AFMN BIOMEDICINE

CASE REPORT

ISOLATED RIGHT FALLOPIAN TUBE TORSION IN A 13-YEAR-OLD ADOLESCENT

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Isolated fallopian tube torsion is a rare condition, especially in adolescents, and can often be misdiagnosed due to nonspecific symptoms.

We report the case of a 13-year-old sexually inactive girl who was admitted to Shahid Mobini Hospital in Sabzevar, Iran, with worsening pain in the right lower abdomen and hypogastrium over the past four days. Transabdominal ultrasound revealed normal ovaries and a hemorrhagic solid cystic mass measuring 60 x 35 mm in the left adnexa. However, an urgent laparotomy subsequently revealed isolated torsion of the right fallopian tube.

This case highlights the importance of considering isolated fallopian tube torsion in adolescents presenting with lower abdominal pain. Prompt diagnosis and surgical intervention are crucial for preserving reproductive health.

Keywords: salpingectomy, fallopian tube, torsion, laparoscopy, laparotomy, oophorectomy

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INTRODUCTION

Fallopian tube torsion is a rare gynecological emergency, accounting for only 1 in 1.5 million women per year (1). It can occur in two forms: adnexal torsion, which involves the twisting of both the fallopian tube and the ovary, and isolated torsion of the fallopian tube, which is an even rarer occurrence (2). The exact etiology of fallopian tube torsion is not always clear, but there are several potential contributing factors. Congenital anatomical variations in the structure and support of the fallopian tubes can predispose some women to torsion (2). Pelvic inflammatory disease (PID) and associated adhesions may also distort the normal pelvic anatomy, increasing the risk of torsion (3). Prior pelvic or abdominal surgeries, such as tubal ligation or ectopic pregnancy treatment, can alter the surrounding anatomy and predispose the fallopian tube to twisting (4). The presence of ovarian cysts or tumors can pull on the fallopian tube, leading to torsion (5). Pregnancy, particularly in the first trimester, is another risk factor due to the increased size and mobility of the uterus and adnexa (6). Sudden movements or changes in position may also trigger the twisting of a Fallopian tube.

Isolated Fallopian tube torsion (IFTT), in the absence of an associated adnexal mass or cyst, is an even rarer occurrence (4, 6). The etiology of IFTT is not fully understood, but proposed mechanisms include congenital anomalies, tubal spasm, pelvic adhesions, and tubal peristalsis (3-4). The clinical presentation is often non-specific, with abdominal pain being the most common symptom. This can lead to a delay in diagnosis, which is especially problematic given the risk of irreversible tubal ischemia and necrosis if left untreated. Laparoscopy is considered the gold standard for both the accurate diagnosis and management of IFTT (7). Early recognition and prompt surgical intervention are critical for preserving tubal function and avoiding salpingectomy and also preventing life-threatening complications such as peritonitis, sepsis, and death. However, the rarity of IFTT makes it a challenging diagnosis to consider, particularly in the absence of an associated adnexal mass (4-7). This case report presents a rare instance of isolated Fallopian tube torsion in a young woman, with a focus on the importance of maintaining a high index of suspicion for this condition in the appropriate clinical setting.

CASE REPORT

A 13-year-old sexually inactive girl was admitted to Shahid Mobini Hospital in Sabzevar, Iran, with a chief complaint of right lower abdominal and hypogastric pain that had worsened over the past four days. She had previously visited another medical facility and received painkillers, which did not alleviate her symptoms. The patient noted that the pain improved when lying down and was not related to eating, movement, urination, or defecation. Physical examination revealed tenderness in the lower abdomen without guarding. A pelvic examination indicated normal external genitalia, and there were no complaints related to urinary or bowel function. Laboratory evaluations, including blood tests, showed normal results. A transabdominal ultrasound revealed normal ovaries and a hemorrhagic solid cystic mass measuring 60 x 35 mm in the left adnexa and 20 cc of free fluid around it (Figure 1). No transvaginal ultrasound or digital examination was performed due to the age of the patient and the patient's declaration of virginity.

