



Acute Appendicitis Presenting as Right Ovarian Torsion in a Teenage Girl A Case Study

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Abstract

Background: Acute appendicitis is the most common abdominal surgical emergency in the pediatric population. In adolescent females, its diagnosis can be challenging as gynecological pathologies, particularly ovarian torsion, can present with similar symptoms. While both conditions are recognized, the phenomenon of appendicitis perfectly mimicking the clinical and radiological features of ovarian torsion is unusual and can lead to significant diagnostic and management delays.

Case Presentation: A 16-year-old female presented to the emergency department with a 24-hour history of acute, severe right lower quadrant pain, nausea, and vomiting. Physical examination revealed localized tenderness and guarding. A pelvic ultrasound, ordered to rule out gynecological pathology, showed a peripherally located, hypoechoic right adnexal mass with absent Doppler flow, highly suggestive of ovarian torsion. No clear, non-compressible appendix was identified. Based on these findings, the patient was taken for an emergent diagnostic laparoscopy with a presumptive diagnosis of right ovarian torsion. Intraoperatively, the right ovary and fallopian tube were found to be viable and normally positioned. Instead, a severely inflamed, retrocecal appendix was identified, which was adherent to the right pelvic sidewall, causing secondary inflammatory changes in the right adnexa. A laparoscopic appendectomy was performed. The patient recovered uneventfully.

Conclusions: This case highlights a critical diagnostic pitfall where acute appendicitis, especially in a retrocecal position, can clinically and radiologically mimic ovarian torsion. It underscores the limitations of ultrasonography and the importance of maintaining a broad differential diagnosis in adolescent females with acute abdominal pain. A low threshold for diagnostic laparoscopy is essential in such ambiguous cases to ensure correct identification and treatment of the underlying pathology, preventing unnecessary oophorectomy and managing the true surgical cause promptly.

Keywords: acute appendicitis, ovarian torsion, diagnostic dilemma, adolescent abdominal pain, retrocecal appendix, pelvic ultrasound, diagnostic laparoscopy



Introduction

Acute appendicitis remains the foremost cause of acute abdominal pain requiring surgical intervention across all age groups, with a lifetime risk of approximately 7-8% (1). The diagnosis is typically made based on a classic history of migrating periumbilical pain localizing to the right iliac fossa, accompanied by anorexia, nausea, and signs of localized peritonitis on examination (2, 3).

In adolescent females, the differential diagnosis for right lower quadrant pain expands considerably to include gynecological emergencies, with ovarian torsion being a critical consideration (4, 5). Ovarian torsion accounts for nearly 3% of all gynecological emergencies and involves the rotation of the ovarian vascular pedicle, leading to ischemia and potential loss of the adnexa if not promptly detorsed (6, 7). The clinical presentation of ovarian torsion acute, severe lower abdominal pain, nausea, and vomiting often overlaps significantly with that of appendicitis (8, 9).

While it is standard practice to utilize pelvic ultrasound to distinguish between these entities, there are rare instances where the inflammatory process of a retrocecal or pelvic appendix can cause secondary congestion, edema, and decreased perfusion of the ipsilateral adnexa. This can create a sonographic picture indistinguishable from primary ovarian torsion. This case report details one such instance of diagnostic confusion, emphasizing the need for a collaborative approach between surgeons and gynecologists and the invaluable role of diagnostic laparoscopy in resolving such clinical conundrums.

Case Presentation

Patient Presentation

A 16-year-old female presented to the Emergency Department with a 24-hour history of severe, constant, sharp pain in her right lower quadrant. The pain began peri umbilically and migrated to its final location over several hours. It was associated with three episodes of non-bilious vomiting and anorexia. She denied any fever, diarrhea, or dysuria. Her menarche was at age 12, and her last menstrual period had concluded one week prior to presentation. She was not sexually active.

Past Medical, Social, and Family History

The patient had no significant past medical or surgical history. She was not on any regular medications, including hormonal contraception. There was no family history of ovarian cysts or appendicitis.

Physical Examination

The patient was tachycardic (heart rate 110 bpm) and afebrile. Abdominal examination revealed marked tenderness to deep palpation over McBurney's point, with positive rebound tenderness and guarding. Rovsing's and obturator signs were positive. The psoas sign was negative. Pelvic examination was deferred due to patient discomfort and the plan for ultrasonography.

