

Term Delivery Following Ruptured Tubo-Ovarian Abscess In Early Pregnancy*

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ABSTRACT

Tubo-ovarian abscess in pregnancy is extremely rare. Its occurrence increases the maternal and fetal morbidities and mortalities. The clinical presentation is variable ranging from asymptomatic abscess to diffuse peritonitis. In this report, we present a rare case of tubo-ovarian abscess complicating a pregnancy on its 6 weeks and 5 days age of gestation. The patient presented with frank peritonitis. Internal examination revealed uterine, adnexal and cervical tenderness with no masses palpated. A laparotomy was done and intra-operative findings showed an 8 x 4 cm-sized, right, ruptured tubo-ovarian abscess with purulent contamination of the whole pelvic cavity. Right salpingoophorectomy was performed and parenteral antibiotics were given. The pregnancy was eventually carried to term and the patient delivered by repeat low segment cesarean section without fetal and maternal complications.

Keywords: Pregnancy; tubo-ovarian abscess; term delivery

INTRODUCTION

Tubo-ovarian abscess (TOA) during pregnancy is extremely rare because pelvic infection renders fertilization and implantation almost impossible.¹ Moreover, the cervical mucus plug and intact amniotic membrane act as a mechanical barriers against ascending infection.² The most common risk factors for pelvic abscess formation during pregnancy are pelvic inflammatory disease, previous laparotomy, and structural genital anomalies. Oocyte retrieval is another rare risk factor for pelvic abscess accumulation.³

In pregnancy, diagnosis and management are difficult than in the non-pregnant state and the diagnosis may not be revealed until surgery is resorted to. Maternal and fetal morbidity and mortality significantly increase if the TOA is not removed at an optimal time. Additionally, surgical intervention during pregnancy poses a challenge to the obstetrician who should aim for optimal removal of the infection while conserving the pregnancy with favorable maternal outcome.

Review of the case reports in the literature has revealed only a few cases of pregnancy reaching term. In this report we present a case of TOA diagnosed intraoperatively at 6 weeks and 5 days age of gestation. Salpingoophorectomy was performed and parenteral antibiotics were given. The patient's course after surgery was uncomplicated and she delivered a healthy male

infant by elective repeat low segment cesarean section at 38 weeks and 4 days age of gestation.

CASE REPORT

A 31-year-old, G2P1 (1001) consulted at the emergency room at 6 weeks and 5 days age of gestation for right lower quadrant pain. Pain started 4 hours prior to consult and was associated with vaginal spotting. On admission she was awake and coherent, with blood pressure of 110/80 mmHg, pulse rate of 100 beats per minute, respiratory rate of 24 breaths per minute and temperature of 36.8°C. There was abdominal tenderness and guarding, more pronounced on the right. Speculum examination was normal. Internal examination revealed a long, closed cervix with cervical motion tenderness. The uterus was enlarged to about 10 weeks age of gestation. There was right adnexal tenderness and a thorough evaluation of the adnexal areas were difficult due to guarding. Complete blood count revealed leukocytosis with neutrophil predominance. Urinalysis showed pus cells of 15-20 per high power field. Serum electrolytes and renal function tests were normal (Table 1). Transvaginal ultrasound revealed a right ovarian cyst consider corpus luteum hemorrhagicum measuring 3.8 x 4.6 x 3.7 cm, a normal singleton intrauterine pregnancy 9 weeks by crown rump length with good cardiac activity, normal left ovary, and minimal hemoperitoneum (Figure 1). An exploratory laparotomy was carried out for a suspected ruptured corpus luteum hemorrhagicum. Upon opening the abdominal peritoneum, there was note of purulent discharge admixed with blood. The right adnexa was converted to an 8 x 4 cm mass with a 2 cm point of

* Third Place, PGH Department of Obstetrics and Gynecology 2015 Resident's Interesting Case Contest.

* Presented as a Poster in the 23rd World Congress in Obstetrics, Gynecology & Infertility (COGI), Melbourne, Australia - March 21-23, 2016.

Table 1. Laboratory Findings.

