

Laparoscopic management of a bilateral ovarian pregnancy after failed methotrexate treatment

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Summary

To date, there have been three reported cases of bilateral ovarian pregnancy including the case reported here. As infertility has increased, so has the use of assisted reproductive techniques and in turn, the incidence of rare forms of ectopic pregnancy. The authors report a 32-year-old woman who underwent in vitro fertilization and embryo transfer (IVF-ET) and was shown to have an ectopic pregnancy through pelvic ultrasonography and serum beta-human chorionic gonadotropin. She was unsuccessfully treated medically (methotrexate single dose injection) and an emergency laparoscopy was subsequently performed. The laparoscopic finding was that both fallopian tubes appeared normal but a bilateral ovarian pregnancy was confirmed. Resection of the ectopic tissue was performed. Of the published cases of bilateral ovarian pregnancy, this is the only case managed laparoscopically. This case is of clinical significance as preserving as much ovarian tissue as possible is key in preserving fertility and promoting a quick recovery.

Key words: Fertilization in vitro; Laparoscopy; Ovarian pregnancy.

Introduction

As the number of infertility patients worldwide has increased, so has the use of assisted reproductive technology (ART) and in turn, the rate of ectopic pregnancy. Among the 94,118 ART pregnancies, 2009 (approximately 2.1%) were ectopic [1]. The ectopic pregnancy rate after in-vitro fertilization and embryo transfer (IVF-ET) has been reported as 4.9% [2], which is much higher than the rate of natural pregnancy. The importance of controlling the number of embryos transferred is important considering the state of the patient; however, compromised pregnancies and unique ectopic pregnancies have been consistently reported.

Ovarian pregnancy is an unusual form of ectopic pregnancy occurring with a frequency of one case per 7,000 deliveries [3]. Of the reported ovarian pregnancies, the majority are one-sided. Bilateral ovarian pregnancy is an extremely rare phenomenon. To date, there have been two cases of bilateral ovarian pregnancy reported in the literature [4]. Here in, the authors report a laparoscopic approach for managing a bilateral ovarian pregnancy after IVF-ET.

Case Report

A 32-year-old woman, who was seen as an outpatient, was admitted with lower abdominal pain. Upon admission, her vital signs were stable and there was direct tenderness and rebound tenderness on physical examination of the right and left lower

quadrant.

The patient had no history that affected her fertility; however, following her marriage in 2011, she was unable to conceive. A hysterosalpingography was performed in 2012, which revealed no specific findings. Following two failed intrauterine insemination attempts at a private hospital, IVF-ET was attempted. Ten oocytes were obtained after ovarian hyperstimulation, and three embryos were transferred. During continuous follow up, her serum beta-human chorionic gonadotropin (β -hCG) concentration increased from 736 μ IU/ml to 4,212 μ IU/ml over four days, but a gestational sac was not observed in her uterus.

After appropriate counseling, a single dose of methotrexate (50mg/m²) was administered at a local clinic; however, the treatment failed. Her serum β -hCG concentration increased to 10,850 μ IU/ml, and an ectopic pregnancy lesion was detected in the left side of the pelvic cavity. As the patient complained of lower abdominal pain, she was transferred to the present hospital. At admission, transvaginal ultrasonography showed a small amount of fluid collection, suggested to be hemoperitoneum, and a left ectopic focus was suspected. The authors chose to perform emergency laparoscopic surgery because her condition was likely to worsen. On laparoscopy, the uterus was ovoid, with a size of a goose egg, and without any specific shape. Both the fallopian tubes were intact. There was bleeding of 300 cc in the posterior cul-de sac (i.e. hemoperitoneum) was noted. Both ovaries revealed an ectopic pregnancy; the right ovary had a one-cm protruding mass and the left ovary had a two-cm mass covered with a blood clot (Figure 1). The authors performed an ectopic pregnancy resection, preserving as much normal ovarian tissue as possible. The post-operative serum β -hCG level was 2,163 μ IU/ml after two days and 215 μ IU/ml after one week. The ectopic pregnancy was confirmed by post-surgical pathologic evaluation of tissue from each ovary (Figure 2). The patient was discharged in good general condition.

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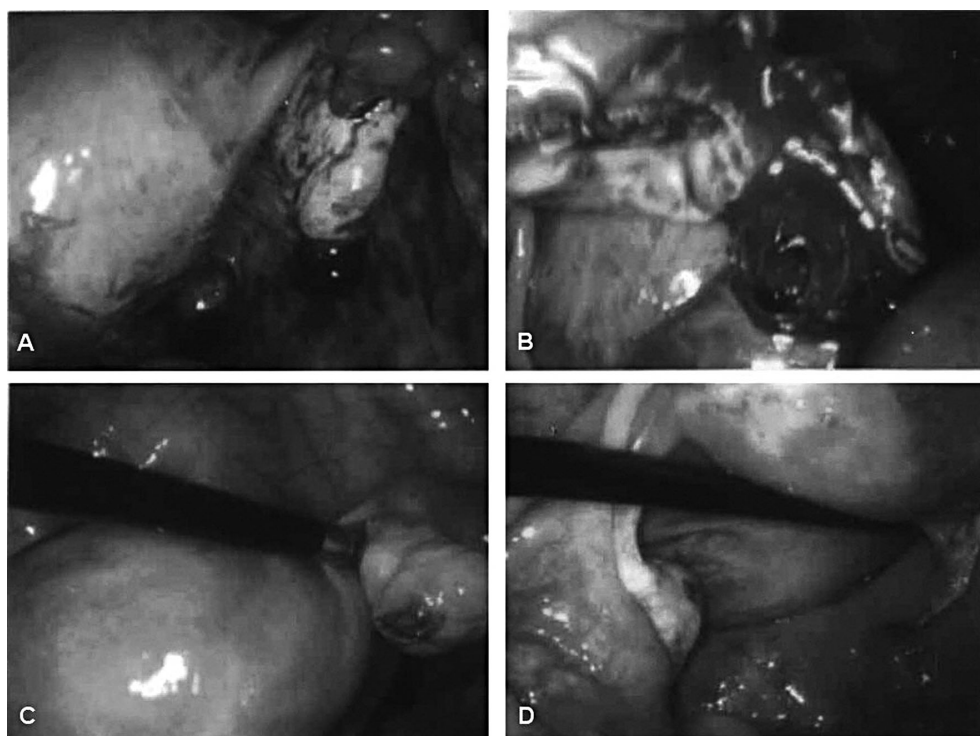


