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CASE REPORT

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A rare case of postmenopausal isolated fallopian tube torsion: Value of cross-sectional imaging

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ABSTRACT

Background: Isolated fallopian tube torsion (IFTT) is an uncommon cause of pelvic pain and is exceptionally rare after menopause, often leading to delayed diagnosis. Cross-sectional imaging plays a crucial role when ultrasound findings are inconclusive. We report a case with comprehensive imaging and histopathological correlation.

Case Presentation: A 61-year-old postmenopausal woman (G1P0 with a history of spontaneous miscarriage) presented with intermittent hypogastric pain for 10 days, with acute worsening 5 days before admission. She had no gastrointestinal or urinary symptoms, and her vital signs were stable. Physical examination revealed a tender, firm mass in the hypogastric and peri-umbilical region; bimanual pelvic examination was limited due to pain but suggested a right adnexal mass. Ultrasonography demonstrated a supra-uterine cystic formation with incomplete internal septa; the ipsilateral ovary was not visualized separately. Contrast-enhanced computed tomography (CT) showed a midline tubular cystic structure, coiled and deviated to the right, associated with uterine verticalization and rightward displacement, surrounding fat stranding, and small-volume intraperitoneal fluid. Pelvic magnetic resonance imaging (MRI) confirmed a coiled tubular cystic lesion attached to the uterine fundus with a visible twist (whirlpool sign) and demonstrated T1/T2 hyperintense contents, thickened walls with frond-like projections, and adjacent inflammatory changes. The ipsilateral ovary appeared normal for age. A diagnosis of IFTT was proposed. Laparotomy confirmed a twisted right tubulated cystic formation with a normal ipsilateral ovary. Salpingo-oophorectomy was performed because, in a postmenopausal patient with concern for underlying pathology, complete excision was deemed the safest approach. Histopathological examination found a cystic structure with a hemorrhagic and inflamed cystic adnexal structure without evidence of malignancy, consistent with torsion-related ischemic change. No malignancy was found. The ipsilateral ovary was present and normal, confirming the diagnosis of IFTT.

Conclusion: Identification of a twisted extra-ovarian tubular cystic structure with a normal ipsilateral ovary on CT and MRI is highly suggestive of IFTT. Awareness of this imaging pattern, particularly in postmenopausal patients, allows for timely diagnosis and surgical management, thereby preventing complications.

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Introduction

Isolated fallopian tube torsion (IFTT) is a rare gynecological emergency, accounting for approximately 1/1.5 million women and representing only 1%–11% of all adnexal torsions [1]. It is defined as torsion of the fallopian tube without involvement of the ipsilateral ovary. While adnexal torsion is more common in reproductive-age women, IFTT is exceptionally rare in postmenopausal women, with only isolated case reports described in the literature [2]. This rarity, combined with a nonspecific clinical presentation—often mimicking appendicitis, diverticulitis, or ovarian cyst accidents—frequently

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leads to diagnostic uncertainty and delayed treatment [3].

Ultrasound is typically the first-line imaging modality, but findings are often inconclusive, especially when the ovary appears normal [4]. Cross-sectional imaging, particularly computed tomography (CT) and magnetic resonance imaging (MRI), plays a critical role in these challenging cases. MRI, with its superior soft-tissue contrast, can demonstrate key diagnostic features such as the "whirlpool sign" and a normal ipsilateral ovary, allowing for a more confident preoperative diagnosis [4,5].

We present a rare case of postmenopausal IFTT, highlighting the complementary value of CT and MRI in establishing the diagnosis, and we provide a detailed histopathological correlation.

Case Report

A 61-year-old postmenopausal woman (G1P0 with a history of spontaneous miscarriage) presented to the emergency department with intermittent hypogastric pain for 10 days, which had acutely worsened over the 5 days prior to admission. The pain was constant, sharp, and radiated to the right flank. She reported no fever, nausea, vomiting, or changes in bowel or urinary habits. Her medical history was unremarkable.

On physical examination, the patient was afebrile with stable vital signs. Abdominal palpation revealed a tender, firm, non-mobile mass in the hypogastric and peri-umbilical region, with evidence of voluntary guarding; however, no rebound tenderness or abdominal rigidity was elicited. Bimanual pelvic examination was limited due to pain, but suggested a right adnexal mass.

