

# Primary Ovarian Ectopic Pregnancy: A Case Report

Fatemeh Samiee-Rad,<sup>1</sup> Mahsa Ziaee-Ardestani,<sup>2,\*</sup> Mehri Kalhor,<sup>3</sup> and Bahare Keshavarzi<sup>4</sup>

<sup>1</sup>Department of Pathology, Metabolic Diseases Research Center, Qazvin University of Medical Sciences, Qazvin, Iran

<sup>2</sup>Department of Pathology, Tehran University of Medical Sciences, Tehran, Iran

<sup>3</sup>Kowsar Hospital, Qazvin University of Medical Sciences, Qazvin, Iran

<sup>4</sup>Velayat Clinical Research Development Unit, Qazvin University of Medical Sciences, Qazvin, Iran

\*Corresponding author: Mahsa Ziaee-Ardestani, Department of Pathology, Tehran University of Medical Sciences, Kosar Hospital, Talagani Street, Central Lab, Tehran, Iran. Tel: +98-2812236378, Fax: +98-2812236378, E-mail: ziaeiardestani@gmail.com

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## Abstract

**Introduction:** Ectopic pregnancy is a serious health problem that leads to maternal mortality and morbidity. The current article was based on the record of a female patient with primary ovarian ectopic pregnancy.

**Case Presentation:** The patient was a 28-year-old female with regular previous menstrual cycle and without using any contraception method. She presented with right lower abdominal pain and amenorrhea. Transvaginal sonography findings revealed a gestational sac in the right ovary. Finally, primary ovarian ectopic pregnancy was diagnosed by laparotomy and confirmed by histopathology.

**Conclusions:** To prevent misdiagnosis, an awareness of this issue should be developed by gynecologists, surgeons, and radiologists.

**Keywords:** Ovary, Ectopic Pregnancy

## 1. Introduction

Today, one of the important causes of maternal mortality, morbidity, and early fetal loss, especially in the first trimester with 10% frequency, is ectopic pregnancy (EP) (1, 2).

The most common site of EP is fallopian tubes. Ovarian form is a rarer event and accounts for 0.15% - 3% of total ectopic pregnancies (3).

Definite diagnosis of primary ovarian ectopic pregnancy is critical and also very difficult, because there are not specific clinical or paraclinical presentations. To resolve this problem, the von Spiegelberg criteria are used. According to these criteria, diagnosis of primary ovarian ectopic pregnancy should be considered as follows: 1) Ipsilateral fallopian tube should be intact, 2) The gestational sac should be laid in the ovarian situation, 3) Connection of ovary to ovarian ligament and uterus should be verified, 4) On histopathologic examination, the gestational sac walls should contain ovarian tissue. In some cases due to anatomical variations, exact demonstration of the von Spiegelberg criteria is impossible (4, 5).

Accurate preoperative diagnosis of primary ovarian ectopic pregnancy is challenging, and undoubtedly every delay leads to serious complications and maternal mortality and morbidity.

The current paper reports case of exceptional primary ovarian ectopic pregnancy and summarizes the clinical, radiologic, and histopathologic findings.

## 2. Case Presentation

A 28-year-old female with a history of a full-term pregnancy, normal vaginal delivery, and 8 weeks since last menstrual period (LMP) was admitted into the surgical emergency department of Kosar University Hospital, in July 2014 with the history of sudden onset of severe pain in the right lower quadrant of abdomen as well as nausea and vomiting with amenorrhea. Four days prior to admission, she had vaginal bleeding.

Two weeks prior to the presentation, she had a colicky pain in lower abdomen with radiation to lower back and thighs. Her previous menstrual cycle was regular. She was not using any contraception method from marriage date. There were not any symptoms of dizziness, fainting, recent purulent vaginal discharge, and difficulty in micturition.

On physical examination, she was pale. Her pulse rate was 110 beats/minute and the blood pressure was 95/55 mmHg, with positive tilt table test (orthostatic change in blood pressure). Mild distention of abdomen with tenderness was found in the lower parts of abdomen.

