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Case Report

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Isolated Fallopian Tube Torsion in Chronic Pelvic Pain: A Rare Case

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Abstract

Background: Abdominal pain is a frequent complaint among women presenting to gynecological and surgical emergency departments. The management approach depends on the severity, nature, and possible underlying causes of the pain, ranging from observation to urgent surgical intervention. One important cause of abdominal pain in women is adnexal torsion, which may occasionally involve only the fallopian tube. This condition can present with non-specific symptoms, making diagnosis challenging. Although ultrasound can reveal features suggestive of ovarian torsion, the findings are not always definitive, and other surgical emergencies such as ectopic pregnancy or appendicitis should also be considered. Early recognition and timely surgical management are essential to preserve fertility and minimize ischemic damage.

Case Presentation: The case is a 28-year-old woman, who presented with chronic pelvic pain and was diagnosed with hydrosalpinx, subsequently confirmed via laparoscopic intervention. Imaging revealed a cystic lesion near the left adnexa, initially interpreted as hydrosalpinx. During laparoscopy, the left fallopian tube was found to be twisted twice, and a salpingectomy was performed.

Conclusion: Isolated fallopian tube torsion (IFTT) is an uncommon clinical condition characterized by torsion of the fallopian tube without ovarian involvement. It may result from predisposing factors such as hydrosalpinx, pelvic inflammatory disease, or congenital anomalies. Symptoms are usually not specific, and imaging results can be uncertain. Laparoscopy remains the gold standard for both diagnosis and treatment, although laparotomy may be required in certain cases. This case highlights the importance of considering IFTT in women with unexplained chronic pelvic pain. Prompt diagnosis and surgical intervention are crucial to prevent complications and preserve reproductive potential.

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Introduction

Abdominal pain is one of the most significant and prevalent complaints among patients referred to gynecological and surgical emergency departments. Management decisions for these patients are based on factors such as the severity and quality of the pain, as well as potential diagnoses related to its underlying cause. These decisions typically encompass a range of options, from expectant management to the consideration of emergency surgery. Paraclinical assessments and imaging evaluations are essential for facilitating optimal decision-making in these cases. One of the most significant causes of abdominal pain in women is adnexal torsion. In most cases, the torsion is associated with the ovary and can typically be diagnosed through a comprehensive med-

ical history, making the patient a candidate for surgery. In rare cases, adnexal torsion may occur in the fallopian tubes, leading to a variety of clinical manifestations. In certain cases of ovarian torsion, characteristic changes can be observed on ultrasound, which can aid in diagnosis. However, in cases of tubal torsion, the normal size and appearance of the ovaries may diminish the reliability of this imaging modality. IFTT is a rare condition, occurring in approximately 1 in 1.5 million women (1). The patient's symptoms are often nonspecific; therefore, in cases of acute abdominal pain, other surgical emergencies such as ovarian torsion, ectopic pregnancy, or appendicitis must also be considered. With early diagnosis and prompt surgical intervention, the likelihood of preserving the fallopian tube as a tissue that contributes to a person's future fertility increases and non-invasive damage from ischemia is minimized (2). However, because diagnosis can be challenging, the management of the condition varies based on the patient's specific circumstances, ranging from simple decompression of the torsion to salpingectomy (3).

In this study, a case is presented involving a patient who made frequent visits due to complaints of subacute pelvic pain. Imaging evaluations revealed a diagnosis of hydrosalpinx, and laparoscopic intervention confirmed isolated fallopian tube torsion.

Case Presentation

A 28-year-old nulliparous woman was referred to the gynecology department at Imam Reza Hospital, Mashhad, Iran, in 2024 for evaluation of chronic pelvic pain. She had previously visited several specialists, but her symptoms did not improve, which eventually led to a decision for diagnostic laparoscopy. On physical examination, the pelvic findings were normal, with no evidence of inflammation or abnormal discharge. During bimanual examination, mild tenderness was noted in the left lower abdomen.

The patient reported that her pain usually became worse during intercourse and menstruation. She reported no nausea or vomiting during painful episodes. Her menstrual cycles were regular with no delays, and she was not using any form of contraception. She had recently been evaluated for primary infertility.

The patient also mentioned a history of a sexually transmitted infection in the previous year, after which her symptoms, including pelvic pain and vaginal d ischarge, had completely resolved. A paraclinical evaluation was performed, and ultrasound revealed a cystic lesion measuring approximately 7×3 *cm* near the left adnexa, which was initially suspected to be in the ovary (Figure 1).