Figure 1. — Laparoscopic findings of bilateral ovarian pregnancy (A is right, B is left side). After excision of bilateral ectopic tissue, normal ovarian tissue remained (C, D).

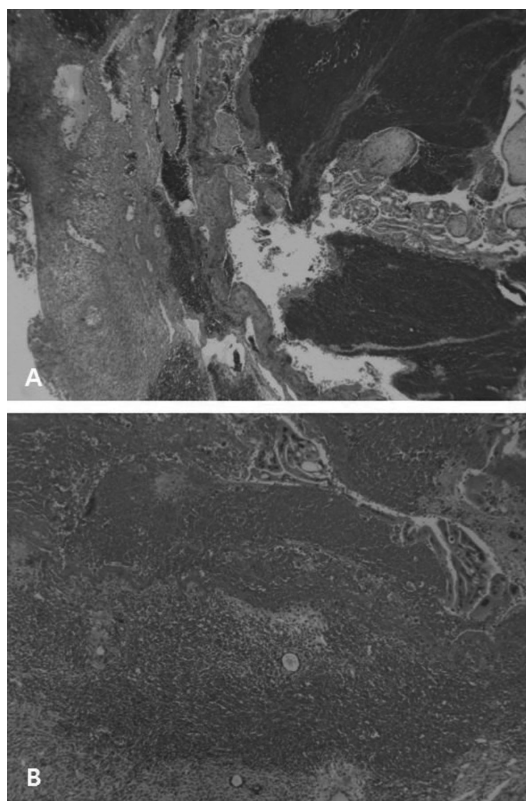


Figure 2. — Pathologic findings of excised right (A) and left (B) ovarian ectopic masses: infiltration of inflammatory cells with hemorrhagic congestion and degenerated villous trophoblasts with oocyte (H&E stain, $\times 100$).

Discussion

Ovarian pregnancy is a rare type of ectopic pregnancy that can be life threatening if diagnosis and treatment is delayed. Ovarian pregnancy occurs in 3.2% of all ectopic gestations [3]. The criteria for diagnosis have been defined by Spiegelberg [5], as follows: the ipsilateral tube on the involved side is intact; the gestational sac is located in the region of the ovary; the pregnancy must be attached to the uterus by the ovarian ligament; and ovarian tissue in the gestational sac wall must be proved histologically. The present authors were able to confirm the ovarian pregnancy according to the criteria given by Spiegelberg through laparoscopic and pathologic results. The triad symptoms (including pelvic mass, lower abdominal pain, and vaginal bleeding) are predictive factors in patients with ovarian pregnancy [6]; however, because unruptured ovarian pregnancy can be asymptomatic, the triad symptoms by using transvaginal ultrasonography are more helpful for early diagnosis. In this case, β -hCG levels markedly increased but a gestational sac was not detected in the intrauterine cavity. The patient complained of lower abdominal pain and a pelvic mass was detected on transvaginal ultrasonography. Based on this evidence, the authors were able to confirm the ectopic pregnancy (possibly a ruptured type). However, it is difficult to distinguish between ovarian pregnancy from tubal pregnancy on the basis of β -hCG levels and ultrasonography findings. Ovarian pregnancy can be verified through laparoscopy [7]. Generally, an ovarian pregnancy is detected later and the rupture risk is higher. If an ovary is damaged, then the chance of

preserving ovarian tissue is reduced. Therefore, early diagnosis of ovarian pregnancy is important for preserving fertility.

Prior pelvic inflammatory disease or a history of pelvic surgery, and the use of intrauterine devices (IUD) are risk factors for ovarian pregnancy. The greatest risk factor is the use of an IUD [8-10]. The three reported cases of bilateral ovarian pregnancy occurred in women who had undergone ART such as intrauterine insemination or IVF-ET [4, 11]. The detection rate of abnormal pregnancy (previously unexplored review) is higher in patients who have undergone ART.

The medical treatment of ovarian pregnancy is not significantly different from other ectopic cases. Methotrexate treatment is indicated if the β -hCG level is $< 1,000 \mu\text{IU/ml}$ and a non-symptomatic, non-visible mass has been detected on ultrasonography. Medical treatment is also indicated if the β -hCG level is $< 5,000 \mu\text{IU/ml}$ with an adnexal mass of $< 4 \text{ cm}$ and stable hemodynamic conditions [12]. If medical treatment fails, or conditions such as hemoperitoneum are suspected, emergency surgical treatment (laparoscopy or laparotomy) is necessary. Laparoscopic management of ovarian pregnancies has many advantages compared to laparotomy, namely, less adhesion and bleeding, lower costs, shorter operating time, and admission stay [13-15]. This is the only case describing the laparoscopic diagnosis and treatment of bilateral ovarian pregnancy. Laparoscopic management is warranted for the protection of ovarian volume and function, and for minimizing damage to a patient's fertility.

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