Figure 1. *Ultrasound representation of a hemorrhagic solid cystic mass with a size of about 60 x 35 mm in the left adnexa*

The preliminary diagnosis was a hemorrhagic cyst, and emergency laparotomy was performed. Intraoperatively, the diagnosis was identified as isolated torsion of the right fallopian tube. Upon opening the fascia and peritoneum, 50 cc of serous fluid was evacuated from the abdominal cavity. The uterus, both ovaries, and the left fallopian tube appeared normal. The right fallopian tube, however, was found to be twisted multiple times, exhibiting signs of congestion, necrosis, and deformation (Figure 2).

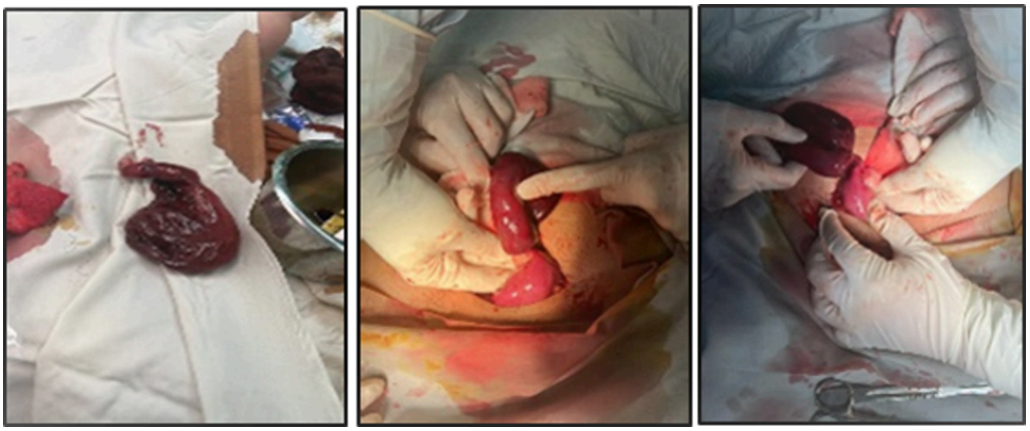

Figure 2. *Isolated torsion of the right fallopian tube*

The twisted tube was positioned on the left side, which had led to the misinterpretation of a cyst on the ultrasound. A tissue sample was sent for pathological evaluation. Histopathology revealed the right fallopian tube wall to be extensively congested, hemorrhagic, and ischemic, which was consistent with the clinical diagnosis of fallopian tube torsion. The postoperative course was uneventful, and the patient was discharged after three days.

DISCUSSION

Isolated torsion of the fallopian tube is extremely rare, with an estimated incidence of approximately one in 1,500,000 women annually. About 80% of cases occur in women of reproductive age, and approximately 12% during pregnancy (8). In our study, as in most reported cases, right fallopian tube torsion was observed. Contributing factors include the position of the sigmoid colon, slower blood flow in the right ovarian vein, and quicker surgical interventions on the right side. Torsion of the fallopian tube is a significant but uncommon cause of lower abdominal pain in adolescents, often difficult to diagnose before surgery. Immediate recognition and timely intervention are crucial for preserving tubal function (9). Diagnosis typically occurs during laparoscopy or laparotomy. Tubal and ovarian pathologies are rare in childhood, accounting for about 0.2% of pediatric surgeries, with 18-33% of adnexal surgeries related to torsion. Research indicates that oophorectomy or salpingo-oophorectomy is performed in 91% of torsion cases, with successful detorsion occurring in only 9% (10).

