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Case Series

Ruptured Primary Ovarian Ectopic Pregnancy: A Four-Case Series

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Please provide an abstract of 150 to 250 words. The abstract should not contain any undefined abbreviations or unspecified references

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ABSTRACT

Background: Primary ovarian ectopic pregnancy is a rare subtype of ectopic gestation that is often diagnosed only after rupture. Here we present four surgically and histopathologically confirmed cases with clinical, radiological, operative, and postoperative details.
Methods: This retrospective case series of included patients managed at a tertiary care center.
Results: All four patients presented with acute abdominal pain and hemoperitoneum. Surgical exploration revealed a ruptured ovarian pregnancy; all four patients underwent oophorectomy. Histopathological examination confirmed ovarian implantation in accordance with Spiegelberg's criteria.
Conclusion: High clinical suspicion and prompt surgical management significantly reduces the morbidity associated with ovarian ectopic pregnancy.
Word count: 714 words, excluding references.

Keywords*: Ovarian ectopic pregnancy, hemoperitoneum, rupture, Spiegelberg criteria, oophorectomy.*

INTRODUCTION

Ovarian ectopic pregnancy (OEP) is defined as the implantation of a fertilized ovum within the ovarian tissue. It accounts for 0.5–3% of all ectopic pregnancies and remains one of the rarest non-tubal forms. The diagnostic challenge stems from its clinical and radiological similarities to ruptured corpus luteum and tubal ectopic pregnancy. Spiegelberg's criteria, which were described in 1878, remain the definitive diagnostic framework. The criteria being 1) gestational sac located in the region of ovary, 2) the ectopic pregnancy is attached to the uterus by the ovarian ligament; 3) ovarian tissue in the wall of the gestational sac is proved histologically, 4) tube on the involved side is intact. Early recognition is difficult because patients often present with an acute abdomen secondary to rupture, necessitating emergency surgery.

The incidence of non-tubal ectopic pregnancies has increased owing due to the widespread use of assisted reproductive technologies, ovulation-inducing agents, and intrauterine devices. However, primary ovarian pregnancies continue to be underreported owing to misdiagnosis or lack of histopathological confirmation. This case series presents the detailed clinical, operative, and histopathological characteristics of four confirmed cases managed in a tertiary care center, highlighting diagnostic dilemmas, fertility implications, and management outcomes.

Case Series

Case 1: A 22-year-old G3P1L1A1 patient presented with severe lower abdominal pain, spotting, and dizziness. Vitals: BP 100/60 mmHg; PR 114/min. Hb was 8.8 g/dL. Ultrasonography revealed a right adnexal sac-like lesion with significant free fluid. Emergency laparotomy revealed approximately 800 mL of hemoperitoneum and a ruptured right ovarian ectopic pregnancy. Right oophorectomy was performed. The postoperative recovery was uneventful. Histopathology confirmed chorionic villi embedded within the ovarian stroma, fulfilling Spiegelberg criteria.

Case 2: A 23-year-old patient G3P2L2 with two months amenorrhea presented with acute abdominal pain and presyncope. Vitals: BP 100/70 mmHg, PR 118/min. Ultrasonography revealed the presence of a ruptured adnexal mass. Laparotomy revealed nearly 500 ml hemoperitoneum and a ruptured right ovarian pregnancy. Right oophorectomy was performed. Histopathological examination confirmed primary ovarian ectopic pregnancy.

Case 3: A 21-year-old patient G2P1L1 presented with sharp pain in the left iliac fossa pain. β-hCG was 3357 mIU/mL. TVS revealed a left adnexal mass with pelvic free fluid. Intraoperatively, 200 mL hemoperitoneum was found with a ruptured left ovarian ectopic gestation. Left oophorectomy was performed. The postoperative β-hCG level decreased to 393 mIU/mL. Histopathological examination confirmed ovarian implantation.

Case 4: A 34-year-old woman with history of right tubectomy, and patient had ingested medical abortion pills during this pregnancy and presented with shock (BP 70/40 mmHg; PR 140/min). TVS revealed a right adnexal gestational sac-like structure with a massive hemoperitoneum. Laparotomy detected >1 L hemoperitoneum and ruptured right ovarian pregnancy. Right oophorectomy performed, patient also opted for tubal ligation on the left side tube, to prevent further pregnancies, 3 units of packed cell volume (PCV) also given to the patient, to cover for the blood loss. Histopathological examination confirmed primary ovarian ectopic pregnancy.