On vaginal examination, the vagina and cervix were normal and the uterus had increased in size during 8 weeks. Her fornices and the cervical movements were tender.

According to medical history, clinical and paraclinical findings, acute abdomen was consisted and the main differential diagnoses were ruptured ectopic pregnancy, an acute pelvic inflammatory disease, and tubo-ovarian mass. Systemic symptoms and signs of inflammation were not

found and paraclinical data did not support any inflammatory disease including tubo-ovarian mass.

Routine laboratory investigations revealed leukocytosis with neutrophilia without any anemia (hemoglobin: 14 g/dL). Pregnancy test showed positive result.  $\beta$ HCG level was 15650 mIU/mL. Transvaginal ultrasonography assessment showed the presence of a right adnexal complex mass with fetal pole and hearth rate (Figure 1), free fluid in the pouch of Douglas, and increased vascular blood flow activity.

Estimated gestational age was 8 weeks. The uterus showed a normal outline with slightly thickened endometrial line and no intrauterine sac.

At this stage, results were in favor of ectopic pregnancy. Therefore, right salpingo-oophorectomy was performed. On laparotomy, the right fallopian tube appeared normal, but the right ovary was enlarged with hemorrhagic area. The left adnexa looked normal. She passed uneventful postoperative period.

On macroscopic examination, the enlarged ovary measured  $4.5 \times 3.5 \times 2.5$  cm associated with a small creamy placenta 1.3 cm in diameter. On serial cutting, blood clots and a corpus luteum were identified. There was no evidence of embryo, apparently. Associated fallopian tube, measuring 5.2 cm in length and 0.7 cm in diameter, appeared normal. On histopathologic examination, review of the slides displayed large areas of hemorrhage and scattered chorionic villi associated with corpus luteum embedded in the ovarian stroma (Figures 2 and 3). Therefore, diagnosis of primary ovarian ectopic pregnancy was confirmed.

The patient was followed-up according to standard format. Her hemoglobin level on discharge time was 10.7 g/dL and she underwent medical treatment for compensation. She had a successful and full-term pregnancy after 23 months.

### 3. Discussion

The incidence of primary ovarian ectopic pregnancy varies from 1 in 7000 to 1 in 40 000 deliveries (6).

The primary ovarian ectopic pregnancy was firstly described by Saint Maurice in France in 1682 (7).

Ovarian ectopic pregnancy is a life threatening medical concept and its early detection is perhaps the most difficult, compared to all the other forms of extra uterine pregnancies and almost always, the primary diagnosis is made on the operating bed (8).

The ovarian pregnancy forms under 2 circumstances: First, when fertilization occurs in the peritoneal cavity and, then, fertilized ovum is implanted into the ovary; and second, when fertilization occurs in the fallopian tube and,

then, via tubal abortion or perforation, products of conception are implanted on the ovarian surface (8).