Transabdominal ultrasonography demonstrated a large supra-uterine cystic formation with incomplete internal septa and low-level internal echoes. The right ovary was not visualized separately from this cystic structure, and there was no evidence of an ovarian mass or edema.

Contrast-enhanced CT of the abdomen and pelvis revealed a midline abdominopelvic tubular cystic structure, which was coiled and deviated to the right (Fig. 1). The uterus was verticalized (loss of the normal horizontal axis, with the uterus aligned vertically in the craniocaudal plane**)** and displaced toward the right side. Surrounding fat stranding and a small volume of intraperitoneal fluid were present. The appearance suggested a dilated, torsed fallopian tube rather than an ovarian origin.

A pelvic MRI was performed for further characterization. It confirmed a C-shaped, coiled tubular cystic lesion abutting the uterine fundus. The cystic content was hyperintense on both T1- and T2-weighted sequences, consistent with proteinaceous or hemorrhagic material (Fig. 2). The walls were thickened with frond-like internal projections and adjacent inflammatory changes. A distinct whirlpool sign—a concentric pattern of soft tissue representing the twisted vascular pedicle—was clearly visible at the level of uterine attachment (Fig. 3). Importantly, the right ovary was identified separately, located adjacent to the lesion, and appeared atrophic normal for age with no evidence of edema, cysts, or mass. Based on these findings, a preoperative diagnosis of IFTT was made.

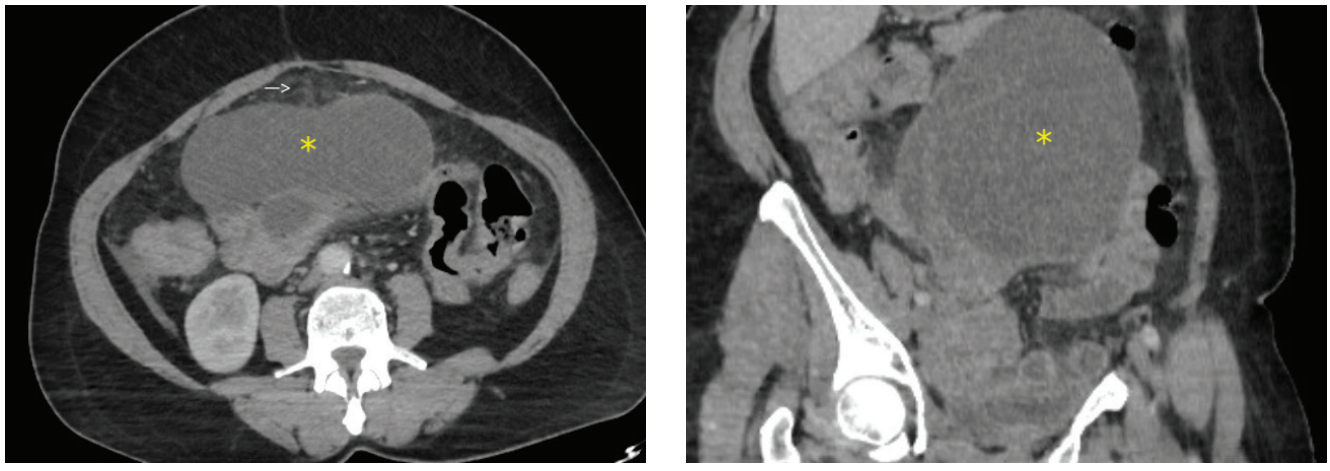


Figure 1. Abdominopelvic CT scan, axial (a) and oblique reconstruction (b), showing a supra-uterine tubular, coiled cystic lesion deviated to the right (yellow asterisk), with surrounding fat stranding (white arrow).