Complete Blood Count	
WBC Count	23.38 x 10 ⁹ /L
RBC Count	4.51 x 10 ¹² /L
Hemoglobin	121 g/L
Hematocrit	0.377
Neutrophils	0.95
Lymphocytes	0.03
Monocytes	0.01
Basophils	0.01
Urinalysis	
Color	Dark yellow
Specific gravity	1.030
Transparency	Hazy
pH	5.5
Sugar	Negative
Protein	1+
RBC	0-1/hpf
WBC	15-20/hpf
Epithelial cells	1+
Bacteria	1+
Mucus thread	2+
Cast	Hyaline 5-10/hpf
Crystals	Negative
Serum electrolytes and renal function tests	
Sodium	133 mmol/L
Potassium	3.3 mmol/L
Chloride	105 mmol/L
Calcium	1.81 mmol/L
BUN	1.5 mmol/L
Crea	45 mmol/L
Albumin	19 g/L

rupture with egress of purulent and bloody material. The right infundibulopelvic ligament was densely adherent to the ileocecal junction. The left ovary was grossly normal with a 2 x 2 cm cystic mass at the superior pole. The left fallopian tube was edematous but had intact fimbriated end. The uterus was enlarged to 10 weeks age of gestation and was densely adherent to the bladder (Figure 2). Adhesiolysis, right salpingo-oophorectomy, bowel inspection, peritoneal lavage and fascial closure by Smead Jones technique were done. Patient received Meropenem 500 mg intravenously every 8 hours for two days then shifted to Clindamycin 300 mg per orem every 6 hours for 7 days. She had a febrile episode of 39°C one day after the operation which was lysed by Paracetamol

500 mg per orem every 6 hours. The patient also received Hydrogesterone 10 mg per orem three times a day and Isoxsuprine 10 mg per orem three times a day for 5 days. Histopathology report was consistent with TOA (Figure 3). She was discharged 5 days after the operation and had regular antenatal consultations at the out patient department thereafter. At 38 weeks and 4 days age of gestation, she delivered by elective repeat low segment cesarean section to a live baby boy weighing 3250 grams, 40 weeks by pediatric aging, APGAR score of 9 remaining 9, appropriate for gestational age. Her postpartum course was uneventful and she was discharged after 2 days.

DISCUSSION

Adnexal masses in pregnancy requiring surgical intervention occur with a frequency ranging from 1 in 81 to 1 in 2500 live births.⁴ Reports of pelvic abscess complicating pregnancy, especially those reaching term are even more rare. The proposed pathogeneses of TOA during pregnancy are variable and include hematogenous spread from a distant focus, lymphatic spread from a contiguous organ such as an infected cervix, infection in a previously existing ovarian cyst, and flare-up of an old infection.^{3,5,6} In some reports, TOA was thought to result from ascending infection caused by gonococci attached to motile spermatozoa.⁷ Use of assisted reproductive technology and structural uterine abnormalities are other suggested causes of the formation of TOA during the gestational period.^{3,8} In our patient, it is more likely that the ovary became infected independent of the gravid state. Since infection needs approximately 6 weeks to 6 months to develop up to the stage of an abscess, the patient probably contracted pelvic infection at some point between her first delivery and the current pregnancy, leading to the involvement of the right ovary. include appendicitis, intestine obstruction, cholecystitis, inflammatory bowel disease, peptic ulcer, acute pancreatitis, urinary tract pathology, sickle cell crisis, porphyria, malaria, arteriovenous hemorrhage, and tuberculosis.² In our case, the patient presented with right-sided abdominal pain and eventually with frank peritonitis and fever. In an early review of literature by Dudley, Lee and Barclay, the TOAs in pregnancy in all nine cases, as was the case in our patient, were unilateral and confined to the right side.⁹

The initial consideration in our patient after transvaginal sonography was rupture of the corpus luteum hemorrhagicum. It must be noted that TOA may not be detected on routine obstetric ultrasonography unless the diagnosis is suspected. TOA on ultrasonography may appear as a complex cystic, thick walled mass in the adnexal region. It is usually hypoechoic and can be multiloculated

