

Torsion of a Paraovarian Cyst Mimicking Acute Appendicitis in an Adult Unmarried Woman: A Rare Diagnostic and Surgical Challenge

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ABSTRACT

Paraovarian cysts are generally benign adnexal lesions and are frequently asymptomatic. Although uncommon, torsion of a paraovarian cyst may produce an acute abdomen and closely mimic common surgical emergencies such as acute appendicitis. Early recognition is important to prevent irreversible adnexal ischemia and preserve ovarian function. A 21-year-old woman presented with sudden-onset right lower abdominal pain of approximately one-day duration. Clinical examination revealed right iliac fossa tenderness with guarding, rigidity, and rebound tenderness, initially raising suspicion of acute appendicitis. Ultrasonography demonstrated a $5.9 \times 6.5 \times 5.9$ cm right adnexal cystic lesion without obvious solid component, calcification or septation. Color Doppler demonstrated preserved arterial flow but absent venous flow. The appendix measured approximately 6.5 mm without significant periappendiceal inflammatory changes. In view of the clinical and radiological suspicion of adnexal torsion, emergency diagnostic laparoscopy was performed. Intraoperatively, torsion involving the right ovary, fallopian tube, and paraovarian cyst with twisting of the vascular pedicle was identified. The adnexa was successfully detorsed, with preservation of ovarian viability, followed by right paraovarian cystectomy. The cyst contained clear fluid. Histopathological examination demonstrated a benign cystic lesion serous type. The postoperative course was uneventful. This case highlights the diagnostic difficulty of paraovarian cyst torsion presenting as acute right iliac fossa pain and mimicking appendicitis. Preserved arterial flow does not exclude adnexal torsion, and early laparoscopy facilitates definitive diagnosis, ovarian preservation, and treatment.

Keywords: Adnexal torsion, Acute appendicitis, Ovarian torsion, Paraovarian cyst, Right iliac fossa pain

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INTRODUCTION

Adnexal torsion is an important gynecological surgical emergency resulting from rotation of the ovary, fallopian tube, or both around their supporting structures, producing progressive vascular compromise. Delay in diagnosis may result in ovarian ischemia, necrosis, and loss of ovarian function.^[1-3] The clinical presentation is frequently non-specific, with acute lower abdominal pain being the predominant symptom. Right-sided adnexal torsion may closely mimic acute appendicitis and create a significant diagnostic dilemma.^[2-4]

Paraovarian cysts are generally benign lesions arising separately from the ovary and are frequently asymptomatic. Complications such as torsion, rupture, and hemorrhage may, however, result in acute abdominal symptoms.^[5,6] Preoperative diagnosis may be difficult, particularly when the presentation resembles an acute surgical abdomen. Ultrasonography with color Doppler is an important initial investigation, although preservation of arterial flow does not exclude torsion.^[7-9]

We report a young woman with torsion of a paraovarian cyst presenting with acute right iliac fossa pain mimicking acute appendicitis. The case also highlights the importance of prompt laparoscopic intervention for definitive diagnosis and fertility-preserving management.

CASE REPORT

A 21-year-old woman presented with sudden-onset right lower abdominal pain of approximately one-day duration. The pain was continuous, non-radiating, and aggravated by standing and walking. There was no documented history of fever, vomiting, abdominal distension, or urinary symptoms. She was a known case

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of polycystic ovary syndrome diagnosed in August 2025 and was being managed with dietary and lifestyle measures.

On examination, she was conscious, alert, and oriented. Her temperature was 98°F, pulse rate 89/min, respiratory rate 20/min, and blood pressure 106/76 mmHg. Abdominal examination revealed tenderness in the right iliac fossa and periumbilical region, with guarding, rigidity, and rebound tenderness in the right iliac fossa. Bowel sounds were present. Cardiovascular and respiratory examinations were unremarkable.