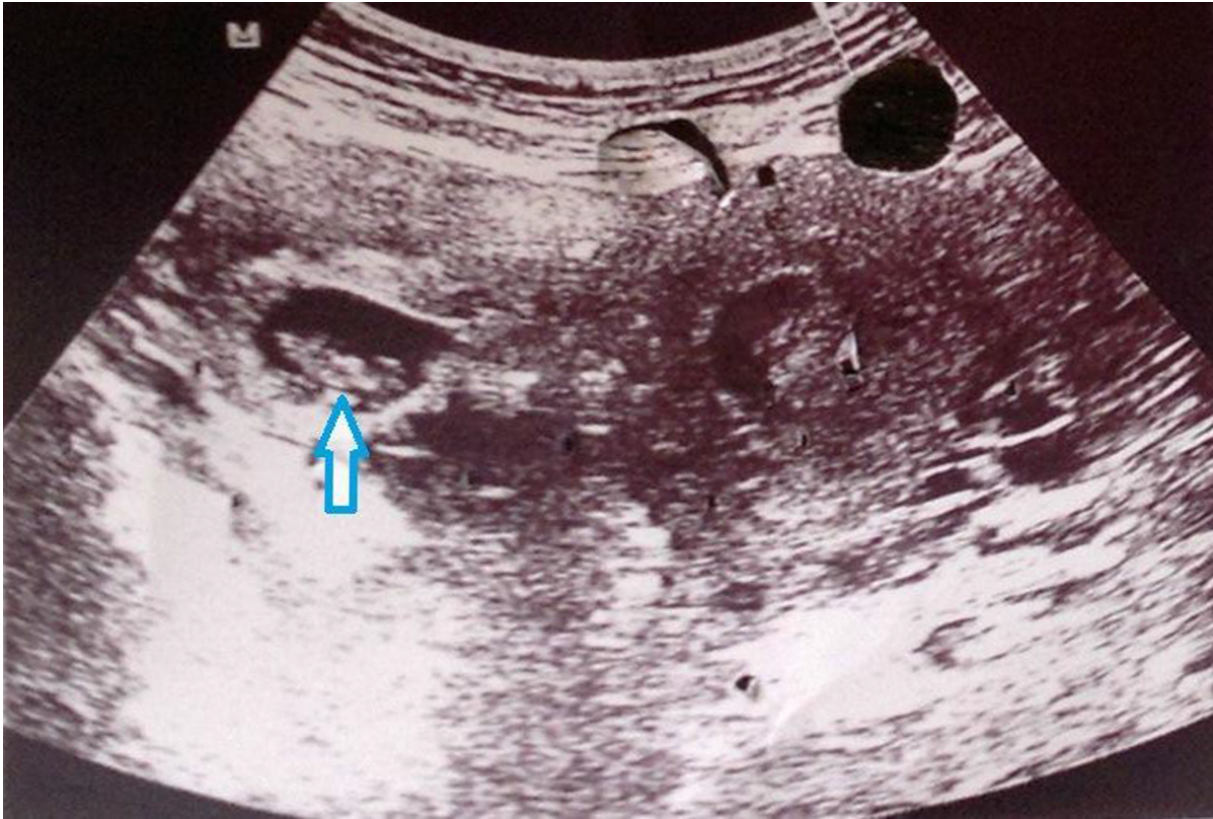
According to the review of the literature, occurrence of primary ovarian ectopic pregnancy is confirmed as a very exceptional event; but nowadays, due to application of intrauterine contraceptive devices, and ovarian hyper stimulation in infertile patients, its incidence is slightly rising. However, few reported cases had no underlying causes, similar to the current case, and happened by chance (9,10).

The main risk factors of the development of primary ovarian ectopic pregnancy are as follows: Obstructed ovulation, malfunction of fallopian tube from previous salpingitis, endometriosis, application of intrauterine contraceptive devices, chronic pelvic inflammatory disease, Tuberculosis (especially in the developing countries), and assisted reproductive technology (in vitro fertilization and in vivo transfer of the embryo to the uterus (IVF-ET) and intrauterine insemination) (8, 11, 12). There were no evidence of such predisposing conditions and factors in the past medical history of the current case.

