

## Secondary Abdominal Appendicular Pregnancy: Case Report

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### SUMMARY

**Introduction** The case report describes a 29-year-old nulliparous woman that was admitted at the Department of Gynecology and Obstetrics of the Clinical Hospital Osijek complaining of mild abdominal pain without vaginal discharge.

**Case Outline** The patient's menstrual cycle was irregular, from 30-45 days. An ultrasound examination showed suspicion of an ectopic pregnancy with a  $\beta$ HCG level of 1358 IU/L. Due to the presence of liquid in the pouch of Douglas the patient underwent emergency laparoscopy, which showed the presence of tumor mass between the right Fallopian tube and the appendix. These two structures associated with adhesions corresponded to secondary implantation after spontaneous tubal abortion which was confirmed by histopathologic analysis.

**Conclusion** Laparoscopy has emerged as the "gold standard" in the diagnosis and treatment of ectopic pregnancy, in this case the secondary abdominal pregnancy. From the diagnostic point of view, all women of reproductive age should be considered pregnant until proven otherwise, also keeping in mind that ectopic pregnancies can have different locations and many clinical features.

**Keywords:** ectopic pregnancy; laparoscopy; appendix

### INTRODUCTION

Abdominal pregnancy is a very rare but dangerous form of ectopic pregnancy where implantation occurs within the peritoneal cavity, outside the Fallopian tube and ovary. It is estimated to occur in 10 out of 100,000 pregnancies in the United States [1].

Although the case fatality rate for ectopic pregnancies has decreased to 0.08% in industrialized countries, it still represents 3.8% of maternal mortality in the United States alone. In the developing countries, the case fatality rate varies from 3% to 27% [2].

Primary peritoneal pregnancy was first described by Studdiford as a rare form of ectopic pregnancy characterized by the following criteria: 1) normal tubes and ovaries, 2) absence of uteroplacental fistula, 3) attachment exclusively to a peritoneal surface early enough in gestation to eliminate the likelihood of secondary implantation [3]. Mortalities in these cases rise up to 20% because of the risk of massive hemorrhage from partial or total placental separation. The placenta can be attached to the uterine wall, bowel, mesentery, liver, spleen, bladder and ligaments. It can be detached at any time during pregnancy leading to severe blood loss [4].

Diagnosis and treatment of these unusual ectopic gestations have been always challenging, and they usually include major operative procedures that affect future fertility.

Ultrasound is the first line diagnostic imaging method, although, if available, magnetic resonance imaging (MRI) would be superior, especially in cases when the delineation of anatomic relationships may alter the surgical approach [5]. Treatment with the least invasive method, either by minimal access techniques, non-invasive radiological procedures or medical treatment should be encouraged [6].

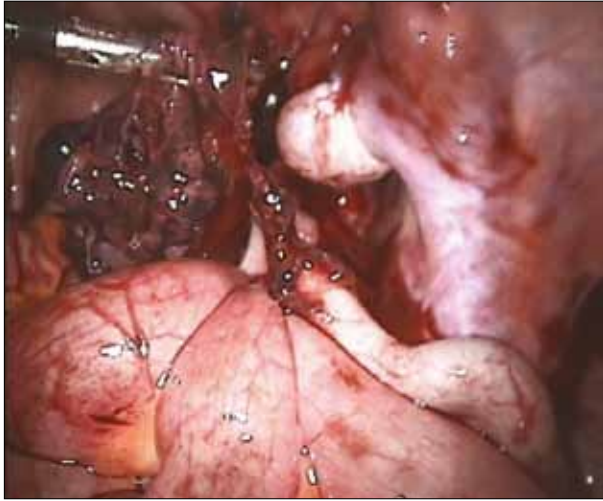
### CASE REPORT

A 29-year-old nulliparous woman was admitted at the Department of Gynecology and Obstetrics of the Clinical Hospital Osijek, complaining of lower abdominal pain. A pelvic examination showed tenderness and pain in the projection of the right adnexa without presence of vaginal bleeding or other gynecologic symptoms. The patient's last menstruation was 30 days prior admission, although her menstrual cycle was irregular, ranging from 30-45 days. Beta human chorionic gonadotropine ( $\beta$ HCG) serum level measured 1358 IU/L. All other blood parameters were normal; the patient was hemodynamically stable. Transvaginal ultrasound (TV US) showed an enlarged right Fallopian tube measuring 43×30 mm, and a normal uterus and endometrium measured 15 mm. Explorative curettage was performed showing no histological signs for products of conception. After 48 hours an additional

