

Conservative Management of Tubo-ovarian Abscess through Minimal Invasive Route: A Case Report

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ABSTRACT

Tubo-ovarian Abscess (TOA) is a challenging infectious condition of the adnexa, typically arising from Pelvic Inflammatory Disease (PID). Patients with TOA commonly present with symptoms such as lower abdominal pain, fever and vaginal discharge. Traditionally, cases of TOA have been addressed through total abdominal hysterectomy. TOA typically presents with abdominal pain and fever, which, on imaging, appear as a lobulated multicystic lesion in the adnexa. These cases were managed through transvaginal aspiration, resulting in a satisfactory outcome. The present report of a 45-year-old woman emphasises the efficacy of management through minimally invasive techniques and highlights the role of interventional radiology in managing such cases.

Keywords: Multicystic lesion, Pelvic inflammatory disease, Transvaginal aspiration adnexa

CASE REPORT

A 45-year-old Para2, Living2 (P2L2) woman underwent a hysterectomy four years ago due to a fibroid and presented with abdominal pain, increased frequency of micturition and fever over the past 1-2 weeks. The pain was gradual in onset, constant and dull aching, localised to the lower abdomen. It intensified over four days and was not relieved by any specific factors. The fever was high-grade, intermittent and accompanied by chills. There was no specific medical or personal history and no co-morbidities were reported.

On examination of the abdomen, the abdomen was soft, with tenderness noted in the left iliac fossa. A per speculum examination showed that the vault was healthy, with no evidence of discharge. On per vaginal examination, tenderness in the left iliac fossa was detected, along with a boggy swelling in the left fornix extending to the midline. Additionally, tenderness in the left adnexa and cervical motion tenderness were observed. The following investigations were conducted [Table/Fig-1].

Investigations	Observed values	Normal range
Hb	10 gm/dL	11.6-15g/dL
WBC count	21000/ μ L	4000-10000/ μ L
Neutrophils	88%	40-80%
Lymphocytes	10%	20-40%
Eosinophils	1%	1-6%
Monocytes	1%	2-10%
Basophils	0%	0-2%
Platelet count	421000	150000-410000/ μ L
CRP	171 mg/L	<10 mg/L
Urine culture	No growth	-
Vault swab	No growth	-

[Table/Fig-1]: Blood and urine investigations.

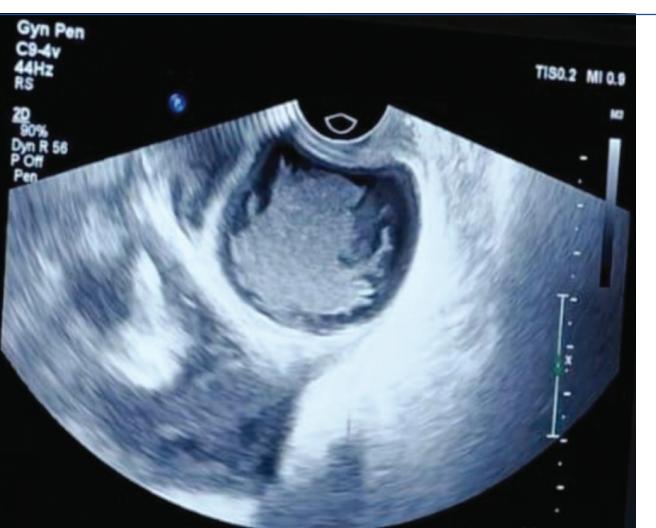
Hb: Haemoglobin, WBC: White blood cells, CRP: C reactive protein

Transvaginal Ultrasonography (TVS) revealed a lobulated, heterogeneous, multiloculated, complex tubular multicystic lesion with a thick wall in the left adnexal region, measuring approximately 10.2x5.3x8 cm, with a volume of approximately 229 cc [Table/Fig-2a,b]. Extensive soft-tissue oedema with inflammatory changes was

noted surrounding the lesion. Adhesions were present between the bowel and the peritoneum. The lesion extended medially into



[Table/Fig-2a]: A lobulated Heterogenous multi-loculated complex tubular multicystic lesion with thick walls and internal septate in left adnexal region with turbid fluid within.



[Table/Fig-2b]: Tubo-ovarian mass of 10.2x5.3x8 cm with volume of 229 cc.

the midline, posterior to the urinary bladder and inferiorly abutted the vaginal vault. These findings suggest a TOA or a left-sided pyosalpinx.

Despite initial treatment with injection Cefotaxime, Metronidazole and Gentamicin, the patient did not show any improvement in symptoms over the next 48 hours. Consequently, Inj. Cefotaxime was discontinued and an injectable combination of Piperacillin and Tazobactam 4.5 g was initiated. After two days of this revised treatment regimen, the patient's temperature began to decrease, accompanied by a general improvement in symptoms. However, a follow-up ultrasound conducted 48 hours after starting Inj. Piperacillin and Tazobactam revealed no change in the previously observed findings.