The patient's previous hysterosalpingography, performed as part of an infertility workup, revealed a hydrosalpinx with no contrast spillage from the left fallopian tube (Figure 2). In addition, an MRI performed three years earlier for similar pelvic pain had shown a cystic lesion measuring 7×6×4 *cm* in the same region.

The tests conducted on the patient did not indicate any signs of pregnancy, and no malignancy

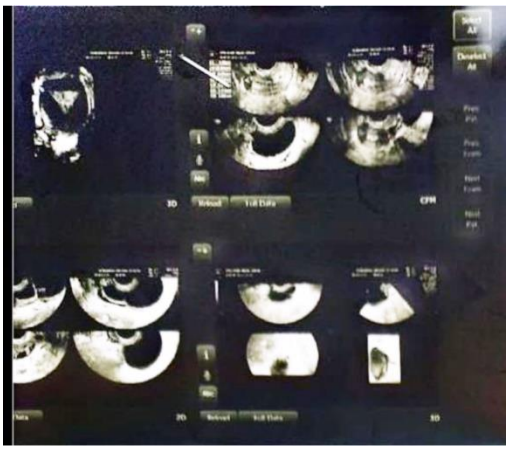

Figure 1. A 7×3 *cm* multiloculated cystic lesion located lateral to the left ovary, suggestive of hydrosalpinx

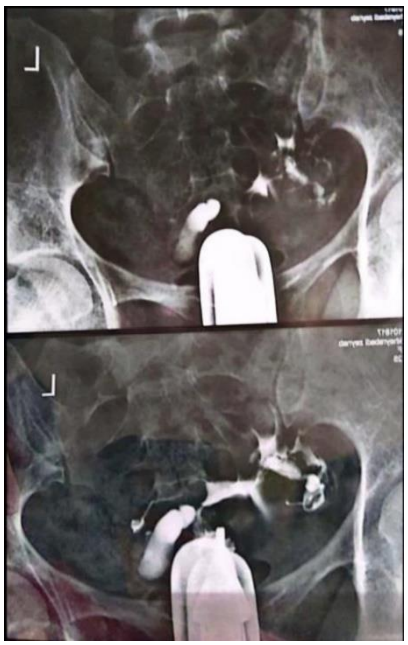

Figure 2. Hysterosalpingography revealing a left-sided hydrosalpinx with complete tubal occlusion

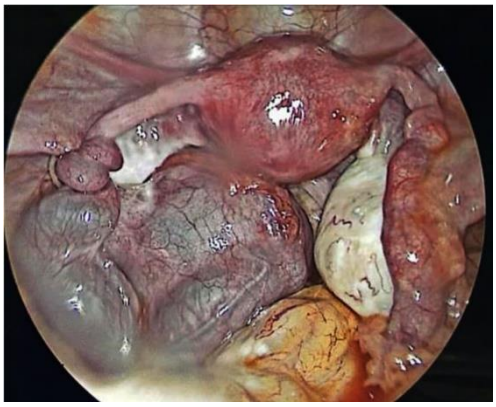

Figure 3. Laparoscopic view showing a twisted left fallopian tube suggestive of tubal torsion

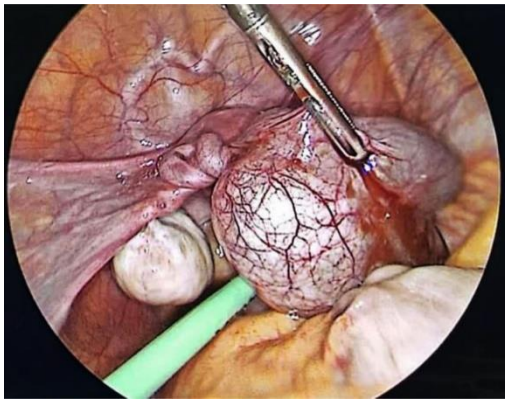

Figure 4. Laparoscopic view showing a twisted left-sided hydrosalpinx

was detected. The patient subsequently underwent laparoscopy. During the procedure, the left fallopian tube was found to be twisted twice (Figure 3) which necessitated a salpingectomy due to hydrosalpinx (Figure 4). The pathological results confirmed the presence of hydrosalpinx, and a paratubal cyst was diagnosed during the pathological evaluations; macroscopically, it was indistinguishable from hydrosalpinx.

