Case Report

Ovarian cystectomy of an ovarian ectopic pregnancy conceived by *in vitro* fertilization

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ABSTRACT

A rare case of a 28-year-old female who suffered from a right ovarian ectopic pregnancy conceived by *in vitro* fertilization (IVF) is illustrated in this paper. She had history of one earlier pregnancy conceived with intrauterine insemination (IUI) that led to right tubal ectopic pregnancy, which was treated conservatively. At subsequent IVF cycle, she presented at 9 weeks of gestation with the compliant of severe pain in lower abdomen and mild vaginal bleeding. Serum β-human chorionic gonadotropin (β-hCG) concentration was 7,843 IU/L. Transvaginal sonography suggested a mass of 4.0 cm × 3.6 cm × 4.9 cm adjacent to the right ovary with cystic area interpreting right ovarian ectopic pregnancy. Prompt decision of laparoscopic management was taken depending upon the status of the patient and the desire to preserve her fertility. The ectopic tissue was aspirated laparoscopically while conserving more than 50% of the ovary. The ovarian pregnancy was also confirmed histologically. Early and accurate diagnosis and prompt management of ovarian ectopic pregnancy can preserve fertility.

Keywords: Laparoscopy, ovarian ectopic pregnancy, transvaginal sonography

INTRODUCTION

Ovarian pregnancy is a rare variety of ectopic implantations. Ovarian ectopic pregnancy was first reported by St. Maurice in 1682. The frequency of ovarian pregnancy is less than a tubal pregnancy and it constitutes 0.5-1% of all ectopic pregnancies. Although the incidence of ectopic pregnancy is on rise after assisted reproductive technology, ovarian ectopic pregnancy is still a rare event.[2]

Abdominal pain and vaginal bleeding is the most common presenting complaint, but the severity and nature of the pain varies widely. Ovarian pregnancies could be misdiagnosed because they are mostly and easily confused with a ruptured corpus luteum.[1] Here, we report a case of ovarian pregnancy after *in vitro* fertilization (IVF) diagnosed and treated conservatively by ovarian cystectomy.

CASE REPORT

A 28-year-old female with complaint of infertility for 2.5 years presented at our hospital. Routine hormonal investigations showed normal thyroid-stimulating hormone (TSH) and prolactin (PRL) levels, with 1.8 μg/L anti-Mullerian hormone (AMH) level interpreting low fertility potential. Transvaginal sonography showed low antral follicle count suggesting ovarian reserve as borderline. Other investigations of the couple were normal. After a period of 4 months, the patient conceived with IUI, which was planned with controlled ovarian stimulation. Following conception, she was admitted with complaint of right abdominal pain, and right tubal ectopic pregnancy was diagnosed that was managed by operative laparoscopy.

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After a period of 1 month, Artificial Reproduction Technology (ART) was planned. She was given short flare-up protocol, down regulation was achieved with leuprolide acetate from day 2 followed by ovarian stimulation with recombinant follicle-stimulating hormone (FSH) (Folligraph, Bharat Serum and Vaccines Limited, India) of 2,475 IU dose and hMG-gonadotropin (Menodac, Zydus Cadila Healthcare Limited, India) of 1,800 IU dose followed by hCG (Ovitrill) injection on day 11 of menstrual cycle. Endometrium thickness was 13 mm. Nine oocytes were retrieved of which four were fertilized by IVF procedure and five by intracytoplasmic sperm injection (ICSI) procedure. On day 5, two expanding blastocysts were transferred under ultrasonography guidance using embryo replacement catheter (K-JETS-6019-SIVF, COOK Incorporated, USA). Two weeks following embryo transfer, urine pregnancy was positive.

At 9 weeks of gestation, the patient presented with severe abdominal pain with mild vaginal bleeding since a day. Serum β-human chorionic gonadotropin (β-hCG) concentration was 7,843 IU/L. Transvaginal sonography suggested a normal uterus, endometrial thickness of 7 mm, normal left ovary, and adnexa. Adjacent to the right ovary there was a 4.0 cm × 3.6 cm × 4.9 cm mass with cystic area interpreting right ovarian ectopic pregnancy. After a proper counseling of the patient, the prompt decision of operative laparoscopy was taken. The findings fulfilled the Spiegelberg (1878) criteria for diagnosis of ovarian pregnancy, i.e., ipsilateral tube should be intact and separate from the ovary, the sac must occupy the position of the ovary, it must be attached to the uterus by ovarian ligament and ovarian tissue must be demonstrated in the wall of the sac.