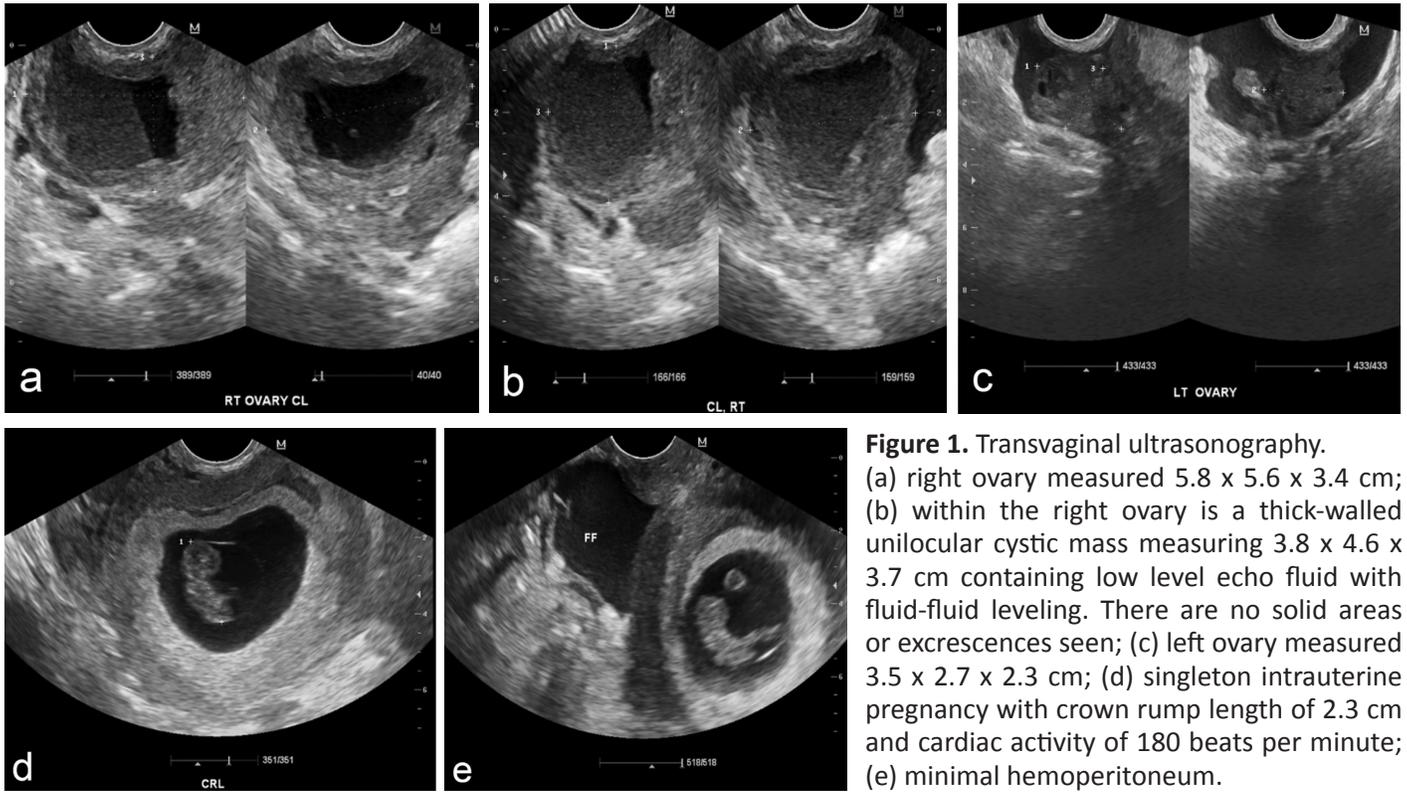


Figure 1. Transvaginal ultrasonography. (a) right ovary measured 5.8 x 5.6 x 3.4 cm; (b) within the right ovary is a thick-walled unilocular cystic mass measuring 3.8 x 4.6 x 3.7 cm containing low level echo fluid with fluid-fluid leveling. There are no solid areas or excrescences seen; (c) left ovary measured 3.5 x 2.7 x 2.3 cm; (d) singleton intrauterine pregnancy with crown rump length of 2.3 cm and cardiac activity of 180 beats per minute; (e) minimal hemoperitoneum.