Discussion

IFTT does not involve the ovaries. This condition was first reported by Sutton (4). Its prevalence is approximately one case per 1.5 million individuals (5), although it may be higher than previously estimated (6). The most common age of onset for IFTT in adolescents is between 12 and 15 years, and it is rarely observed before menarche or around menopause (7, 8).

The causes of IFTT can be divided into two main groups: tubal and extra-tubal factors. Tubal factors include hydrosalpinx, hematosalpinx, tubal tumors, tubal torsion, and congenital tubal malformations. Extra-tubal factors include polycystic ovary syndrome (PCOS), pelvic infections, ligament laxity related to pregnancy, pelvic adhesions, and pelvic venous congestion, among others. (5, 9). In our study, the cause of torsion was attributed to both groups, as the patient presented with hydrosalpinx and a history of pelvic infection. Additionally, a paratubal cyst was identified in the pathological findings, which is a known risk factor for isolated fallopian tube torsion.

In our case, the cyst was not visible on the initial ultrasound or during laparoscopy due to the presence of a large hydrosalpinx which distorted anatomical landmarks and obscured surrounding structures. The hydrosalpinx may have masked the cyst, flattened it, or altered its appearance so that it was interpreted as part of the dilated fallopian tube or considered as adnexal fluid rather than a separate cystic mass.

The paratubal cyst likely contributes to torsion through mechanical effects, including increased mass at the distal tube or fimbrial end, a lever-like effect, altered tubal mobility, and a higher risk of rotation around its axis. Therefore, even though it was not identified pre-operatively, pathologic identification of this cyst strengthens our etiological understanding of this case.

The most common presenting symptoms include unilateral severe pain in the lower abdomen or pelvis, often accompanied by nausea and vomiting (10-14). However, clinical symptoms can vary widely, ranging from mild to severe, and may be consistent or intermittent, acute or chronic, with or without accompanying symptoms such as nausea and vomiting. In contrast, the patient reported in our study did not exhibit severe or acute symptoms; instead, she presented with chronic pelvic pain. A review of the reported cases indicates that pain and tenderness upon examination are the primary features in the patients' histories (1, 7, 15-17).

As demonstrated in the previously mentioned patient, the most common initial imaging method is ultrasound; however, CT scans and MRI can also be beneficial. Nonetheless, imaging generally exhibits low sensitivity in diagnosis (18). One study identified three common findings in sonography: 1) normal ovarian size at the site of pain, 2) evidence of a paratubal cyst, and 3) the whirlpool sign in the fallopian tube on Doppler ultrasound in patients with isolated fallopian tube torsion. However, none of these criteria are definitive (19). In

ambiguous cases, IFTT should be suspected if hydrosalpinx or paraovarian cysts are detected on ultrasound (15). Hydrosalpinx was evident in the patient evaluations reported in this article. The gold standard for managing isolated fallopian tube torsion is laparoscopy, which can serve both diagnostic and therapeutic purposes (18). However, in some cases, open abdominal surgery may be necessary. Although the surgical team aims to preserve the patient's reproductive organs, most cases ultimately result in salpingectomy (20).

The fallopian tubes have a dual blood supply, with the ovarian artery arising from the abdominal aorta and the uterine artery branching from the internal iliac artery. This collateral blood supply makes fallopian tube ischemia a rare condition (1). Furthermore, Doppler perfusion imaging does not provide a definitive diagnosis of tubal torsion due to collateral blood supply to the tube (2, 15, 21). This may offer a protective effect on the viability of the tube, despite delays in clinical diagnosis. In the case presented, despite the patient's chronic pain, no evidence of necrosis was observed during the laparoscopic examination or in the pathological report. The reason for the patient's salpingectomy was identified as tubal hydrosalpinx.

Conclusion

Isolated fallopian tube torsion is a gynecological emergency that necessitates prompt diagnosis. Although this condition is rare, it can have significant implications for fertility. This study highlights the importance of thorough clinical examination and comprehensive history-taking by presenting a case of this condition. Furthermore, it is essential to consider the possibility of torsion even in patients presenting with chronic pelvic pain. Therefore, it is advisable to re-evaluate the patient's condition and assess the risk factors associated with torsion. Surgeons and specialists should maintain a low threshold for considering this diagnosis in women who meet the criteria and should utilize minimally invasive methods, such as laparoscopy, for early intervention. This approach can help preserve fertility and alleviate the patients' symptoms. Consequently, heightened clinical suspicion combined with timely surgical management is paramount to optimize reproductive outcomes and prevent long-term sequelae associated with delayed diagnosis.

Conflict of Interest

Authors declare no conflict of interest.

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