In view of acute right iliac fossa pain with localized peritoneal signs, acute appendicitis was initially considered. Ultrasonography demonstrated a heterogeneous hypoechoic cystic lesion in the right adnexa measuring approximately $5.9 \times 6.5 \times 5.9$ cm, without obvious solid component, calcification, or septation. Arterial flow was demonstrated, whereas venous flow was not visualized

[Figure 1]. The appendix measured approximately 6.5 mm without surrounding inflammatory stranding. Multiple mesenteric lymph nodes were also noted. The radiological impression favored a right adnexal cystic lesion with absent venous flow and preserved arterial flow, with torsion considered.

Emergency diagnostic laparoscopy was performed. Intraoperatively, torsion involving the right ovary, right fallopian tube, and paraovarian cyst with twisting of the vascular pedicle was identified. The right ovary appeared viable [Figures 1 and 2].

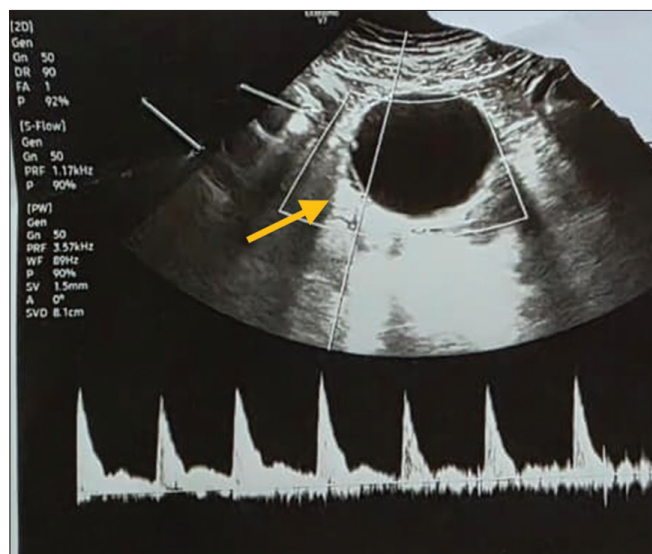


Figure 1: USG Abdomen and Pelvis revealed a cystic lesion arising from Rt Adnexa with preserved arterial flow and reduced venous flow

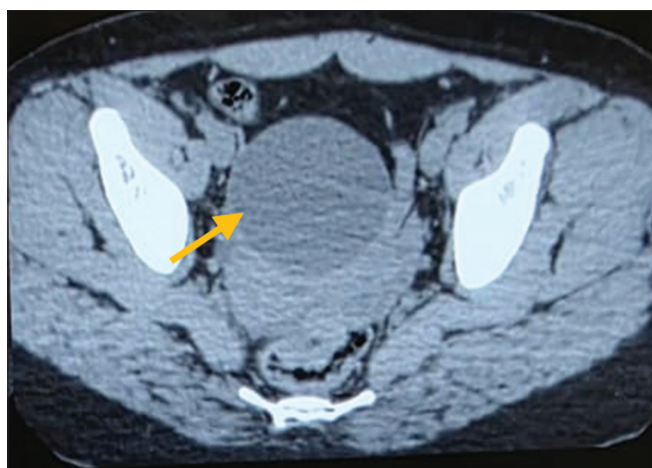


Figure 2: NCCT Pelvis: Cystic lesion arises from Rt Adnexa

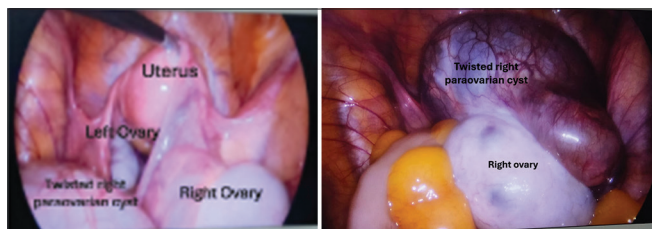


Figure 3: Intraop-twisted paraovarian cyst

The adnexa was carefully detorsed, followed by right paraovarian cystectomy. The cyst contained clear fluid, and hemostasis was achieved.

The post-operative course was uneventful. Histopathological examination of the excised lesion demonstrated a benign serous cystic lesion. No malignant features were reported [Figure 3].

