



# A Rare Case of Tubo-Ovarian Abscess by Enterococcus SPP, Following Intrauterine Insemination

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## ABSTRACT

Background: Tubo-ovarian abscess (TOA) is one of the most serious infections and one of the important and life-threatening complications of the pelvic inflammatory disease. This infection with intrauterine insemination (IUI) is rare. Herein, we reported a case of tubo-ovarian abscess with enterococci after IUI procedure. Case: A 38-year-old lady G2AB1L1 referred to our center with acute abdominal pain and fever two weeks after IUI with the diagnosis of the tubo-ovarian abscess. After treatment with intravenous broad-spectrum antibiotics and repeated drainage under ultrasonographic guide, she was still febrile after 20 days but had no tenderness in the abdominal test. Therefore, laparoscopy and bilateral salpingo-oophorectomy were done for the patient, and due to positive abscess culture for Enterococci spp., linezolid was started for the patient. The woman became afebrile on the eighth postoperative day, and after two weeks of antibiotic therapy was discharged from hospital in good condition. Conclusion: In conclusion, we described a rare case of TOA after IUI procedure by rare colonies of Enterococcus spp., which was not managed with antibiotics and repeated evacuation alone. We have demonstrated that abscesses can be successfully eradicated with surgery and concomitant antibiotic therapy. The clinician must be aware of the potential infectious morbidity following the IUI procedure, the importance of clean catheter use, early diagnosis, and intervention to minimizing morbidity.

**Key Words:** Tubo-Ovarian Abscess, Enterococci SPP, Intrauterine Insemination.

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## INTRODUCTION

Artificial insemination is a commonly performed procedure for the treatment of various forms of infertility. It can be described as the mechanical deposition of semen in the vagina, cervical canal, or uterine cavity. Although rare, infectious morbidity can be related to this procedure. Although studies have indicated that donor semen samples can contain hepatitis B, *Chlamydia trachomatis*, or other bacteria, the pelvic inflammatory disease has only rarely been reported as a complication of intrauterine insemination [1-4].

As pelvic infections are ascending infections, the violation of the natural cervical barrier with IUI can theoretically place the patient at increased risk of infectious morbidity. Pelvic inflammatory disease is one of the most common infections that affects adolescent and young adult women. It is a spectrum of infectious disorders of the upper genital tract, including endometritis, salpingitis, pelvic peritonitis and TOA [5, 6]. One of the most serious complications of pelvic inflammatory disease is TOA, an ascending infection that involves the fallopian tubes and ovaries. Signs and symptoms, when present, may include lower abdominal pain, vaginal discharge, fever, dyspareunia, and other

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complications include endometritis, salpingitis, TOA, periappendicitis, and perihepatitis [7].

A case of tubo-ovarian abscess following IUI is very rare, especially with *Enterococcus* spp. *Enterococcus* is a type of bacteria that is commonly present in the gut and bowel. In some cases, this bacterium can also be found in the mouth or vaginal tract and may cause a life-threatening condition due to both natural and acquired resistance from antibiotics treatment. As a result, it is one of the most antibiotic-resistant types of bacteria that is transmitted most commonly due to poor hygiene. Enterococcal infections are often as part of polymicrobial infections. These factors limit the ability of investigators to understand the independent contribution of enterococcal infections to mortality and morbidity. Therefore, we must consider administering antibiotics with anti-Enterococcal activity to patients with peritonitis and valvular heart disease, patients with severe sepsis of abdominal origin that have recently used broad-spectrum antibiotics, and patients with persistent intra-abdominal fluid collections without clinical improvement [8]. In this study, we presented a case of a tubo-ovarian abscess caused by *Enterococcus* spp. following IUI with the husband's sperm.

#### Case Report

A 38-year-old female, G2P1AB1L1, presented for reproductive assistance due to infertility. After a 6-year attempt to conceive with timed intercourse, the patient underwent IUI using her husband's sperm following empiric controlled ovulation hyperstimulation with HMG (human menopausal gonadotropin). The patient's gynecologic history was not remarkable except for persistent endometrioma about 4 centimeters in right

ovary diagnosed by ultrasonography, prior to receive ovarian stimulating drugs. No pre-insemination cultures were performed.

The freshly prepared sperm sample was deposited intra uterinely via a small catheter after washing the cervix with sterile betadine solution. Fifteen days later, the patient presented with complaints of lower abdominal pain and fever (temperature was 38.5°C) and was admitted in gynecologic central hospital of Shiraz University of Medical Sciences. Furthermore, pelvic sonography failed to reveal any significant findings except previous endometrioma and mild free fluid in the pelvic cavity. She was subsequently given azithromycin and gentamicin (80 mg IV q 8 h), and clindamycin (900 mg IV q 8 h). Blood cultures were without growth at 72 h. For a possible pelvic infection, the source of her symptoms was believed to be most likely due to a ruptured ovarian cyst. The patient reported to have some initial relief with antibiotic therapy, but her fever continued.

Six days later, an abdominal ultrasound revealed both side ovarian echocomplex cystic mass with a moderate amount of free fluid in the pelvic cavity, and white blood cell (WBC) count of 11000 / $\mu$ l with neutrophil dominance (65%) without any significant change during follow up. The urine pregnancy test was negative. Due to the patient's persistent fever, imipenem antibiotic therapy was added to other medications. A presumptive diagnosis of a pelvic abscess was made, aspiration of ovarian cysts under ultrasonography guide was done for patient two times with an interval period of about four days. The cyst fluid culture result showed mixed bacterial growth.