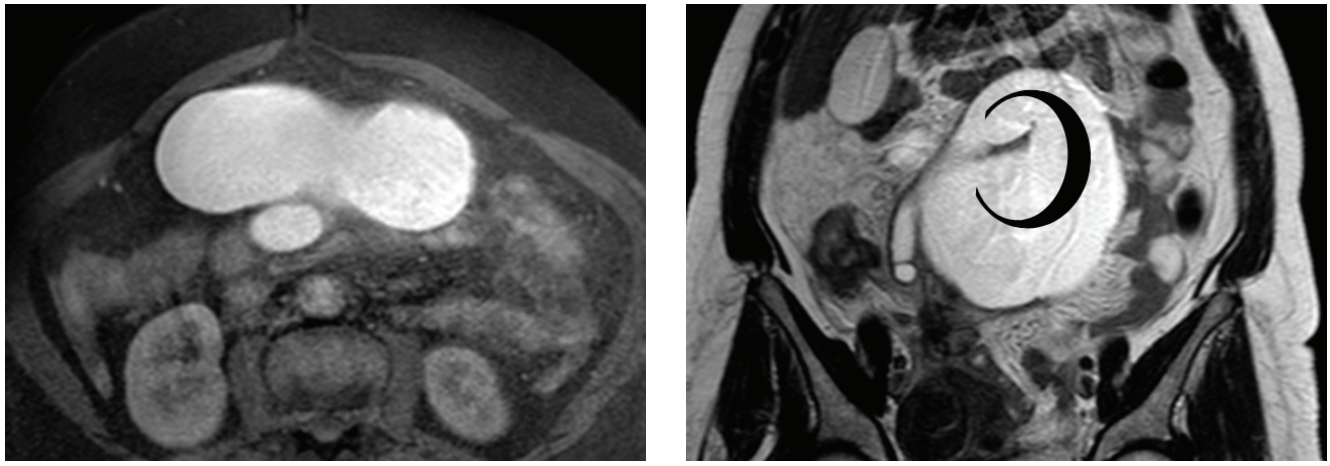


Figure 2. Pelvic MRI showing the same supra-uterine tubular, C-shaped structure (C). On axial T1-weighted image (a), the lesion demonstrates high signal intensity, while on coronal T2-weighted image (b) it also appears hyperintense, consistent with proteinaceous or hemorrhagic content.

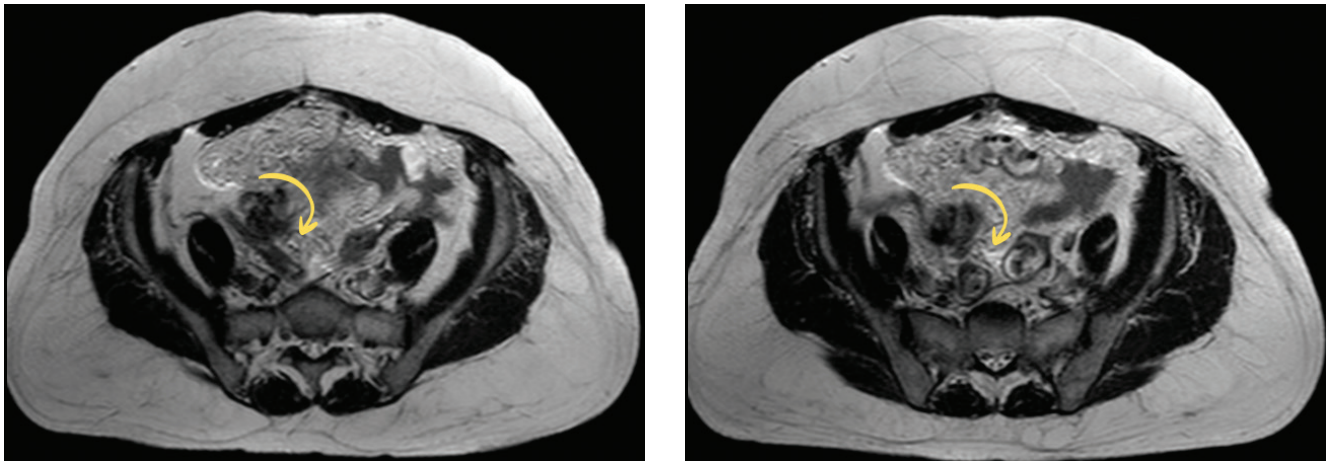


Figure 3. Pelvic MRI, axial T2-weighted images, demonstrating the whirlpool sign (curved arrow) of the twisted pedicle, consistent with tubal torsion.

The patient underwent an exploratory laparotomy. Intraoperative findings confirmed a necrotic, congested, and twisted tubular cystic lesion attached to the uterine fundus with a visible twist corresponding to the right fallopian tube (Fig. 4). The right ovary was normal in size, shape, and color, with no evidence of torsion or pathological change. A right salpingo-oophorectomy was performed.