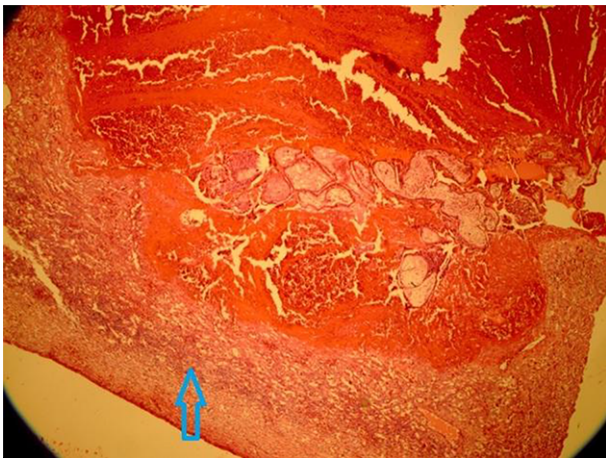
It commonly occurs in young females, similar to the current case. The clinical presentations of primary ovarian ectopic pregnancy vary from asymptomatic forms to life threatening ones. The current patient referred to clinic with acute abdomen presentation. When the first form happens, early diagnosis may be missed until later in pregnancy (12). Therefore, there is the risk of rupture, secondary ectopic implantation, and complications during surgery (6, 7). Therefore, its early detection permits the wedge ovarian resection in the selected cases with preserved uninvolved ovary. The other treatment option is methotrexate (conservative treatment), but may not be appropriated (13, 14). In the current case, based on the surgeon's decision, extension of lesion, and tissue destruction, right salpingo-oophorectomy was selected as the choice therapy. However, ovarian ectopic pregnancy has good prognosis; therefore, early diagnosis and immediate therapy can permit for conservative surgery and retain the future fertility of the patient (8).

The most clinico-radiologic differential diagnosis of the primary ovarian ectopic pregnancy includes corpus luteal cyst, hemorrhagic corpus luteum, tubal ectopic pregnancy, hemorrhagic ovarian cyst, ruptured endometrioma, ovarian tumor, ovarian torsion, and intrauterine pregnancy. In the current case, menstrual cycle was regular and no previous adnexal fullness or pain was observed. Also, imaging and laboratory results ruled out any evidence of benign or malignant cystic, or solid ovarian tumors. However, similar to many other situations in medicine, definite diagnosis was confirmed by a histopathologic review (1, 13, 14).

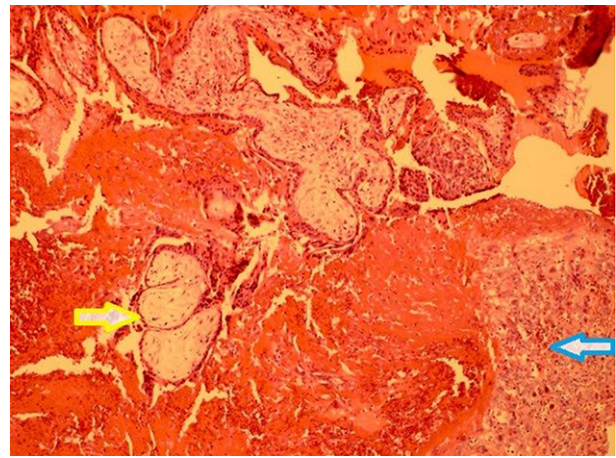
One important cause of missed early diagnosis is mis-



**Figure 1.** On transvaginal sonography of the right adnexa, a gestational sac (blue arrow) was visualized



**Figure 2.** Photomicrograph Shows Trophoblastic villi and Hypercellular Ovarian Stroma (Blue Arrow) with Massive Areas of Hemorrhage (Hematoxylin and Eosin Stain;  $\times 40$ )



**Figure 3.** Large Areas of Hemorrhage and Scattered Chorionic villi (Yellow Arrow) Associated with Corpus Luteum (Blue Arrow) Embedded in the Ovarian Stroma (Hematoxylin and Eosin Stain;  $\times 200$ )

interpretation of ultrasonographic findings. The presence of ovarian gestational sac and its surrounding tissue

mimic ultrasonographic features of an intrauterine gestation. To prevent this error, systematic ultrasonography

assessment of pelvis including uterus and both adnexa is highly recommended (2). This major concept, in the described patient, was fully respected.

A high index of suspicion should be maintained in reproductive age females with each one of the following symptoms: amenorrhea, abdominal pain, adnexal mass, peritoneal irritation, and enlarged uterus (acute abdomen) (2).

The presented case fulfilled the von Spiegelberg criteria for primary ovarian ectopic pregnancy based on the following histopathological findings: The gestational sac in the area of the ovary, ovarian tissue in the wall of the gestational sac, and intact associated ipsilateral fallopian tube (5); similar to the studies by Ghasemi et al. (1), Bhuria et al. (2), and Manjula et al. (8). Although, the current case results were similar to those of the other studies, for more complete epidemiological information and comparison between the findings in a geographic region, case series studies are mandatory.