Ovarian torsion is often suspected due to ultrasound findings, such as an enlarged ovary or specific signs like the vortex sign. In contrast, isolated fallopian tube torsion frequently presents without these indicators, complicating diagnosis in acute abdominal cases lacking typical signs of ovarian torsion. Furthermore, if ovarian torsion is associated with a cyst requiring cystectomy, surgery should be performed by an experienced surgeon to minimize tissue damage (11). Identifying factors indicative of isolated fallopian tube torsion is essential before surgical intervention. While cervical motion tenderness can suggest pelvic inflammatory disease, it may also indicate adnexal torsion. This tenderness might reflect an inflammatory process due to twisting of the fallopian tube, as the cervix's movement could stimulate peritoneal stretching. However, inflammatory markers in isolated fallopian tube torsion cases do not support this hypothesis, warranting further investigation into alternative causes (12). The rich blood supply from the ovarian and uterine arteries initially causes ischemia before infarction occurs. Torsion may be intermittent or incomplete, leading to a history of intermittent abdominal pain. Contributing factors may include hydrosalpinx, hematosalpinx, prior surgery, incomplete mesosalpinx, or the presence of cysts (13).

Jeffcoate's theory suggests that a growing pregnant uterus exerts torsional pressure on the adnexa, while Sellheim's theory posits that sudden body position changes can lead to abnormal internal organ movement. The primary symptom is lower abdominal pain, often accompanied by nausea and vomiting. Reliable symptoms include acute pain radiating to the flank or thigh. Physical examination may reveal abdominal tenderness and adnexal tenderness, although specific masses are not always palpable, and laboratory findings are typically non-specific. While ultrasound can aid in diagnosing fallopian tube torsion, definitive diagnosis relies on laparoscopy or laparotomy. Reliable symptoms to diagnose this condition

include acute lower abdominal or pelvic pain with lateral spread, which may lead to nausea and vomiting if blood flow is obstructed. Ultrasound may show a cystic mass with varying septation and internal echoes, often near the uterine horn (14). Doppler ultrasound may demonstrate high-impedance flow with reversed diastolic flow in the affected tube. Due to non-specific symptoms, diagnosis and surgery are often delayed, increasing the risk of torsion and necrosis of the contralateral tube, ultimately impacting fertility (6).

In our case, the patient was a 13-year-old girl. Another report indicated that approximately 40% of isolated fallopian tube torsion cases occur in adolescents, with an average age of 26 years. This suggests that isolated fallopian tube torsion is more prevalent in pediatric populations and should be included in the differential diagnosis for lower abdominal pain in women of childbearing age. Fallopian tube torsion is a surgical emergency that should be considered in cases of acute lower abdominal pain. Doppler examination of adnexal masses can support clinical diagnosis. Early diagnosis and treatment are essential for preserving fertility; delays can lead to necrosis and loss of tubal function. While detorsion may be feasible if there are no signs of infarction, resection is often necessary (15).

CONCLUSION

Detecting isolated fallopian tube torsion is challenging due to its rarity and nonspecific clinical presentation prior to surgery. Failure to diagnose this condition in a timely manner can lead to irreversible damage to both the fallopian tube and the ovary. Timely laparotomy can often salvage the tube and maintain the potential for future pregnancy. Diagnostic laparoscopy plays a critical role in facilitating prompt diagnosis and preventing treatment delays. Despite its potential for significant morbidity, isolated fallopian tube torsion is frequently underdiagnosed. It is imperative for the medical community—especially obstetricians and gynecologists—to enhance awareness of this condition. Global reporting of similar cases can help accurately assess their prevalence and underscore the importance of including isolated fallopian tube torsion in the differential diagnosis of acute abdominal pain in women and adolescents. Increasing awareness among clinicians, particularly primary care physicians who are often the first point of contact, is essential for enabling timely diagnoses and appropriate referrals. This proactive approach can help prevent complications associated with delayed treatment.

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Statement of Ethics

This study was reviewed and approved by Research Ethics Committees of Sabzevar University of Medical Sciences, approval number IR.MEDSAB.REC.1402.112, issued on 2024-02-06. Complete written informed consent was obtained from the patient for the publication of this study and accompanying images.

Competing Interest

The authors declared no relevant conflicts of interest.

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