

Laparoscopic Management of Primary Ovarian Pregnancy

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Abstract

Background: Ectopic pregnancy (EP) is a leading cause of pregnancy-related death in early pregnancy increasing in incidence worldwide. Ovarian ectopic pregnancy (OP) comprises 0.15% of all pregnancies and 1% to 3% of ectopic gestations. **Case Report:** A patient who was detected with OP was treated with laparoscopic surgery is described. The patient was admitted through emergency or outpatient department and managed by laparoscopy. The diagnosis of ovarian pregnancy was based on history, clinical symptoms, physical examination, a positive serum B-human chorionic gonadotropin (B-HCG), and transvaginal ultrasonography. Patient was informed pre-operatively about the surgical procedures. In the patient, ovarian wedge resection was performed to restore and preserve the ovarian tissue. There was no further therapeutic intervention in the follow-up course. Postoperative recovery period was normal. **Conclusion:** Primary OP may occasionally occur in patients with a suspected EP. Signs and symptoms suggestive of extrauterine pregnancy, TVS, and serum β -hCG dynamics can be a useful adjunct to allow the preoperative diagnosis of OP prior to the use of the diagnostic gold standard, diagnostic laparoscopy. Preservation of ovarian tissue should be the therapeutic goal to maintain ovarian reserve and preserve fertility in young women with OP.

Key words: Laparoscopy; Ovarian pregnancy; Transvaginal ultrasonography.

INTRODUCTION

Ectopic pregnancy (EP) is a leading cause of pregnancy-related death in early pregnancy increasing in incidence worldwide.^{1,2} Fortunately, after the advent of high-resolution transvaginal ultrasonography and beta subunit of hCG (beta-hCG) tests, the accurate diagnosis of EP can now be made at an early stage. Surgery remains the mainstay of treatment.^{3,4} Improved anesthesia and cardiovascular monitoring, together with advanced laparoscopic surgical skills and experience, justifies operative laparoscopy for surgical treatment of EP even in women with hemodynamic instability.^{5,6} The advantage of operative laparoscopy for EP over laparotomy is well recognized: it is associated with shorter operation time, less intraoperative blood loss, shorter duration of hospital stay, and lower analgesic requirements.^{4,7} Significantly fewer adhesions develop in laparoscopic surgery.⁸ The laparoscopic approach is also associated with significantly lower costs.⁹ Ovarian pregnancy (OP) is a rare form of EP occurring in 0.15% of all pregnancies, i.e., 1 in 7,000 deliveries.¹⁰ Within this, 3.2% of all extrauterine pregnancies have been demonstrated to be of ovarian origin with a higher occurrence rate in patients following in vitro fertilization

(IVF).¹⁰ It can be classified as primary and secondary. Primary is when ovum is fertilized while still within the follicle, whereas secondary is when fertilization takes place in the tube and the conceptus is later regurgitated to be implanted in the ovarian stroma. They can be either intrafollicular or extrafollicular. Intrafollicular is invariably primary and extrafollicular may be primary or secondary where ovarian tissue is usually absent in the gestational sac. Diagnosis of OP are highlighted by criteria defined by Spiegelberg, and are described as follows: intact ipsilateral tube, clearly separate from the ovary; gestational sac occupying the position of the ovary; sac connected to the uterus by the ovarian ligament; and histologically proven ovarian tissue located in the sac wall.¹⁰⁻¹³ Several lines of evidence suggest that traditional risk factors, such as a history of pelvic inflammatory disease (PID) and prior pelvic and/or tubal surgery, may not play a significant role in the etiology of OP. However, the association of ovarian pregnancy with the use of an intrauterine device (IUD) remains controversial.¹³ In a series of 19 women with ovarian pregnancy, 13 (68%) were using an IUD.^{14,15} Primary OP should be suspected in cases of EP lacking characteristic ultrasonographical features of tubal pregnancy; diagnostic laparoscopy frequently is required to make the diagnosis of ovarian pregnancy, which is only later confirmed by histopathology examination of removed tissue. In general, surgical diagnosis and management are mandatory in symptomatic patients with signs of EP, especially in cases of hemodynamic instability.¹⁶ Ovarian pregnancies are often confused with a hemorrhagic corpus luteum or ovarian cyst. Particular care should be taken to investigate thick-walled cystic ovarian lesions in patients with an empty uterus and a quantitative hCG above the discriminatory zone. Doppler ultrasonography seems to offer little additional diagnostic value due to the high vascularity of the ovary. Symptoms and signs of OP are similar to those associated with tubal pregnancy. Due to the blood supply of the ovary, these patients are at a high risk of suffering severe hemorrhage in case of ovarian surface rupture and may present with signs of hypovolemic shock.¹⁴

CASE REPORT

A 24-year-old female, house wife, was admitted to the BIRDEM Hospital, Dhaka, with pain in lower abdomen for the last 14 hours duration. The patient initially started with dull pain in the periumbilical area. After some time the pain shifted to the right iliac fossa (RIF) and became more severe. The patient had bouts of vomiting but continued to have nausea, increasing pelvic pain, guarding, and rebound

tenderness. Transvaginal ultrasound (TVS) examination revealed a sonomorphologically normal uterus, a left ovary 4 cm in diameter with a multifollicular hypoechoic structure. There was no evidence on the presence of an intrauterine gestational sac and free fluid in the pouch of Douglas. Serum β -hCG concentrations at the time of presentation were 1500 μ IU/mL. The patient had her normal periods 8 days back but reported that the overall flow had been less than usual. The patient had two lower uterine cesarean section (LUCS) and a history of termination of pregnancy at 8 weeks of gestation 6 months back.