Diagnostic Workup

Initial Investigations:

Laboratory Tests: Revealed a leukocytosis of $16.5 \times 10^3/\mu\text{L}$ with neutrophilia (85%). C-reactive protein (CRP) was elevated at 45 mg/L. Urine pregnancy test was negative. Urinalysis was normal.

Transabdominal Pelvic Ultrasound: The study reported a 5 cm complex, hypoechoic right adnexal mass with peripheral cysts and absent central Doppler flow, highly suspicious for ovarian torsion in the setting of a hemorrhagic cyst. The left ovary appeared normal. The sonographer noted difficulty in visualizing the appendix clearly due to patient tenderness and overlying bowel gas.



Given the compelling ultrasound findings suggestive of ovarian torsion a time-sensitive surgical emergency the pediatric gynecology team was consulted. A joint decision was made to proceed with an emergent diagnostic laparoscopy for presumed right ovarian torsion.

Results

Laparoscopy was performed under general anesthesia. Upon entry into the peritoneal cavity, the initial inspection revealed a normal-sized, non-ischemic right ovary with a 4 cm hemorrhagic corpus luteum cyst. The fallopian tube was not twisted, and the utero-ovarian ligament was intact. Further exploration, however, identified a grossly inflamed, retrocecal appendix (Figure 1). The tip of the appendix was positioned deep in the pelvis, adherent to the right pelvic sidewall in close proximity to the right adnexa, causing significant surrounding inflammatory changes.

Final Diagnosis: The final diagnosis was Acute Suppurative Appendicitis masquerading as right ovarian torsion on clinical and radiological grounds.

Hospital Course and Management

Given the intraoperative findings, the surgical team was consulted intraoperatively. A laparoscopic appendectomy was successfully performed. The ovarian cyst was left in situ as it was not the cause of the acute pathology and was deemed benign in appearance. The patient received perioperative intravenous antibiotics. Her postoperative course was unremarkable. She was started on clear fluids on post-operative day one, advanced to a soft diet, and discharged home on post-operative day two in a stable condition. Histopathological examination of the appendix confirmed acute transmural suppurative appendicitis.

Discussion

This case exemplifies a classic diagnostic dilemma in pediatric and adolescent surgery/gynecology, where two common surgical emergencies present with near-identical features. The inflammatory focus of a retrocecal appendix can directly irritate the adjacent adnexal structures, leading to a misleading clinical picture.

Pathophysiology of the Mimicry

The mechanism by which appendicitis mimics ovarian torsion is multifactorial:

Anatomic Proximity: A retrocecal or pelvic appendix lies in close anatomical relationship to the right ovary and fallopian tube. An inflammatory process in the appendix can cause a localized peritonitis that directly involves the adnexa, producing pain that is indistinguishable from that of a torsed ovary (10)

Secondary Vascular Compromise: The severe inflammatory edema and phlegmon associated with advanced appendicitis can lead to secondary compression of the venous and lymphatic drainage of the adjacent ovary. This can result in ovarian enlargement, edema, and diminished arterial flow on Doppler ultrasound, creating a false-positive diagnosis of primary ovarian torsion(11).

Diagnostic and Therapeutic Implications

This case has critical implications for clinical practice:

While imaging is invaluable, it should not override clinical suspicion. Atypical features, such as the specific character of the pain or the presence of classic signs of appendicitis (e.g., Rovsing's sign), should maintain a high index of suspicion for appendicitis even with "positive" gynecological findings.

In cases of diagnostic uncertainty in young females, diagnostic laparoscopy is the gold standard. It allows for a rapid and comprehensive visual assessment of both the appendix and the pelvic organs, minimizing the risk of misdiagnosis and unnecessary organ removal. As demonstrated here, it enables a swift change in management without the need for a second incision or a delayed operation.



Multidisciplinary Collaboration: The management of acute abdominal pain in adolescent females is best served by a collaborative model involving pediatric surgeons, gynecologists, and emergency physicians. This ensures that all potential diagnoses are considered and that the most appropriate surgical team is involved from the outset.

Conclusion

Acute appendicitis can present with a clinical and radiological profile that is indistinguishable from ovarian torsion, particularly when the appendix is in a retrocecal location. This case serves as a critical reminder of the limitations of preoperative imaging and the overlapping presentations of surgical and gynecological pathologies. A high level of clinical suspicion, coupled with a low threshold for employing diagnostic laparoscopy, is essential to navigate this diagnostic challenge effectively. This approach ensures the correct pathological entity is treated, prevents unnecessary oophorectomy, and highlights the indispensable value of a multidisciplinary strategy in managing acute abdominal pain in young women.

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