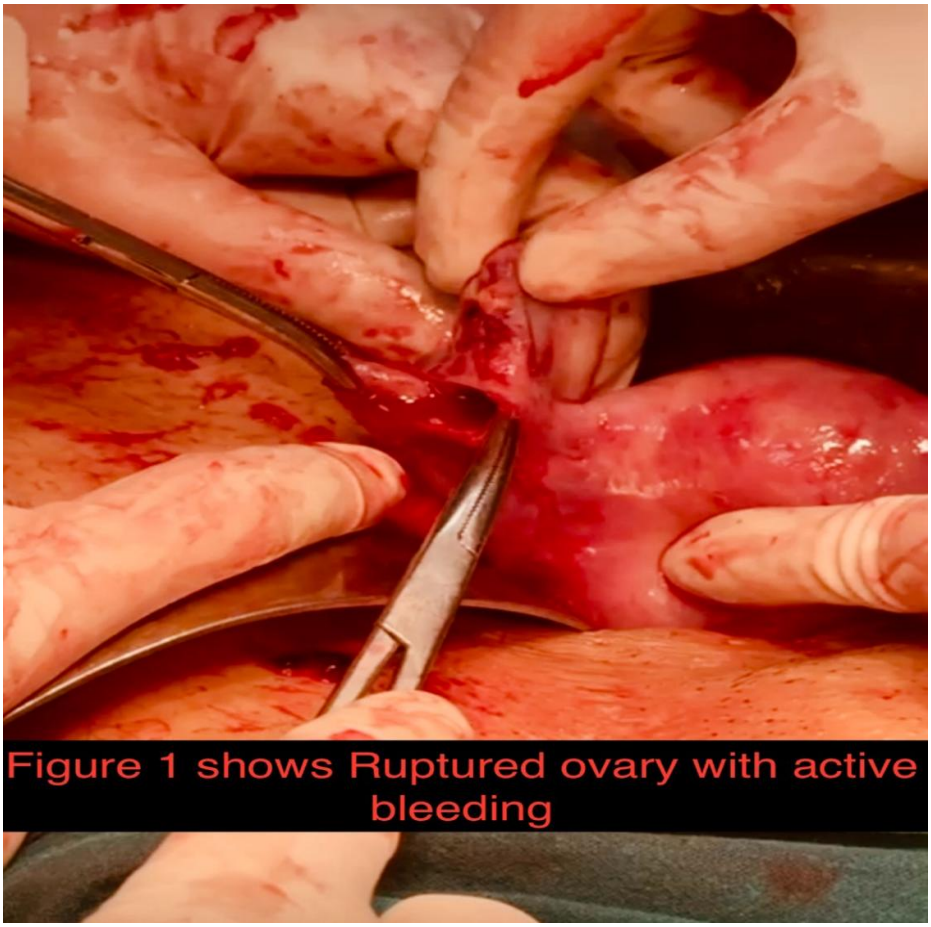
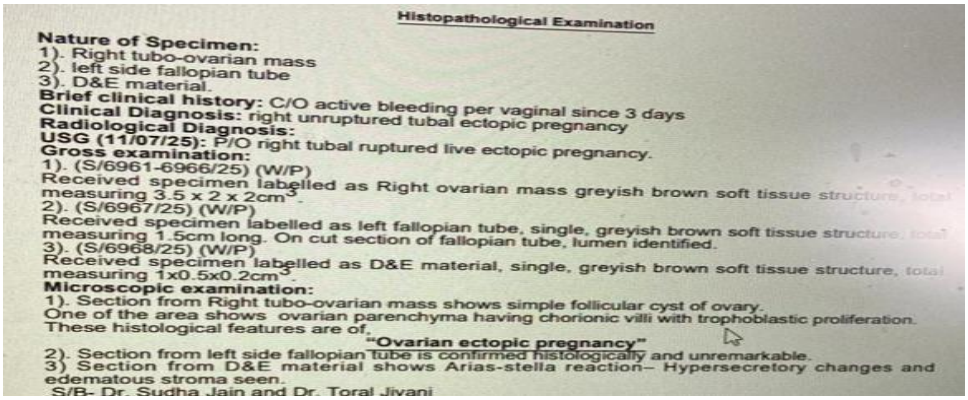


Figure 1: Intraoperative image of ruptured ovarian ectopic pregnancy.


Histopathological Examination

Nature of Specimen:
1). Right tubo-ovarian mass
2). left side fallopian tube
3). D&E material.
Brief clinical history: C/O active bleeding per vaginal since 3 days
Clinical Diagnosis: right unruptured tubal ectopic pregnancy
Radiological Diagnosis:
USG (11/07/25): P/O right tubal ruptured live ectopic pregnancy.
Gross examination:
1). (S/6961-6966/25) (W/P)
Received specimen labelled as Right ovarian mass greyish brown soft tissue structure, total measuring 3.5 x 2 x 2cm^3.
2). (S/6967/25) (W/P)
Received specimen labelled as left fallopian tube, single, greyish brown soft tissue structure, total measuring 1.5cm long. On cut section of fallopian tube, lumen identified.
3). (S/6968/25) (W/P)
Received specimen labelled as D&E material, single, greyish brown soft tissue structure, total measuring 1x0.5x0.2cm^3.
Microscopic examination:
1). Section from Right tubo-ovarian mass shows simple follicular cyst of ovary.
One of the area shows ovarian parenchyma having chorionic villi with trophoblastic proliferation.
These histological features are of,
"Ovarian ectopic pregnancy"
2). Section from left side fallopian tube is confirmed histologically and unremarkable.
3) Section from D&E material shows Arias-stella reaction– Hypersecretory changes and edematous stroma seen.
S/B- Dr. Sudha Jain and Dr. Toral Jivani

Figure 2: Histopathological report of the case 4

Discussion

Ovarian ectopic pregnancy is a frequently encountered forms of ectopic pregnancy. Although representing only 0.5–3% of all ectopic gestations, accurate preoperative diagnosis remains difficult. Transvaginal ultrasonography has improved detection, but most cases still present with rupture, leading to hemoperitoneum and shock.

Recent literature highlights that early detection may allow conservative surgical approaches, including ovary sparing excision or laparoscopic management. However, in low-resource settings and in hemodynamically unstable patients—as in our series—laparotomy remains the standard of care.

Spiegelberg's criteria distinguish between primary ovarian pregnancies and secondary implantations. Histopathological examination remains essential for confirmation. Reported risk factors include IUD use, PID, ART, and previous surgeries, though many patients have no identifiable risk factor as in our study. Prompt laparotomy and timely transfusion reduce morbidity and mortality, particularly in resource-limited settings.

Conclusion

Primary ovarian ectopic pregnancy should be treated as a differential diagnosis in reproductive-aged women with an acute abdomen and positive pregnancy test. Prompt surgical management is still a lifesaving procedure. Histopathology is crucial to confirm diagnosis.

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Ethical Compliance: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Conflict of Interest declaration: The authors declare that they have no affiliations with or involvement in any organization or entity with any financial interest in the subject matter or materials discussed in this manuscript.

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