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Case Report

Laparoscopic management of an unruptured interstitial ectopic pregnancy following tubal recanalization: a case report emphasizing haemostatic and uterine reconstruction techniques

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ABSTRACT

Interstitial ectopic pregnancy is a rare and potentially life-threatening form of ectopic pregnancy because of the rich vascularity of the interstitial portion of the fallopian tube. Pregnancy following tubal recanalization carries a risk of ectopic implantation. We report a case of an unruptured interstitial ectopic pregnancy following bilateral tubal recanalization, managed successfully by laparoscopy. A 40-year-old G3P2L1 woman at 9 weeks of gestation presented with acute lower abdominal pain. Ultrasonography showed a left adnexal mass containing a live fetus with good cardiac activity. Laparoscopy revealed a 5×4 cm unruptured, highly vascular left interstitial pregnancy. Cornual wedge resection with left salpingectomy and uterine reconstruction was performed. Haemostatic control was achieved using dilute vasopressin and electrocautery, followed by multilayer closure of the myometrium and serosa. Estimated blood loss was 50 mL. Histopathology confirmed ectopic pregnancy and follow-up β -hCG was negative. Interstitial pregnancy requires early diagnosis because rupture can result in catastrophic haemorrhage. Careful laparoscopic surgery with effective haemostatic control and anatomical uterine reconstruction can provide definitive treatment in appropriately selected haemodynamically stable patients. A high index of suspicion is essential when pregnancy occurs following tubal recanalization. Prompt recognition and meticulous laparoscopic management can achieve effective haemostasis and preserve uterine integrity while avoiding major blood loss.

Keywords: Interstitial ectopic pregnancy, Tubal recanalization, Laparoscopy, Cornual wedge resection, Uterine reconstruction, Haemostasis

INTRODUCTION

Interstitial pregnancy is a rare form of ectopic pregnancy in which implantation occurs within the intramural portion of the fallopian tube. It accounts for approximately 2-4% of ectopic pregnancies and carries a significant risk of severe haemorrhage because of the rich vascular supply of the utero-tubal region and the capacity of the interstitial segment to distend before rupture.^{1,2}

Previous tubal surgery is a recognized risk factor for ectopic pregnancy. Tubal recanalization can restore fertility after sterilization; however, ectopic pregnancy

remains a recognized complication following tubal reanastomosis.³

Early diagnosis and appropriate selection of treatment are essential to avoid rupture and catastrophic haemorrhage. Transvaginal ultrasonography plays a central role in diagnosis, while laparoscopic management provides a minimally invasive option in haemodynamically stable patients with an unruptured interstitial pregnancy.^{2,4}

We present a case of an unruptured interstitial ectopic pregnancy at 9 weeks of gestation following tubal recanalization, successfully managed by laparoscopy

cornual wedge resection with uterine reconstruction and left salpingectomy.

CASE REPORT

A 40-year-old woman, gravida 3 para 2 living 1, at 9 weeks of gestation, presented with acute lower abdominal pain. The current pregnancy had been conceived following bilateral tubal recanalization by mini-laparotomy performed in 2022 after previous sterilization. She was a known case of hypothyroidism and was receiving thyroxine replacement.

On presentation, she was haemodynamically stable. Abdominal examination revealed mild tenderness, predominantly in the left iliac fossa, while vaginal examination demonstrated mild cervical tenderness. Her blood group was B positive. Serum β -hCG was 18,835 mIU/mL. Transvaginal ultrasonography revealed a left adnexal mass containing a live fetus with good cardiac activity, with an empty uterine cavity and no fluid collection in the pouch of Douglas. An unruptured ectopic pregnancy was suspected.

The patient was counselled regarding the diagnosis and available treatment options, and laparoscopic surgical management was undertaken.

