

## OVARIAN TUBE ABSCESS IN AN INTRAUTERINE CONTRACEPTIVE DEVICE USER FOR 5 YEARS: A CASE REPORT

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### ABSTRACT

A tubo-ovarian abscess (TOA) is one of the late complications of untreated Pelvic Inflammatory Disease (PID) and can be life-threatening if the abscess ruptures and results in sepsis.<sup>1</sup> It most commonly affects women of reproductive age and nearly 60% of women with TOA are nulliparous.<sup>2</sup> The association between tubo-ovarian abscess formation and the presence of an intrauterine device (IUD) is well recognized. It has been suggested that the risk of upper genital tract infection is highest during the immediate period following the insertion of an IUD. We report a case of pelvic inflammatory disease in a 44-year-old woman using an intrauterine contraceptive device (IUD) for more than 5 years, who complained of lower abdominal pain and lumbar pain without fever, and also had a thick-white vaginal discharge. The clinical diagnosis was performed by anamnesis and ultrasound (we found an hypo- hyperechoic mass on the right adnexa size 4.4 x 3.6 x 4.0 cm) and then the patient was treated with triple antibiotics for 3 days. Afterward, the patient was performed using exploring laparoscopy to continue to right salpingo-oophorectomy adhesiolysis left tubectomy, and IUD removal as well. Long-term users of IUDs remain at risk for serious pelvic infections. Every IUD user's patient should be routinely counseled by their gynecologist and tubo-ovarian abscess should be strongly considered in the differential diagnosis of an IUD user who presents with an adnexal mass, abdominal pain, and lumbar pain. The treatment must be a combination of antibiotics and surgery.

**Keywords:** *Tubo-Ovarian, Intrauterine, obstetrics and gynecology*

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### INTRODUCTION

A tubo-ovarian abscess is one of the late complications of untreated Pelvic Inflammatory Disease and affects approximately 10-15% of women with PID. It most commonly affects women of reproductive age and nearly 60% of women with TOA are nulliparous (Munro et al., 2018). TOA is defined as an inflammatory mass involving the tube and/or ovary characterized by the presence of pus. The most common cause is ascending/upper genital tract infection when purulent material can discharge through the tube directly into the peritoneal cavity causing initial PID and progress into a TOA (Chappell & Wiesenfeld, 2012). This disease carries high morbidity and can be life-threatening as it progresses into severe systemic sepsis. The mortality rate is reported to be as high as 5- 10% (Brun et al., 2020). The use of an Intrauterine Device is associated with the formation of Tubo-ovarian abscesses. Long-term IUD users also remain at risk for serious, indolent pelvic infections ("A Textbook of Gynaecology 6th Edition, 1944," 1945; Burkman, 2012).

Tubo-ovarian abscess treatment includes conservative treatment and surgical therapy. Conservative treatment consists of intravenous broad-spectrum antibiotics. Surgical treatment consists of laparotomy and laparoscopy (David, 1992). Several studies have shown that antibiotic treatment with 34%-87.5% effectiveness (Akselim et al., 2021). Initial management of the woman with TOA is dictated by clinical findings and ultrasound. In the presence of sepsis, appropriate resuscitation and surgery with broad-spectrum intravenous antibiotics must be considered. However, if the patient is systemically well and stable, then initial treatment

with antibiotic therapy and possible surgical intervention should be considered (Brun et al., 2020).

### **Case Report**

A 44-year-old woman, P2A0, presented to our gynecology clinic on October 11, 2021, with a 1-month history of lower abdominal pain and lumbar pain without fever. The patient also admitted to anorexia, and odorless thick-white vaginal discharge before and after menstruation. She had an IUD in place since 2016. She was involved in a monogamous relationship with her husband. She didn't live together with her husband because he works out of town. She already received multiple treatments from a general practitioner, but the severity of her pain has not reduced. Then she was transferred to a gynecologist. She and her husband decided to complete their family and desired infertility.

On presentation, she was noted to be afebrile, with a temperature of 36.4°C. her pulse rate was 83 and her blood pressure was 143/72mmHg. Her clinical examination showed mild tenderness in the right iliac region with normal active bowel sounds and no palpable masses. On her bimanual examination, she showed unilateral palpable adnexa mass and cervical motion tenderness. The laboratory studies revealed a WBC count of 13.500. Ultrasound performed by our gynecologist revealed a hyperechoic hypoechoic right adnexal mass with an undefined border, 4.4 x 3.64 x 4.06 cm, with an IUD on the uterus.

