

## Tubo-Ovarian Abscess in a Female Virgin with Partially Imperforated Hymen

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**A tubo-ovarian abscess is a serious complication of pelvic inflammatory disease; it is very rare among sexually inactive females.**

**We report a case of tubo-ovarian abscess in a twelve-year-old sexually inactive female. The first menarche was two months prior to her presentation with acute abdominal pain and fever and no evidence of acute appendicitis. The patient had a partially imperforated hymen. Laparoscopy revealed large bilateral tubo-ovarian abscess. Unilateral salpingo-oophorectomy and appendectomy were performed. Postoperatively the patient received an antibiotic course.**

**Early diagnosis and intervention are essential to prevent further complications, such as infertility and ectopic pregnancy.**

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Pelvic inflammatory disease (PID) is an inflammation of the female genital tract, believed to be polymicrobial infection in origin, but mainly composed of anaerobic and gram-negative bacteria<sup>1</sup>. Theoretically, it is caused by the ascending of pathogens from the lower genital tract to the endometrium and fallopian tubes, peritoneum and pelvic structures, causing inflammation<sup>2</sup>. Tubo-ovarian abscess complicates 30% of PID and usually is characterized by a collection of pus in the adnexa<sup>3</sup>. It can lead to agglutination of pelvic organs resulting in palpable mass<sup>4,5</sup>. PID is believed to be a disease of young, sexually active women of reproductive age<sup>6</sup>. PID is considered to be rare in sexually inactive females as it is believed to be related to sexual activity<sup>7</sup>. Our review of the literatures revealed more than 10 cases of tubo-ovarian abscesses in virgins. Furthermore, it can develop as a complication of oncological surgery due to superimposed infection of necrotic malignant tissue<sup>8,9</sup>.

Tubo-ovarian abscess risk factors are similar to that of PDI, which include multiple sexual partners, intrauterine device, and low socioeconomic status<sup>10</sup>.

The diagnosis of TOA could be clinical, or by laboratory and imaging studies. Clinically, abdominal pain and uterine tenderness are almost consistent findings. Laboratory investigations could reveal leukocytosis or elevated CRP. The gold standard for TOA diagnosis is ultrasound if performed transvaginally<sup>11</sup>.

The management depends on the patient's medical condition

and risk factors; it could be IV antibiotics or surgery. In a vitally stable patient with no signs or symptoms of peritonitis, percutaneous drainage with antibiotics coverage is ideal<sup>12,13</sup>. However, laparoscopic intervention was proposed as the first option in the treatment of TOA by Arda et al<sup>14</sup>.

The aim of this presentation is to report a case of tubo-ovarian abscess in a twelve-year-old sexually inactive female who was managed with unilateral salpingo-oophorectomy and appendectomy.

### THE CASE

A twelve-year-old single virgin presented with acute abdomen associated with vomiting and fever of one-week duration. The patient had her menarche two months prior to presentation.

History revealed several visits to another health facility in the last two years with abdominal pain, gastroscopy and colonoscopy; she was diagnosed with irritable bowel syndrome and prescribed chlordiazepoxide orally after meals. The patient has a six-year-old sister who had a similar diagnosis at birth (partially imperforated hymen). Furthermore, two paternal relatives had operations to open their hymens at menarche.

Examination revealed a temperature of 38°C, diffuse tenderness of abdomen in the right iliac fossa and suprapubic area, and positive bowel sounds. Vulval examination revealed a pinpoint opening in the hymen. Blood investigation revealed leukocytosis with elevated CRP. Ultrasound revealed fallopian tubal

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distension with internal turbid fluid and thick wall, associated pelvic fat aggregation and mild free intraperitoneal fluid and bilaterally enlarged ovaries, both harboring multiple immature follicles. A provisional diagnosis of pelvic inflammatory disease with tubal abscess was considered. She was started on IV tazobactam 4.5 gm 8 hourly and metronidazole 500 gm 8 hourly and paracetamol. Septic workup was negative; throat swab was positive for MRSA.

CT abdomen and pelvis revealed free fluid in the bilateral paracolic gutters; the ovaries and the fallopian tubes could not be delineated in the CT scan. Evidence of reactionary inflamed appendix was not consistent with acute appendicitis. High-grade fever and hypotension 67/28 mmHg continued. She developed impaired coagulation profile; therefore, she was transferred to the ICU. Her condition continued to deteriorate; therefore, diagnostic laparoscopy was performed. Extensive adhesion was found between the anterior abdominal wall and pelvic organs with pus over the peritoneum and in the abdominal cavity. The mass was right tubo-ovarian abscess; no evidence of diverticular or appendiceal diseases on inspection. The left ovary was bulky without pus draining. Salpingectomy, appendectomy, right ovarian biopsy and left tube and ovarian biopsy were obtained. The peritoneum was thickened with friable tissue. The bowel and omentum were inflamed. The appendix was edematous. The uterus was enlarged for her age. Postoperative cytology and histopathology reports revealed no endometriosis or malignancy. However, the report noted xanthogranulomatous salpingitis in the right and left tubes, acute periappendicitis and follicular cyst in the right ovary, see figures 1 and 2. Pus specimen was sent for culture of anaerobic, aerobic organisms, and acid-fast bacilli. In addition, cytology of peritoneal lavage was performed. Examination of her vulva confirmed initial findings of partially imperforated hymen. Cruciate incision of the imperforated hymen was performed. The patient recovered well and was discharged after 10 days.