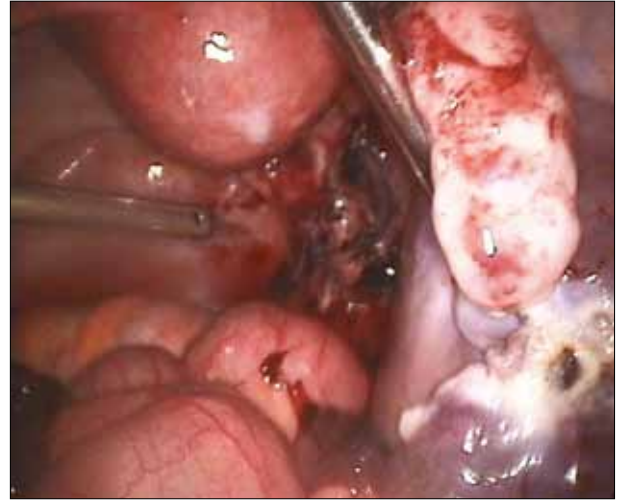
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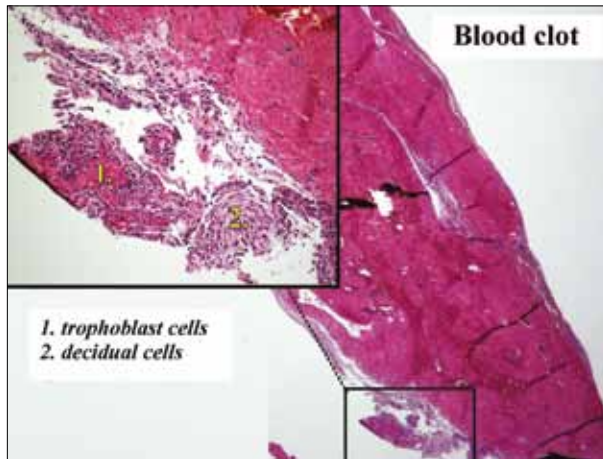
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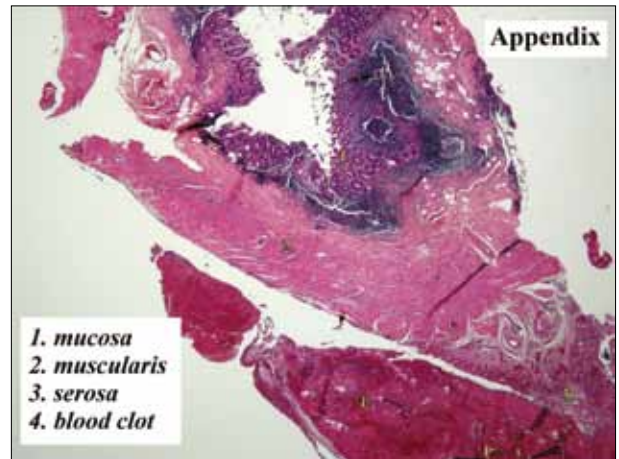
**Figure 1.** Secondary abdominal pregnancy located between right salpinx and appendix



**Figure 2.** Ectopic pregnancy adjacent to appendix



**Figure 3.** Histological finding - blood clot connecting appendix with embryonic tissue present



**Figure 4.** Histopathologic finding – appendix with previously described blood clot

$\beta$ HCG was measured showing a drop to 1241.5 IU/L and US was made showing the presence of right adnexal echo now measuring 34×24 mm and liquid, presumably blood, in the pouch of Douglas. The decision was made to perform urgent laparoscopy to confirm the diagnosis and to resolve a possible rupture of the ectopic pregnancy.

Approximately 250 cm<sup>3</sup> of blood and coagula was discovered in the pouch of Douglas with right salpinx generally enlarged with a tumor-like area the size of a peach. This tumefaction consisted partially of blood and coagula with some placental tissue and was linked to the appendix. An incision was made in the tubal tumor-like area but no embryonic tissue was found, only blood and coagula. Due to the massive hemorrhage, salpingectomy was performed. Further examination discovered large masses consisting of coagula and tissue around the appendix reaching to the right Fallopian tube (Figures 1 and 2). These masses were removed and laparoscopic appendectomy was performed in consultation with an abdominal surgeon.

Histological examination showed a small decidual area in the right tube with trophoblastic activity and chorionic villi on the side of the appendix and an adhesion between the appendix and the right tube (Figures 3 and 4). Two

days later the  $\beta$ HCG serum level declined to 314.4 IU/L, and the patient was discharged from the hospital.

## DISCUSSION

Cases of primary abdominal pregnancies are very rare but have been noted [1, 7]. Even extreme cases of newborns born from such pregnancies have been reported [8].