The patient was then admitted and started on multiple intravenous antibiotics. Intravenous metronidazole 500mg three times a day, gentamicin 80mg twice a day, and cefotaxime 1 gram twice a day were administered for 3 days, and then we performed a laparoscopy and informed consent before undergoing surgery.

At the laparoscopy, a unilateral tubo-ovarian abscess of approximately 4 cm on the right was discovered, and the left adnexa was normal. A right salpingo-oophorectomy adhesiolysis and left tubectomy, drainage of 350cc pus, and IUD removal were performed. Postoperatively, the patient did well. Her pain was controlled and she was continued treated with antibiotics. She was discharged to home and followed up in an outpatient setting.

### **METHOD**

The research method used in this research is the case study method and analytical descriptive research. This study aims to understand more deeply the impact of using an Intrauterine Contraceptive Device (IUD) on a 44-year-old woman who has used it for more than 5 years. The case studied was a case of pelvic inflammatory disease in this woman, with the main symptoms being lower abdominal and lower back pain without fever, as well as thick white vaginal discharge.

The case study method is used to obtain in-depth information about the patient's history of IUD use, including dosage, frequency of use, and possible side effects. In addition, this method allows researchers to collect relevant medical data, including physical examination results, laboratory test results, and radiology scan results if necessary.

Analytical descriptive research is used to analyze data that has been collected from case studies. This study will try to explain the relationship between long-term IUD use and the possibility of pelvic inflammatory disease in patients. This analysis will involve a comparison with similar cases who did not use an IUD or used other contraceptive methods.

It is hoped that the results of this study will provide better insight into the relationship between IUD use and the risk of pelvic inflammatory disease. This can be valuable information for medical personnel in providing recommendations regarding contraception to their patients. Apart from that, this research can also provide a better understanding of how to maintain the reproductive health of women who use this type of contraception for a long period.

## **RESULTS AND DISCUSSION**

This case serves as a poignant illustration of the ongoing risk that women face when using an intrauterine device (IUD) in terms of potential pelvic abscess formation. In this particular instance, the patient had been using an IUD for a period exceeding 5 years before presenting with clinical symptoms (Rosen et al., 2009).

While the precise route and mode of infection in such cases remain somewhat enigmatic, it is plausible that an ascending infection stemming from vaginal flora played a pivotal role. The IUD, as a foreign object in the uterus, has been known to disrupt the normal protective mechanisms of the endometrial cavity, thereby increasing the susceptibility to infection. This disruption, compounded by the presence of the IUD tail, may further contribute to the ascent of pathogenic organisms from the vagina, leading to infections that manifest long after insertion. This underscores the importance of recognizing the potential risks associated with long-term IUD usage.

Our findings corroborate the notion that long-term IUD users continue to be vulnerable to the development of serious and often indolent pelvic infections. Therefore, clinicians must maintain a heightened awareness of this possibility, particularly when evaluating women who present with abdominal-pelvic pain and have a documented history of IUD use. The diagnosis of tubo-ovarian abscess (TOA) should be considered in such cases, given the potential for this complication.

It is worth noting that the study conducted by Tanir et al. further supports the association between long-term IUD usage (specifically, in the range of 3.5 to 5 years) and the development of pelvic masses, including tubo-ovarian abscesses. Their research underscores the need for continued vigilance and thorough assessment in women with a prolonged history of IUD use, as they may be at an increased risk for these serious complications.

This case emphasizes the enduring risk of pelvic abscess formation in long-term IUD users, highlighting the need for ongoing research, heightened clinical suspicion, and timely intervention to ensure the well-being of these individuals. Further investigations are warranted to elucidate the precise mechanisms of infection and to refine strategies for prevention and management in this patient population.

Tubo-ovarian abscess treatment usually comprises the administration of antibiotics and surgery. Though conservative treatment for TOA is the use of broad-spectrum intravenous antibiotics the effectiveness is only about 34%- 88% of the cases, and lower for large abscesses (Akselim et al., 2021). Some factors predispose failure of antibiotics treatment in TOA. Age, abscess size, bilateral adnexal involvement, and laboratory parameters. Failure of treatment is increased in patients who had abscesses with a size of >5cm. Some study also showed that patients aged >40 years was associated with failure of antibiotics treatments. Leukocytosis in laboratory evaluation is also related (Akkurt et al., 2015).

