallopian tube at the junction of the isthmus and cornua.[4]

Laparotomy is the choice of treatment reserved for cases of internal bleeding as in our case. The success of laparotomy is also mentioned in several studies.[5] The main issue in the treatment of heterotropic pregnancy is to be as minimally invasive as possible to preserve the development of the intrauterine pregnancy with subsequent successful pregnancy outcome. The survival rate of the intrauterine pregnancy of a patient with a diagnosis of heterotropic pregnancy has been reported to be 66% after surgical treatment.[6] Cornual pregnancy diagnosed at 18 weeks of gestation after uterine rupture was reported.

Since the diagnosis of heterotropic pregnancy in the present case was made late at 12 weeks, it ended up in an emergency laparotomy. Such a catastrophe can be prevented by early diagnosis through extensive adnexal scanning during initial antenatal visits. However, our case study reports that anticipation is most effective in facilitating early management and reducing morbidity. Despite adequate scanning, anticipating the diagnosis could lead to a great management even if it was not detected early enough. Most cases are usually dealt with by laparoscopy, although a laparotomy is better suited for cases with advanced ectopic gestation, such as our own.

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