Other locations of ectopic pregnancy can be the appendix or even the liver. Secondary abdominal pregnancies have been reported and usually occur as a result of tubal abortion, expulsion of products of conception (POC) from their primary implantation site in the Fallopian tube, with a secondary implantation site elsewhere in the abdominal cavity. Among them secondary appendicular pregnancies are among the rarest [9].

Acute appendicitis in some cases has been reported in combination with ectopic (tubal) pregnancy, so their possible causal interaction was discussed [10, 11, 12].

Pate et al. [13] described even concurrent appendicitis and ectopic pregnancy diagnosed during surgery, after negative findings on both US and MRI.

The recent use of progesterone-only pills and intrauterine devices, a history of surgery, pelvic inflammatory disease, sexually transmitted diseases, and allergy increase the risk of ectopic pregnancy [7]. In the presented case we were able to show an abdominal pregnancy with its secondary implantation on the appendix following a spontaneous right tubal abortion. Ultrasound examination in this case was partially helpful. Although it did not help us with the secondary location it did provide the diagnosis of ectopic pregnancy. Diagnosis of ectopic pregnancies, in general, is based on serum beta-hCG concentration and transvaginal ultrasound.

Although a simple urine home pregnancy test in many cases is enough for positive diagnosis of pregnancy (uterine or extrauterine) Lee et al. [14] described a case of omental implantation secondary to ruptured tubal pregnancy with a negative urine pregnancy test.

Ultrasound is of great importance when gynecologic cases are concerned but when it comes to appendix pathology then it becomes limited when pregnant women are concerned [15]. Laparoscopy is not only the treatment of choice for tubal pregnancies, but also the most valuable tool. Peled et al. [16] investigated the accuracy of the preoperative Doppler ultrasound diagnostics in women undergoing emergency gynecological laparoscopy and postoperative diagnosis with a 63.29% match. The decision to perform salpingotomy depends on the presence/status of a contralateral tube. In carefully selected cases local or intramuscular administration of methotrexate allows conservative treatment, provided the patient does not present acute bleeding [17].

Laparoscopy, in this case, has proven to be a “gold standard” for diagnostics and therapy of ectopic pregnancy. Cohen et al. [18] analyzed patients with a ruptured ectopic pregnancy and massive hemoperitoneum with blood loss more than 800 mL. The authors' intention was to compare laparotomy and laparoscopy as therapeutic options and their complications. They concluded that even in cases of ruptured ectopic pregnancy with massive blood loss, laparoscopy is a feasible and safe option with significantly shorter operating times (quicker hemorrhage control) compared with laparotomy.

Although some case reports suggest vaginal bleeding as a possible sign, our patient did not have it [17].

Methotrexate is also considered a therapeutic option for small gestational age pregnancies. Preoperative methotrexate treatment has been described for abdominal pregnancy by Worley et al. [19] but their experience was limited to one patient who was given daily methotrexate therapy. However, sudden placental separation with acute bleeding developed after 4 days and emergency laparotomy was performed.

In conclusion, all women of reproductive age should be considered pregnant, until proven otherwise. Ectopic pregnancies have many faces and many locations. However, the practicing physicians should always keep them in mind. Despite the challenge that diagnostics and treatment of abdominal pregnancies represent minimally invasive surgery – laparoscopy has proven to be the most useful and most efficient diagnostic and therapeutic method.

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## Секундарна абдоминална апендиксна трудноћа: приказ болеснице

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### КРАТАК САДРЖАЈ

**Увод** Приказујемо дијагностику и лечење 29-годишње нероткиње која је на Клинику за гинекологију Клиничке болнице Осијек примљена с благим боловима у трбуху без вагиналног исцетка.

**Приказ болеснице** Менструални циклус болеснице није био редован – од 30 до 45 дана. Ултразвучним прегледом посумњали смо на ектопичну трудноћу. Ниво  $\beta$ HCG био је 1358 IU/l. Због постојања слободне течности у трбуху, учињен је лапароскопски хируршки захват. Током интервенције уочена је туморска маса између десног јајовода и апендикса.

Патохистолошки је доказано да је реч о секундарној абдоминалној трудноћи имплантираној након тубарног побачаја.

**Закључак** Лапароскопија је постала тзв. златни стандард у дијагностиковању и лечењу ектопичне трудноће, у овом случају секундарне абдоминалне трудноће. С клиничког становишта, све жене у генеративној доби потребно је сматрати труднима док се не докаже супротно, имајући у виду чињеницу да ектопична трудноћа има различите локације и даје често много различитих клиничких слика.

**Кључне речи:** ектопична трудноћа; лапароскопија; апендикс

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