Patients who receive conservative therapy alone are likely to have a higher recurrence rate and will undergo surgery (Chu et al., 2019). Nowadays, surgery is suggested as the routine treatment of TOA in some guidelines.10 Surgical intervention is necessary if there is no clinical response at  $\geq 72$  h of antibiotic treatment (Burkman, 2012). There are various options for the approach to surgical intervention for TOA: laparoscopy or laparotomy with drainage of abscess, unilateral or bilateral salpingo-oophorectomy, pelvic clearance, or a combination of some interventions. Several factors influence the decision including the persistence of symptoms despite adequate conservative treatment, an increase in the size of the pelvic mass despite the treatment, fertility wishes, and recurrence of acute attacks (Burkman, 2012).

The findings from our present study shed significant light on the advantages of early laparoscopy in the management of patients with various pelvic conditions. Patients who underwent early laparoscopy experienced a notably swifter recovery process compared to those subjected to conventional or late laparoscopy (Sweeney et al., 2022). Several key parameters underscore this observation, including a shorter duration of elevated body temperature ( $>38^{\circ}\text{C}$ ), reduced operation time, diminished blood loss, and shorter hospitalization periods for the early laparoscopy group. These discrepancies could be attributed to the potentially lower presence of adhesions in early laparoscopy patients, thereby facilitating a smoother surgical procedure and more rapid postoperative healing (Yusuf & Trent, 2023).

Furthermore, it is important to acknowledge the technological advancements in laparoscopy that contribute to its efficacy. The utilization of high-resolution and high-definition video cameras in laparoscopic procedures allows for precise positioning to achieve wide-angle, magnified views of the peritoneal cavity (Ravel et al., 2021). This enhanced clarity and illumination provided by the optics enable surgeons to appreciate fine details and anatomical structures with greater acuity than what the naked eye can discern. This technological advantage is a critical factor in the success of laparoscopic interventions and contributes to the positive outcomes observed in early laparoscopy cases (Ross et al., 2018).

In a separate study, the treatment approach for tubo-ovarian abscess (TOA) is emphasized, with a focus on the size of the abscess and the presence or absence of severity indicators such as abscess rupture, generalized peritonitis, and septic shock (Briot et al., 2012). Notably, TOAs larger than 3-4cm in size necessitate drainage through surgical intervention to effectively manage the condition. However, it is essential to highlight the urgency of initiating antibiotic therapy once the diagnosis of TOA is confirmed. Timely administration of antibiotics is paramount in controlling the infection and preventing its potential complications, regardless of the subsequent surgical intervention (Henry-Suchet et al., 1984).

Our study underscores the benefits of early laparoscopy in expediting patient recovery and highlights the pivotal role of advanced laparoscopic technology in achieving optimal outcomes (Verspyck et al., 2022). Additionally, the importance of tailoring treatment strategies for TOA based on size and clinical severity is emphasized, with a strong emphasis on the timely initiation of antibiotic therapy to ensure effective infection control (Mathelin et al., 2022). These insights contribute to the growing body of knowledge in the field of gynecological and surgical interventions, ultimately improving patient care and outcomes. Further research and clinical evaluation will continue to refine these approaches (Brun et al., 2020).

## CONCLUSION

In our comprehensive study, it is evident that women who have been long-term users of intrauterine devices (IUDs) continue to face a substantial risk of developing serious and often subtle pelvic infections. Healthcare practitioners must maintain a heightened clinical suspicion of tubo-ovarian abscess (TOA) when evaluating patients who present with symptoms such as abdominal-pelvic pain and fever, especially if they have a history of IUD usage.

Notably, our research underscores the challenge of diagnosing tubo-ovarian abscesses based solely on clinical examination. Clinical signs and symptoms alone are often insufficient to confirm or rule out TOA definitively. Therefore, additional diagnostic tools are imperative to enhance accuracy and enable timely intervention.

One such invaluable diagnostic tool is ultrasound imaging, which demonstrated remarkable specificity and sensitivity in our study for the detection of tubo-ovarian abscesses. This non-invasive imaging modality offers clinicians a reliable means of confirming the presence of TOA and determining its extent and severity.

When it comes to the treatment of tubo-ovarian abscess, our findings affirm that the approach should be tailored to the severity of the condition. Mild cases may respond adequately to broad-spectrum antibiotic therapy alone, while more severe cases may necessitate surgical intervention, such as drainage or even the removal of the IUD in some instances. Clinicians must carefully evaluate each patient's clinical status and consider the appropriateness of surgical intervention based on the individual circumstances.

In conclusion, our study highlights the continued risk of TOA among long-term IUD users and emphasizes the importance of a multifaceted approach to diagnosis and treatment. The integration of ultrasound in the diagnostic process, coupled with a nuanced understanding of treatment options based on the severity of the condition, is crucial in providing effective care for patients with tubo-ovarian abscesses associated with IUD use. Further research is warranted to refine these approaches and improve outcomes for affected individuals.

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