Based on the patient's clinical symptoms and the results of preoperative examinations, diagnostic laparoscopy was performed following signed informed consent.

The patient was placed in the modified lithotomy position before general endotracheal anesthesia. Laparoscopic surgery was performed using three ports. Following the establishment of pneumoperitoneum, a 10-mm laparoscope was introduced through an 11-mm cannula in sub-umbilical incision. After confirmation of the diagnosis a 10-mm puncture was made in the left and a 5 mm puncture in the right lower quadrant using direct visualization.

In the patient, the pelvic-abdominal inspection showed a left ovary with an increased volume and an irregular surface, some filmy adhesions in the pouch of Douglas and between the posterior uterine wall and left ovary and tube.

Enucleation of the suspected extrauterine pregnancy was accomplished by endoscissors and bipolar coagulation combined with an ovarian wedge resection in agreement with the woman's decision to preserve her fertility. Peritubal adhesiolysis was performed by aqua-dissection with an irrigating probe to restore the ovarian integrity for an eventual successive pregnancy. The ovarian surface was grasped by a forceps seized near the extrauterine pregnancy and stabilized by another pair of grasping forceps. Resection of trophoblastic tissue was performed with monopolar scissors. Hemostasis on the remaining basis on the ovarian surface was achieved by fine bipolar forceps. Excised tissue was removed via left 10 mm trocars.

The mean amount of blood loss was less than 200 ml. The clinical diagnosis of OP was confirmed by histopathologic examination. Report of the specimen showed trophoblastic tissue within the ovarian tissue and cystic follicles in the remaining ovarian tissue.

Postoperative recovery was normal. Peritoneal cavity was washed with Ringer's solution and hemostasis was with bipolar diathermy. The pregnancy was removed from the abdominal cavity via a 10-mm port. In the presence of

hemoperitoneum, the amount of blood present was removed with sucker machine. Analgesia was prescribed to the patients on demand, namely pethidine 1.5 mg/kg I/M every 8 hours or diclofenac sodium 100 mg. Normally patients were discharged the day after laparoscopy, with no additive therapy in the follow-up course; the serum β -hCG concentration were negative after 7 days.

DISCUSSION

Ectopic pregnancy remains a common gynecologic condition that causes significant maternal morbidity and mortality. Risk factors such as PID and prior pelvic surgery may not play a significant role in its etiology in contrast to patients with tubal pregnancies. Ovarian pregnancy is more frequent with the use of IUD.¹⁷ The diagnosis is seldom made before surgery.¹⁸ Ultrasound, especially TVS, has proved to be an invaluable tool in the diagnosis, where hyperechoic appearance of the trophoblast surrounded by thickened hypoechoic ovarian tissue is the only indication of an ovarian ectopic gestation.¹⁹ Ovarian pregnancies usually terminate in rupture during the first trimester in 91.0% cases, 5.3% in second trimester, and 3.7% in the third trimester.²⁰ Case presented in the first trimester.

The diagnosis is difficult and is a continuous challenge to the gynecologist. Ovarian rupture destroys the integrity of the organ. Ovarian pregnancy can be treated conservatively with single dose methotrexate. However, the preferred mode of treatment is oophorectomy, cystectomy, or wedge resection performed at either laparotomy or laparoscopy.

Histopathological examination confirmed the diagnosis of an ovarian pregnancy. Laparoscopic treatment of EP is associated with lower cost, shorter hospital stay, less operative time, less blood loss, less analgesic requirement, and faster recovery. Patients randomly assigned to laparoscopy also develop fewer adhesions compared with patients treated with laparotomy.^{21–24} Laparoscopy is not only suitable for early EP but also safe and feasible in cases where there is ruptured ectopic and hemoperitoneum, provided the patient is not severely compromised hemodynamically.^{25,26} These findings were in agreement with previous studies.^{27,28} Thus, we support the use of laparoscopy and ovarian wedge resection as the procedure of choice for treatment of unruptured OP.

CONCLUSION

Ovarian ectopic pregnancy continues to be a life-threatening and sometimes fatal condition, whose treatment frequently requires an emergency intervention. Laparoscopic management offers major benefits superior to laparotomy in terms of

less amount of blood loss, less need for blood transfusion, less need for postoperative analgesia, shorter duration of hospital stay, and return to their normal activities much sooner. TVS and serum β -hCG concentration can be useful adjuncts to allow the preoperative diagnostic suspicion of primary OP. Fertility preserving surgery should be the goal in young patients.

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