As the aim was to pursue conservative management and minimise invasiveness to reduce the risk of secondary peritonitis, therapeutic drainage of the abscess was performed via transvaginal aspiration under ultrasound guidance. Using an ultrasound-controlled endovaginal transducer with an attached 18G needle, approximately 100 cc of foul-smelling pus was aspirated under aseptic conditions and sent for further investigation, including culture and sensitivity tests, which yielded no growth, as well as a negative Cartridge-Based Nucleic Acid Amplification Test (CBNAAT) test. Following aspiration, irrigation with 100 cc of injection Metronidazole was administered, leading to improvement in the patient's general condition, thus allowing for the continuation of intravenous antibiotics. A repeat ultrasound conducted after 10 days of intravenous antibiotic therapy indicated a reduction in the size of the abscess to 4x3x2.5 cm. Subsequently, a repeat ultrasound-guided aspiration of 60 cc was performed under aseptic precautions. After two days of aspiration, the patient was discharged and followed-up on an outpatient basis. A follow-up ultrasound performed three weeks later revealed the presence of a 12 mm hydrosalpinx. A repeat complete blood count showed the total leukocyte count within normal limits.

DISCUSSION

The PID is an inflammation of the upper genital tract (including the ovaries, uterus and/or fallopian tubes) in women, commonly caused by polymicrobial flora [1,2]. The infection ascends from the lower genital tract to the uterus, fallopian tubes, ovaries, endometrium and peritoneal cavity [1-3]. PID is a primary cause of gynaecological hospitalisations and emergency department visits. Untreated cases of PID can lead to severe life-threatening complications such as TOA [4]. A TOA is a sequela of PID, in which a complex infectious mass of the adnexa is formed. It is classically presented with symptoms such as fever, lower abdominal-pelvic pain, vaginal discharge, nausea, elevated white blood cell count, increased C-Reactive Protein (CRP) levels and/or adnexal mass; however, the presentations of this disease can be highly variable [5-7].

A TOA is classified as primary when it occurs as a complication of PID and secondary when it results from any intra-abdominal processes, such as bowel perforation, pelvic malignancy, or ruptured appendix [5]. It is polymicrobial, with the most common causative organisms being *Chlamydia trachomatis*, *Neisseria gonorrhoeae* and *Escherichia coli* [3]. PID affects 11% of reproductive-age women and can lead to immediate and long-term reproductive sequelae, including chronic pelvic pain, recurrent PID, infertility and ectopic pregnancies due to tubal scarring and damage from inflammation [6].

With the advent of broad-spectrum antibiotics, treatment is effective for most women affected by PID, achieving a success rate of 70% [7]. Surgical intervention becomes imperative in instances of antibiotic resistance or suspected rupture. Classically, cases of TOA were managed with abdominal hysterectomy and bilateral salpingo-oophorectomy [8].

A TOA, as a significant complication, typically harbours a mix of anaerobic, aerobic and facultative microorganisms, including *Neisseria*

gonorrhoeae, *Chlamydia trachomatis* and various endogenous bacteria [9]. Treatment options range from broad-spectrum antibiotics for outpatient management to laparotomy in emergencies such as ruptured abscesses [10]. Surgical treatments for pelvic abscesses can generally be categorised into drainage procedures and curative interventions, such as adnexectomy and hysterectomy [7].

Laparoscopy serves as both a diagnostic tool and a means to rule out other emergencies, while drainage of a pelvic abscess carries the anatomical risk of pus and bacterial spillage into the pelvic cavity, potentially leading to complications such as generalised peritonitis and septic shock [11]. Various drainage approaches exist, including transabdominal, transgluteal, transrectal and transvaginal drainage, often guided by computed tomography or ultrasonography. Percutaneous catheter drainage via the abdominal wall is the standard approach for abdominal and upper pelvic abscesses, whereas the transvaginal route is typically preferred for draining lower pelvic abscesses in most cases [12].

In the present case, the authors did not find any causative bacteria. In contrast, Oride A et al., reported a positive bacterial culture in 16 of 19 cases (84.2%) from the obtained abscess in their retrospective review of 20 cases. The causative bacteria included four aerobic species identified in seven patients and eleven anaerobic species found in 10 patients [5].

In the present case, transvaginal drainage of the abscess under ultrasound guidance was performed, providing a wide margin of safety. Gjelland K et al., demonstrated the effectiveness of transvaginal ultrasound-guided aspiration for abscess drainage, successfully treating 282 out of 302 (93.4%) TOA patients using this approach [13]. Perez-Medina T et al., compared antibiotic therapy alone with a combination of antibiotics and ultrasound-guided transvaginal needle aspiration, highlighting the advantages of combining transvaginal aspiration with antibiotics to improve the cure rate and reduce hospitalisation time [14].

The patient was managed conservatively with minimally invasive surgery, resulting in a short hospital stay and recovery period. She was pleased that we were able to avoid any major surgical procedures and she was discharged early.

CONCLUSION(S)

Transvaginal needle aspiration and antibiotic administration represent an effective approach for draining low-lying pelvic abscesses. This method offers several advantages over alternative techniques, including minimal invasiveness, reduced discomfort for the patient, a lower risk of secondary peritonitis, a decreased likelihood of disease flare-ups, early patient discharge and cost-effectiveness.

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