Laparoscopic examination revealed 40-55 cc blood in the cavity while uterus was bulky soft. Blood was aspirated from the peristoneal cavity. Left tube, left ovary, and right tube appeared to be normal. Right ovary showed big blood clot on upper pole showing ectopic pregnancy inside the ovarian cortex that was partially ruptured [Figure 1]. The whole of ectopic tissue was aspirated and removed. The edge of the ovarian capsule showed minimal bleeding. After resection, more than 50% of her right ovary was conserved [Figure 2]. The histology of the resected tissue also confirmed the ovarian pregnancy [Figure 3]. The operative procedure was uneventful.

DISCUSSION

The etiology of ovarian pregnancy remains unclear, but it has been mostly associated with IVF,[3,8] intrauterine device use, and ovulation induction.[4-6]

Ovarian ectopic pregnancy is mostly confused with tubal ectopic pregnancy and ruptured corpus luteum cyst as all the three of the above conditions have the same clinical picture and presentation. In ovarian ectopic pregnancy, the patient usually presents early in gestation as the ovary can accommodate the gestation for a short duration as the tunica albuginea is weakened by the invading cytotrophoblast. Due to the increased vascularity of the ovarian tissue it was common to sustain massive hemorrhage with rapid circulatory collapse.[1] It has been reported that the presentation of ovarian ectopic pregnancies can be delayed.[9]

Figure 1: Laparoscopic finding showing a ruptured right ovarian pregnancy

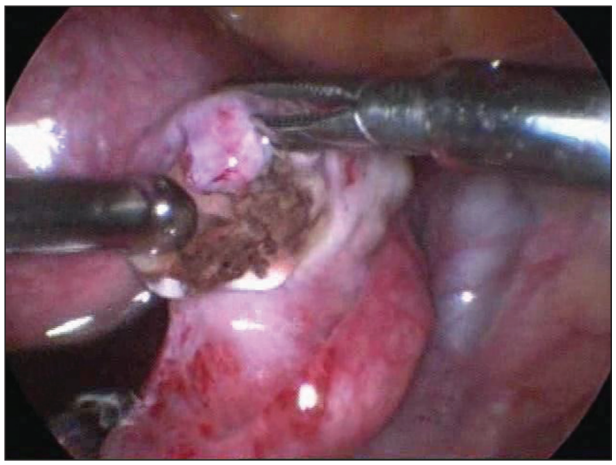

Figure 2: Laparoscopic postreaction of ovarian ectopic pregnancy

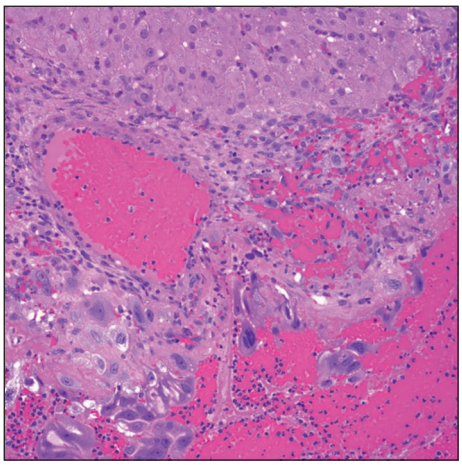

Figure 3: Histology slide of ovarian ectopic pregnancy
Comment: Corpus Luteum surrounded by immature villi and trophoblastic elements suggesting ovarian ectopic pregnancy

The rarity of this type of ectopic pregnancy universally results in the lack of therapeutic protocols on optimal management. The selection of treatment modality is based on severity of symptoms, medical condition of the patient, desire to preserve fertility, gestational age, and surgical experience.

Laparoscopic conservative surgery (ovarian cystectomy or wedge resection) with repair of the ovarian tissue is the standard management and the aim should be to conserve the ovary on which the ectopic pregnancy is attached. For hemodynamically unstable patients, urgent laparotomy should be considered.[7] Methotrexate is a good alternative to laparoscopic management in case of unruptured ovarian ectopic pregnancy; however, its toxicity has to be taken in account.[8] Ovarian ectopic pregnancy has a varied surgical presentation and in spite of advances in clinical sciences correct presurgical diagnosis of ovarian ectopic still remains uncertain as it commonly mimics with tubal ectopic, ruptured corpus luteum, and torsion of the ovary.

CONCLUSION

Although ovarian pregnancy is a rare event, awareness of this condition is important as timely recognition and early referral is of prime importance. This case demonstrates that ovarian pregnancy may be diagnosed and treated conservatively with ovarian cystectomy by the use of operative laparoscopy.

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Conflicts of interest

There are no conflicts of interest.

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