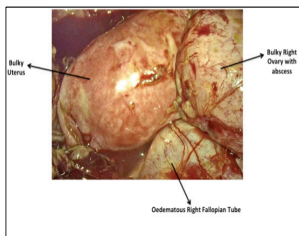


Figure 1 (A)

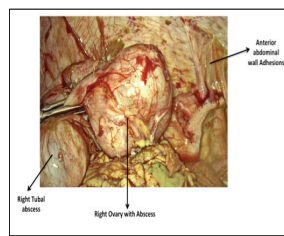


Figure 1 (B)

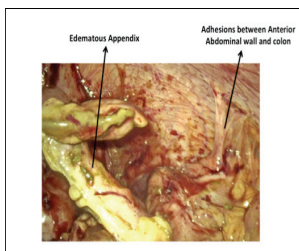


Figure 1 (C)

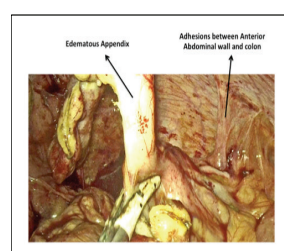


Figure 1 (D)

Figure 1 (A-D): Intraoperative Laparoscopic Findings of the Patient's Pelvis, Showing Pus with Inflamed Appendix, Adhesions and Ovarian Abscess

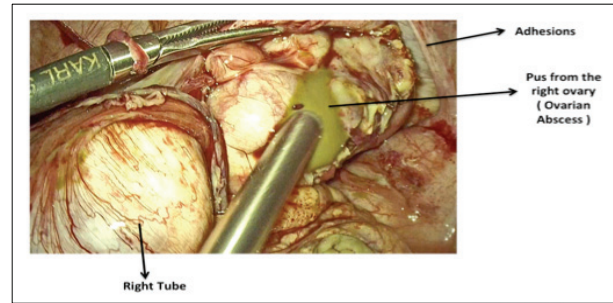


Figure 2 (A)

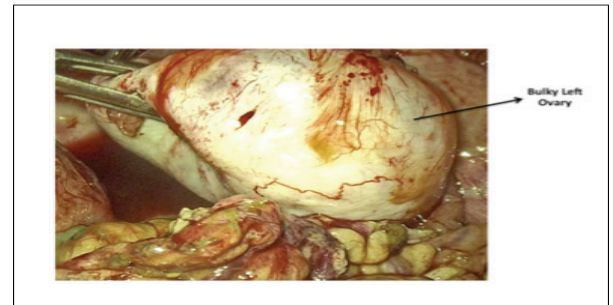


Figure 2 (B)

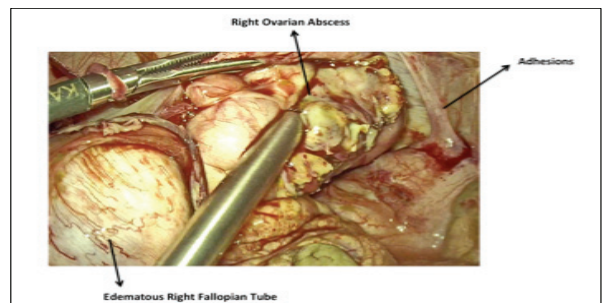


Figure 2 (C)

Figure 2 (A-C): Bulky Ovaries with Pus Draining from the Ovarian Abscess

## DISCUSSION

TOA is almost always a disease of sexually active females, rarely documented in virgins. However, a review of the literature revealed more than 10 cases of reported PID with TOA among non-sexually active females citing other risk factors, such as poor perineal hygiene, female genital tract structural anomalies, previous surgeries, malignancies, appendicitis and diverticulitis<sup>15-21</sup>.

Hiller et al reported an adolescent virgin with TOA secondary to diverticulitis diagnosed by CT<sup>22</sup>. A seventeen-year-old, non-sexually active female was reported to have bilateral TOA as a complication of perforated appendicitis<sup>15</sup>. Protopoulos et al reported a case of TOA in postmenopausal patient who proved to have ovarian malignancy<sup>16</sup>.

The accepted theory of PID TOA formation is the ascending infection via the uterus. However, in the absence of a uterus, hematogenous seeding should be considered; therefore, it is not always related to sexual activity, that was supported by two cases reported to have tubo-ovarian abscess post hysterectomy;

in the absence of appendicitis, diverticular disease or genital trauma should be considered<sup>17,18</sup>.

A case was presented by Tahere et al of TOA in a twenty-four-year-old sexually inactive female with transverse vaginal septum<sup>19</sup>.

Our case demonstrates the need to consider TOA in the differential diagnosis of a virgin female with pelvic pain. TOA formation may be life-threatening secondary to imperforate hymen as a result of retrograde menstruation, causing hematometra, ultimately superimposed infection as in our case. Ultrasound should be done as an initial workup to investigate the case. Presence of chronic pain in an adolescent female should always raise the suspicion of imperforated hymen.

## CONCLUSION

**Our case raised the possibility of genetic predisposition as multiple female relatives presented with similar findings. This has not been reported previously. Our case is the first to document several family members with imperforated hymen.**

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**Competing Interest:** None.

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