**Fig. 1: Trans-vaginal ultrasound imaging (A, B, C) of 38 years old lady developed with bilateral tubo-ovarian abscess after intra uterine insemination procedure with no response to medication: A; 7 cm cystic mass, filled with homogeneous low echo-content, is confirmed in the right adnexal region, (thick white arrow) that was anteriorly displaced uterus (star sign). B; similar left adnexal 6 cm cystic mass, and complex heterogeneous (mixed solid-cystic) appearance (triangular sign) extending between the collapsed rectum and anteriorly displaced uterus to the other side. C; The presence of free pelvic fluid in the cul-de-sac.**

Laparoscopy was performed in the following seven days due to non-responding fever. Percutaneous catheter drainage was considered, but due to its experimental nature and high rate of complications as well as patient desire for definitive treatment, surgical drainage was performed. Dense pelvic adhesions encasing both adnexa and obliterating the cul-de-sac were noted. The ovaries and distal portion of both fallopian tubes were fragile with a brownish-green appearance. Upon manipulation of the ovary, a thick yellow-white exudate was expressed. Since the overlying tube appeared necrotic and friable, bilateral salpingo-oophorectomy was performed and subhepatic multiloculated abscess was evacuated. Fluid from the abscess was collected by aspiration into a syringe and transported to the laboratory. Gram stain from the abscess cavity revealed the presence of neutrophils; however, no bacteria were present. Intraoperative cultures of the peritoneum and abscess cavity were positive for *Enterococcus* spp. that was sensitive to linezolid. Patient was completely afebrile seven days after starting linezolid antibiotic and discharged from our ward after completing these medical courses in good condition.

## DISCUSSION

Complications related to IUI are rare and infrequent. The prevalence of infections following IUI has been reported to be in range of 1 in 500 insemination procedure [9].

The infection associated with IUI can be due to the placing sperm and microorganisms directly inside the uterine cavity, thus bypassing the natural barriers against the infection of upper genital tract. Stone et al also showed the presence of bacteria in the peritoneal fluid of patients who underwent IUI [10].

Unfortunately, there are a few ways other than operative diagnosis for differentiating between an ovarian abscess and a TOA. This patient, that had undergone controlled ovarian hyperstimulation with HMG (human menopausal gonadotropin) in conjunction with timed insemination, may have been at increased risk for an ovarian infection because of the more extensive serosal disruption associated with this method. In any patient undergoing a transcervical procedure at the time of ovulation in which nondescript symptoms of pelvic infection occur, an ovarian abscess should be considered.

The treatment of an ovarian abscess, once suspected, is surgical intervention. In any patient undergoing IUI who has risk factors for sexually transmitted disease or a history of the same, antibiotic prophylaxis might be instituted. However, the side effects must be considered, and antibiotics are not usually recommended. Generally, a history of salpingitis should be viewed as a contraindication to IUI.

Appropriate diagnostic modalities include evidence of systemic infection such as the sedimentation rate of C-reactive protein and ultrasound or computerized tomography for the presence of a fluid-filled cavity within the ovary. As with many abscesses, there may be little evidence of acute elevation of WBC count until rupture or overwhelming sepsis occurs. As antibiotic therapy is almost always unsuccessful, surgical intervention is the hallmark of therapy [10, 11].

In this patient, despite conservative treatment with broad spectrum antibiotics, the patient continued to have fever. When management with antibiotics seems to be inadequate, surgical intervention is required. One quarter of all patients with TOA were reported to need surgical treatment [11].

In our case, even though percutaneous drainage was performed under ultrasonographic guidance, the woman had continuous persistent fever and became afebrile after the ovaries and both tubes were removed.

Oophorectomy with preservation of other reproductive structures can be accomplished if the diagnosis is made early and accurately. Ovarian abscess following IUI is a rare complication. The combination of a transcervical procedure and controlled ovarian hyperstimulation may render this complication more likely.

Since *Enterococcus* is naturally present in the gastrointestinal tract, *Enterococcus faecalis* is found in fecal matter. Improper cleaning of items containing fecal matter, or not washing hands after restroom use, can enhance the risk of bacterial transmission.

The bacteria can spread throughout hospitals if healthcare workers do not wash their hands between patients. If not thoroughly cleaned, catheters or other ports, can also transmit infection [8]. The clinician must be alert to the potential infectious morbidity following this IUI procedure and the importance of early diagnosis and intervention in minimizing morbidity [12].

There have been a few case reports of pelvic inflammatory disease following IUI. The first case of a ruptured TOA after IUI was reported by Sable et al. in 1993 [13]. Here we report a 38-year-old woman who underwent IUI with sperm from her husband. 15 days postoperative, the patient developed abdominal pain and fever. Given the clinical symptoms and detection of ovarian cystic mass on ultrasound examination, we diagnosed TOA. Broad-spectrum antibiotics were used, including gentamicin, clindamycin, azithromycin and imipenem. Despite conservative treatment with antibiotics, the patient continued to have fever. Conservative treatment with broad-spectrum antibiotics is regarded as the initial treatment for TOA. Drainage of abscess under guide of ultrasonography accompanied by antibiotics have been frequently used during the past two decades for the treatment of TOA [14, 15]. When

management with antibiotics seems to be inadequate, surgical intervention is required [16].

## CONCLUSION

In conclusion, we described a rare case of TOA after IUI procedure by rare colonies of *Enterococcus* spp., which was not managed with antibiotics and repeated evacuation alone. We have demonstrated that abscesses can be successfully eradicated with surgery and concomitant antibiotic therapy. The clinician must be alert to the potential infectious morbidity following the IUI procedure, the importance of clean catheter use, early diagnosis, and intervention in minimizing morbidity.

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