### 3.1. Conclusion

Although primary ovarian ectopic pregnancy is a rare challenging diagnostic case and is also a serious maternal health problem, the early accurate diagnosis is not simple. Due to rare incidence, enough experience is not acquired by the involved therapeutic team. To prevent misdiagnosis and reduce the associated morbidity and mortality, awareness of this condition by gynecologists, surgeons, and radiologists are highly necessary.

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### Footnote

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### References

- Ghasemi Tehrani H, Hamoush Z, Ghasemi M, Hashemi L. Ovarian ectopic pregnancy: A rare case. *Iran J Reprod Med.* 2014;**12**(4):281-4. [PubMed: 24976824].
- Bhuria V, Nanda S, Chauhan M, Malhotra V. A retrospective analysis of ectopic pregnancy at a tertiary care centre: one year study. *Int J Reproduct, Contracept, Obstetr Gynecol.* 2016:2224-7. doi: 10.18203/2320-1770.ijrcog20162098.
- Madhuri N. Diagnostic surprises in early pregnancy: two case reports. *Int J Res Med Sci.* 2016;**4**(3):972-4.
- Dandappanavar SD, Teje RS, Jamdade RJ. Primary Intrafollicular Ovarian Pregnancy: A Case Report. *IJSS Case Report Rev.* 2015;**2**(4):25-7.
- Spiegelberg O. Zur kasuistik der ovarialschwangerschaft.. *Arch Gynaecol.* 1878;**13**:73-9.
- Kohli UA, Sood AK, Sinha A, Magdum H, Dey M. A Case of Primary Ovarian Pregnancy. *Int J Biomed Adv Res.* 2014;**5**(8):381. doi: 10.7439/ijbar.v5i8.822.
- Farell DM, Abrams J. Primary ovarian pregnancy; report of a case. *Med J Malaysia.* 1957;**4**:70-1.
- Manjula N, Sundar G, Shetty S, Sujani B, Mamatha D, editors. A rare case of a ruptured ovarian pregnancy. Proceedings in Obstetrics and Gynecology. 2010; pp. 1-5.
- Shrestha A, Chawla CD, Shrestha RM. Ruptured Primary Ovarian Pregnancy: A Rare Case Report. *Kathmandu Univ Med J.* 2013;**10**(39):76-7. doi:10.3126/kumj.v10i3.8026.
- Resta S, Fuggetta E, D'Itri F, Evangelista S, Ticino A, Porpora MG. Rupture of Ovarian Pregnancy in a Woman with Low Beta-hCG Levels. *Case Rep Obstet Gynecol.* 2012;**2012**:213169. doi: 10.1155/2012/213169. [PubMed: 23198195].
- Kaur H, Shashikala T, Bharath M, Shetty N, Rao KA, Rao KA. Ovarian Ectopic Pregnancy Following Assisted Reproductive Techniques: A Rare Entity. *Int J Infert Fetal Med.* 2011:37-9. doi: 10.5005/jp-journals-10016-1015.
- Vlachodimitropoulou Koumoutsea E, Gupta M, Hollingworth A, Gorry A. Ovarian Torsion in the Third Trimester of Pregnancy Leading to Iatrogenic Preterm Delivery. *Case Rep Obstet Gynecol.* 2016;**2016**:8426270. doi: 10.1155/2016/8426270. [PubMed: 27066282].
- Yilmaz O., Kucur SK., Yardim D., Davas I., Polat N.. Diagnosis and clinical approach in primary ovarian ectopic pregnancy: A case report and review of the literature.. *Dicle Med J.* 2013;**40**(1).
- Adeyemi AS, Afolabi AF. Extrauterine foetal death misdiagnosed as missed abortion. *Annal Trop Med Public Health.* 2012;**5**(6):597. doi: 10.4103/1755-6783.109296.