DISCUSSION

The present case illustrates an important diagnostic pitfall in a young woman presenting with an acute right iliac fossa syndrome. The combination of sudden-onset pain, guarding, rigidity and rebound tenderness initially suggested acute appendicitis. However, ultrasonography demonstrated a sizable right adnexal cystic lesion, while the appendix measured approximately 6.5 mm without significant periappendiceal inflammatory changes.

Adnexal torsion may present with acute lower abdominal pain and can be difficult to distinguish from other causes of acute abdomen. Rossi *et al.* reported right-sided torsion in 64% of their adolescent patients, with right lower quadrant tenderness being a common finding.^[4] The right-sided location is clinically important because the resulting pain and peritoneal irritation may closely resemble acute appendicitis.^[3] In the present case, the right-sided location and localized peritoneal signs contributed substantially to the initial diagnostic dilemma.

Paraovarian cysts are usually benign and occur predominantly in women of reproductive age. In a retrospective analysis of 51 patients, Durairaj and Gandhiraman reported abdominal pain as a common presentation and identified adnexal torsion as an important complication.^[5] Gupta *et al.* similarly demonstrated the importance of clinical, radiological, and histopathological correlation in the diagnosis of paraovarian cysts.^[6] In our patient, the operative identification of a paraovarian cyst was subsequently supported by histopathological examination, which demonstrated a cystic lesion consistent with a paraovarian cyst.

The Doppler findings in this case are particularly relevant. Arterial flow was preserved, whereas venous flow was absent. Preserved arterial flow should not be regarded as evidence against adnexal torsion. The ovary has a dual blood supply, and collateral circulation may maintain arterial perfusion despite torsion.^[7] Peña *et al.* reported that normal Doppler flow can occur in surgically confirmed ovarian torsion.^[7] Nizar *et al.* demonstrated the potential diagnostic value of ovarian venous flow, with abnormal or absent venous flow potentially occurring during torsion despite preserved arterial flow.^[8] A systematic review and meta-analysis by Garde *et al.* further demonstrated that individual ultrasound signs have variable sensitivity, reinforcing the importance of integrating imaging findings with clinical assessment.^[9]

Thus, the Doppler pattern in our patient – preserved arterial flow with absent venous flow – was an important clue rather than a reassuring finding. The absence of significant appendiceal inflammatory changes further strengthened the suspicion of adnexal pathology.

Emergency laparoscopy was decisive in establishing the diagnosis. It permitted direct visualization of the torsed adnexa, detorsion, assessment of ovarian viability, and removal of the paraovarian cyst during the same procedure. Current recommendations support prompt surgical evaluation when adnexal torsion is suspected, with preservation of viable ovarian tissue whenever possible.^[10] In the present case, the ovary appeared viable after detorsion and was therefore preserved. This approach

is particularly important in a young woman because ovarian preservation may help maintain future reproductive potential.

The case also emphasizes that the anatomical location of abdominal pain alone should not determine the diagnosis. In a young woman with acute right iliac fossa pain, an adnexal cause should be actively considered, especially when imaging identifies an adnexal cystic lesion. The combination of absent venous Doppler flow, preserved arterial flow, and absence of convincing appendiceal inflammatory changes provided important diagnostic clues in our patient.

The final pathological finding of a cystic lesion consistent with a paraovarian cyst provided correlation between the imaging, operative, and histopathological findings. The successful detorsion and preservation of the ovary demonstrate the practical benefit of early surgical intervention.

CONCLUSION

Torsion of a paraovarian cyst should be considered in young women presenting with acute right iliac fossa pain, particularly when the clinical presentation resembles acute appendicitis. Preserved arterial Doppler flow does not exclude adnexal torsion, and absent venous flow may provide an important diagnostic clue. Early diagnostic laparoscopy allows definitive diagnosis, detorsion, cystectomy, and preservation of ovarian viability. In the present case, histopathological examination demonstrated a cystic lesion consistent with a paraovarian cyst.

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Patient Consent

Written informed consent for publication of the case report and associated clinical/radiological images should be obtained from the patient before submission.

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