Histopathological examination showed a hemorrhagic and inflamed cystic adnexal structure without evidence of malignancy, consistent with torsion-related ischemic change. The fallopian tube was not separately identifiable, as it had been remodeled into a cystic structure due to chronic torsion. No malignancy was identified. The ipsilateral ovary was present and normal for age. The postoperative



Figure 4. Macroscopic view of the resected adnexal specimen (annexectomy) showing twisted fallopian tube with edema, congestion, indicating ischemic suffering consistent with tubal torsion.

course was uneventful, and the patient was discharged on the third postoperative day.

Discussion

IFTT is a rare but potentially serious condition that requires prompt surgical intervention to preserve tubal integrity and prevent complications such as gangrene or peritonitis [3,6]. Its rarity is even more pronounced in postmenopausal women due to the physiological atrophy of the pelvic structures [2]. In this age group, the diagnosis is often overlooked, with a delay in treatment frequently reported.

The diagnosis of IFTT is challenging because clinical and laboratory findings are nonspecific. Pain may be acute, intermittent, or chronic, and can mimic other common causes of pelvic pain such as ovarian torsion, appendicitis, or diverticulitis [4]. In our case, the patient's age and the subacute presentation initially raised concern for a neoplastic process.

Imaging plays a pivotal role in suggesting the diagnosis. Ultrasonography is usually the first-line examination; however, as in this case, it often fails to demonstrate the ovary separately, leading to diagnostic uncertainty [4]. Cross-sectional imaging, particularly MRI, offers critical diagnostic clues. The characteristic imaging features of IFTT, which were all present in our case, include:

- A tubular or C-shaped cystic structure separate from the ovary, representing the dilated, fluid-filled, and twisted fallopian tube [4,5].
- The "whirlpool sign": This pathognomonic sign, best visualized on MRI, represents the twisted vascular pedicle and is a direct sign of torsion [5].
- A normal ipsilateral ovary: The absence of ovarian edema, enlargement, or cystic changes is a key discriminator from ovarian torsion [1,4].
- Secondary signs: These include fat stranding, free fluid, and uterine deviation toward the affected side [4,6].

The main differential diagnoses include ovarian torsion, a paraovarian cyst with torsion, and a pedunculated subserosal uterine fibroid with torsion. Ovarian torsion is ruled out by the presence of a normal, separately visualized ovary [1,4]. A torsed paraovarian cyst may appear similar, but its origin from the broad ligament can sometimes be distinguished by its location. Torsion of a pedunculated fibroid would show a solid mass with a twisted pedicle, not a fluid-filled tubular structure. In postmenopausal women specifically, broad ligament cysts, though rare, can also mimic IFTT; however, they typically arise lateral to the uterus and do not demonstrate the characteristic C-shaped tubal configuration.

Regarding the decision to perform salpingo-oophorectomy rather than simple salpingectomy or detorsion, this was based on the patient's postmenopausal status, the chronic nature of the torsion with necrotic changes, and the intraoperative concern for excluding an underlying malignancy**,** which is a recognized predisposing factor for IFTT in older women. Complete excision of the adnexa was therefore considered the safest approach in this context.

While several case reports and case series have described IFTT, this case is noteworthy for several reasons. First, it provides a comprehensive imaging workup, including ultrasonography, contrast-enhanced CT, and multiparametric MRI, allowing for a direct comparison of their diagnostic value in a single patient. Second, it includes detailed histopathological confirmation, excluding underlying pathology or malignancy, which are known predisposing factors. Third, it emphasizes that IFTT should be considered even in the postmenopausal population, where adnexal pain is often attributed to non-gynecological causes [2]. Our case demonstrates that when typical imaging features are present, a confident preoperative diagnosis is possible, enabling timely surgical management. Prompt surgical detorsion or salpingectomy (with or without oophorectomy) remains the standard of care [3,6]. In postmenopausal patients, salpingectomy is generally preferred due to the absence of future fertility needs and the potential risk of underlying tubal pathology.

Conclusion

IFTT, though rare, should be considered in the differential diagnosis of postmenopausal women presenting with pelvic pain. Cross-sectional imaging, especially MRI, is invaluable in establishing the diagnosis. The constellation of a coiled tubular cystic structure, a visible whirlpool sign, and a normal ipsilateral ovary is highly suggestive of IFTT. Recognition of these imaging patterns facilitates timely diagnosis and appropriate surgical management, thereby preventing complications.

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