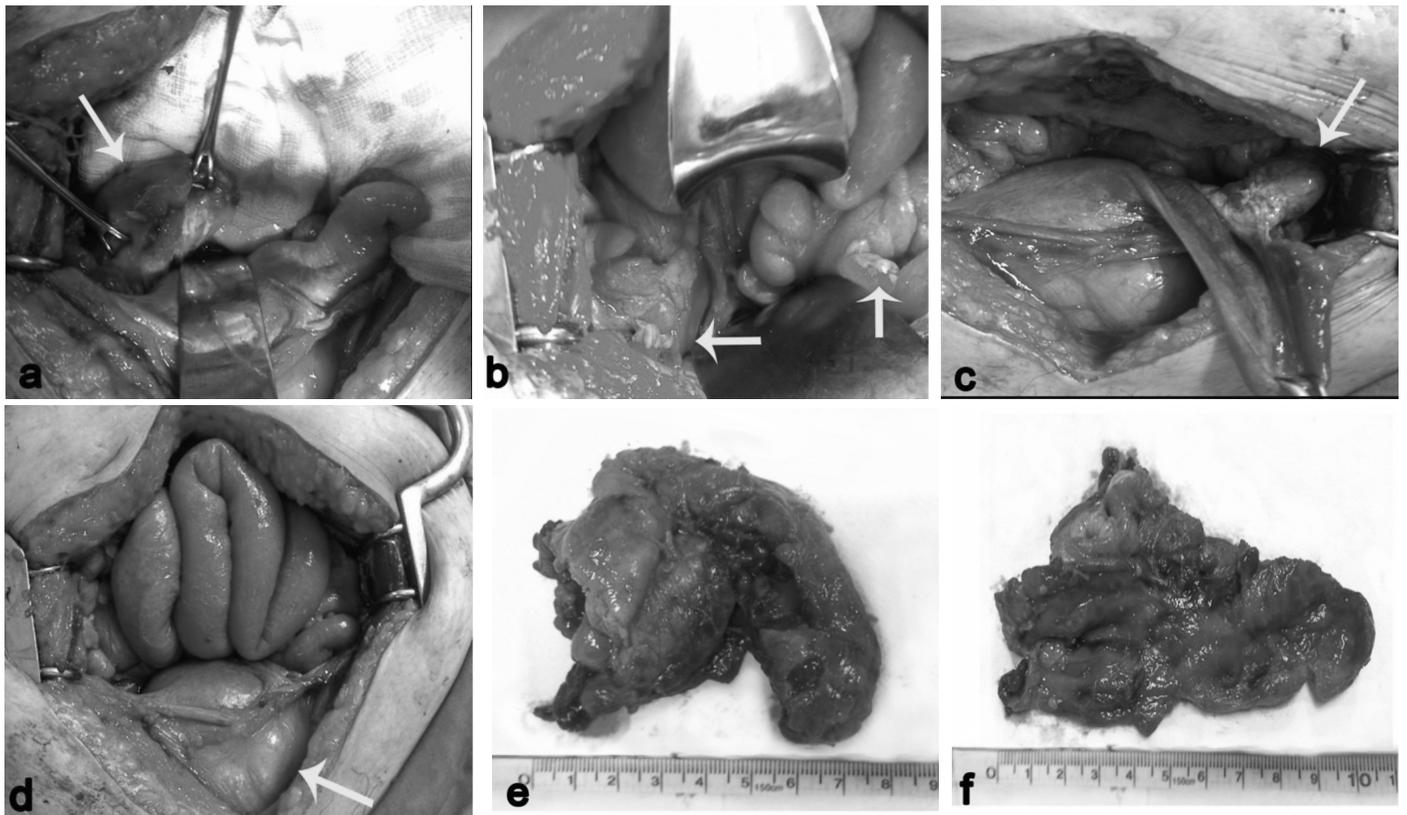


Figure 2. Operation findings which showed ruptured right tubo-ovarian abscess. (a) right adnexa converted to an 8 x 4 cm mass with a 2 cm point of rupture; (b) purulent discharge admixed with blood; (c) left ovary was grossly normal with a 2 x 2 cm cystic mass at the superior pole; (d) uterus was enlarged to 10 weeks age of gestation and was densely adherent to the bladder; (e) right adnexal mass (f) right adnexal mass on cut section.

with debris, septations or with solid components leading to varied echotexture. Air fluid levels may also be appreciated. Magnetic resonance imaging (MRI) is an alternative to ultrasonography in distinguishing among appendicitis, acute pancreatitis, and other pelvic abscesses. Because of superior tissue contrast, MRI can distinguish hematosalpinx from pyosalpinx, and a TOA from a possible ovarian neoplasm. In a study comparing ultrasonography and MRI in the diagnosis of laparoscopically confirmed pelvic inflammatory disease, MRI was found to be more sensitive (95%), specific (89%) and accurate (93%) than transvaginal ultrasonography (sensitivity 81%, specificity 78%, accuracy 80%).¹⁰ However, because ultrasonography is readily available, tolerable, fast and has decreased cost, transvaginal sonography will suffice. In our case, we did

not perform MRI because the patient was already showing signs of frank peritonitis. Thus, laparotomy was carried out.