Diagnostic laparoscopy revealed dense omental adhesions to the anterior abdominal wall, which were released. The uterus was bulky, corresponding to approximately 6-8 weeks in size. A 2×2 cm intramural fibroid with a subserosal component was noted in the right posterolateral uterine wall. A 5×4 cm unruptured left interstitial pregnancy with prominent vascularity was identified. The fimbrial end of the left fallopian tube was adherent to the ectopic gestational sac. The right fallopian tube and both ovaries appeared normal. There was no evidence of endometriosis or pelvic tuberculosis.

For haemostatic control, one ampoule of vasopressin was diluted in 200 mL of normal saline, of which 40 mL was injected around the base of the pregnancy. This was followed by meticulous use of electrocautery and laparoscopic cornual wedge resection with left salpingectomy. The resulting myometrial defect was reconstructed with a continuous layer of barbed suture for myometrial approximation, followed by intermittent No. 1 Vicryl sutures for serosal approximation. Complete haemostasis was achieved, with an estimated blood loss of 50 mL. The patient tolerated the procedure well.

Histopathological examination demonstrated a dilated fallopian tube with attached fibrofatty tissue and areas of haemorrhage. Microscopic examination showed chorionic villi lined by cytotrophoblast and syncytiotrophoblast within the fallopian tube wall, with decidualization and haemorrhage. The findings were consistent with ectopic pregnancy involving the left fallopian tube.

The postoperative course was uneventful. On follow-up, the patient remained clinically well and subsequent serum β -hCG was negative.

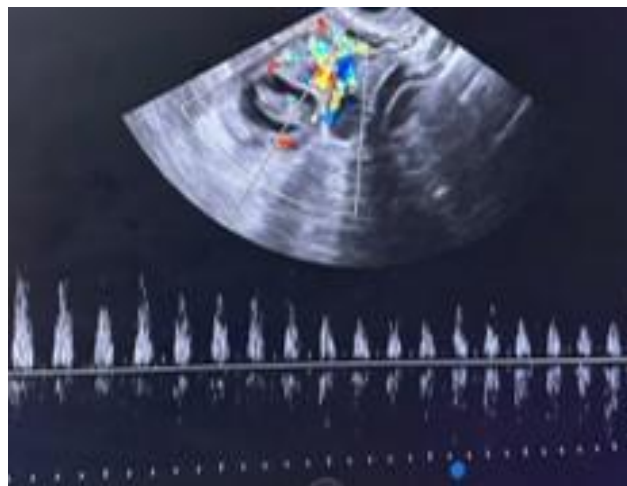


Figure 1: Transvaginal ultrasonographic image showing a left adnexal mass containing a live fetus with good cardiac activity.



Figure 2: Laparoscopic view of the unruptured left interstitial ectopic pregnancy showing prominent vascularity.

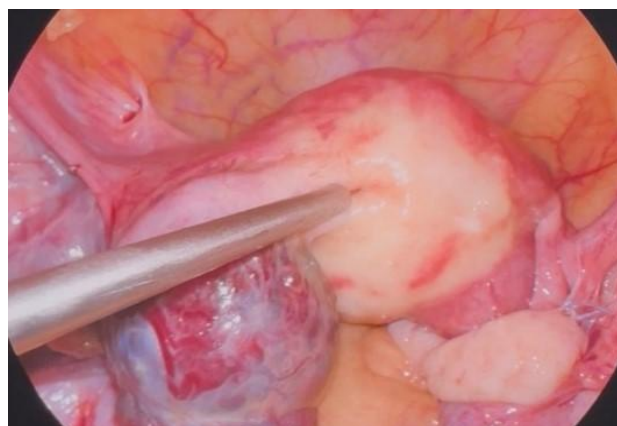


Figure 3: Laparoscopic injection of dilute vasopressin around the base of the interstitial pregnancy for haemostatic control.