Delayed diagnosis and intervention may cause maternal death and/or fetal loss. Fetal loss rate of 50% has been reported most often as spontaneous septic abortions.¹¹ Ruptured TOA therefore requires an aggressive intervention. The management of TOA in pregnancy is the same as in non-pregnant women and is primarily surgical especially if the condition progresses or persists after conservative medical treatment. Pregnant women with unilateral involvement managed with the preservation of the contralateral adnexa usually have a favorable outcome. In this case, we performed only right salpingoophorectomy to preserve fertility as the patient was young and the contralateral adnexa seemed to be free of disease. Postoperatively, the patient initially received Meropenem 500 mg intravenously every 8 hours for two days then Clindamycin 300 mg per os every 6 hours for 7 days. According to the CDC 2010 guidelines, when TOA is present, Clindamycin is preferred because it provides more effective coverage against anaerobic bacteria. An abscess has a low level of oxygen tension, and this low redox potential allows anaerobes to proliferate, which leads to tissue destruction and circulatory compromise, thus preventing many antibiotics from reaching the area. There is also poor phagocytosis by neutrophils in this environment and the high levels of enzymes produced by bacteria within the abscess aid in the destruction of any antibiotic like penicillin, ampicillin, first generation cephalosporins, ticarcillin, carbenicillin and chloramphenicol. All of these are important factors in the resistance of these infections to other antimicrobial therapy. At present, metronidazole or clindamycin are considered the most effective antibiotics to the treatment of TOA. Based on trials, the use of double anaerobic coverage in TOA is unfounded, thus the choice of Clindamycin alone for this patient. Clindamycin and Meropenem are both Category B drugs.

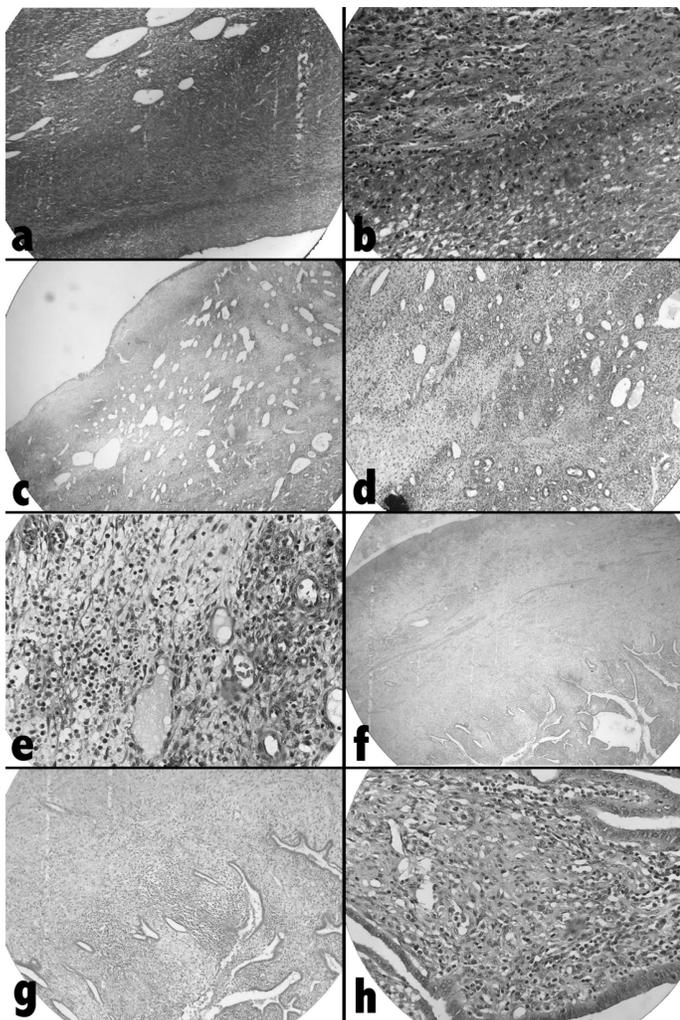


Figure 3. Histopathology of tubo-ovarian abscess. (a-e) ovarian parenchyma is markedly distorted, with abundant fibrous and edematous stroma, and inflammatory components predominantly composed of neutrophils; (f-h) fallopian tube mucosa shows distorted plicae architecture, edema and abundant inflammation mostly composed of neutrophils.

SUMMARY

TOA is an extremely rare entity during pregnancy. Pregnancy is said to protect against pelvic infections and most often clinicians are unlikely to suspect TOA as the cause of an acute abdomen in pregnancy. The proposed pathophysiology are hematogenous and lymphatic spreading, infection in a previously existing ovarian cyst, and flare-up of an old infection. It is particularly important to consider TOA in the differential diagnosis of abdominal pain, fever and leukocytosis, as delay in management may complicate pregnancy and cause several operations, preterm birth, or perinatal morbidity and mortality. TOA may not be detected on

routine obstetric ultrasonography unless the diagnosis is suspected and therefore a laparotomy or laparoscopic intervention should be always be considered for definite diagnosis and treatment. In this report we present a case of a ruptured TOA discovered per operatively at 6 weeks and 5 days age of gestation after presenting

with right abdominal pain. The patient underwent right salpingo-oophorectomy and was given parenteral antibiotics in the form of Meropenem and Clindamycin. Subsequent pregnancy follow-up resulted in the delivery of a term live baby boy by elective repeat low segment cesarean section. ■

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