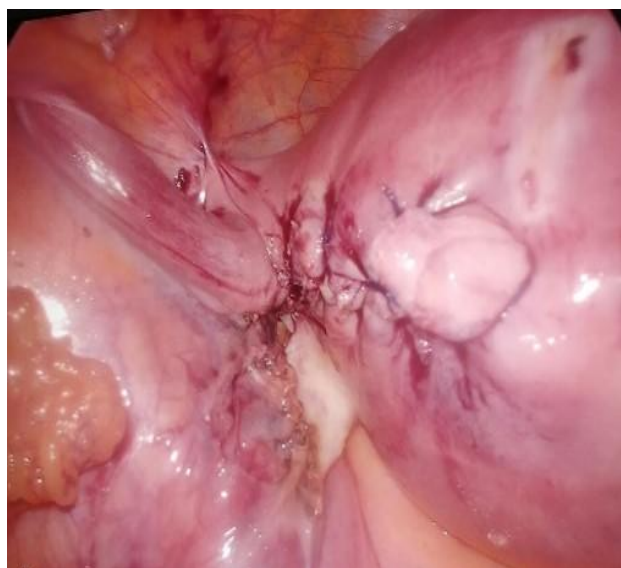


Figure 4: Laparoscopic view demonstrating multilayer reconstruction of the myometrial and serosal defect following cornual wedge resection.

DISCUSSION

Interstitial pregnancy remains a diagnostic challenge because of its location at the utero-tubal junction. Classical transvaginal ultrasound findings include a laterally located gestational sac separate from the endometrial cavity, a thin surrounding myometrial mantle and the characteristic interstitial line sign. The interstitial line sign, an echogenic line extending from the endometrial cavity towards the gestational sac, has been reported to have a sensitivity of 80% and specificity of 98% and may be particularly useful in differentiating interstitial pregnancy from other eccentrically located pregnancies.⁵

Differentiation from an eccentrically located intrauterine pregnancy is clinically important because the prognosis and management differ substantially. An interstitial pregnancy is implanted within the intramural portion of the fallopian tube, whereas an eccentrically located intrauterine pregnancy remains within the endometrial cavity. The terms “angular” and “cornual” have historically been used inconsistently, and current recommendations favour precise description of the anatomical relationship between the gestational sac, endometrial cavity and utero-tubal junction to avoid inappropriate treatment.^{6,7}

Tubal reanastomosis restores fertility but does not eliminate the risk of ectopic pregnancy. In a series of 961 women undergoing tubal reversal, the overall ectopic pregnancy rate was 2.5%, with a substantially higher rate when the repair involved the interstitial-ampullary region.³ This reinforces the importance of early localization of pregnancy following tubal recanalization.

Surgical management must balance haemorrhage control with preservation of uterine integrity. Laparoscopic

approaches, including cornuostomy and cornual wedge resection, have been successfully used in appropriately selected haemodynamically stable patients.^{4,7} Vasopressin injection and meticulous electrosurgical haemostasis can facilitate controlled resection, while layered closure allows anatomical reconstruction of the uterine defect. In the present case, the combination of dilute vasopressin, electrocautery, cornual wedge resection and multilayer uterine reconstruction achieved effective haemostasis despite the marked vascularity of the pregnancy, with an estimated blood loss of only 50 mL.

Cornual surgery results in a myometrial scar, and subsequent pregnancies therefore warrant appropriate antenatal surveillance. Although successful subsequent pregnancies have been reported following laparoscopic treatment, uterine scar integrity remains an important consideration following cornual surgery.⁷

This case highlights the importance of maintaining a high index of suspicion for interstitial pregnancy following tubal recanalization and demonstrates that, in a haemodynamically stable patient, careful laparoscopic management with effective haemostatic control and uterine reconstruction can provide successful definitive treatment of a potentially life-threatening ectopic pregnancy.

CONCLUSION

A prompt diagnosis of interstitial pregnancy is necessary to avoid life-threatening haemorrhage or uterine rupture. Recognition of characteristic transvaginal ultrasound findings, particularly the interstitial line sign, can facilitate early diagnosis and appropriate management. In appropriately selected haemodynamically stable patients, laparoscopic cornual wedge resection with salpingectomy, meticulous haemostasis and multilayer uterine reconstruction can provide effective definitive treatment with minimal blood loss. This case illustrates that careful application of minimally invasive techniques for complex gynaecological conditions by experienced surgeons can benefit both patients and the healthcare system.

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