

Report of a Case of Acute Appendicitis Due to Endometriosis

Jalali S.A. MD^{*}, Shafiei M. MD^{**}

Abstract:

Acute appendicitis is a prevalent cause of acute abdominal pain for patients seeking emergency medical attention. This condition typically arises from an obstruction of the appendiceal lumen, often resulting from the appendicitis itself or lymphoid tissue hyperplasia. Although infrequent, endometriosis can also contribute to appendicitis, primarily affecting the serosa of the appendix, with rare cases involving invasion of the muscularis mucosa. This report presents the case of a 36-year-old female patient with no previous history of endometriosis who exhibited symptoms consistent with acute appendicitis.

Keywords: Endometriosis of the appendix, endometriosis, acute abdomen, appendicitis

Background and Objective

Acute appendicitis is a common condition characterized by pain in the right lower quadrant (RLQ) of the abdomen and often requires surgical intervention.^{1,2} Endometriosis located in the RLQ may mimic or directly induce acute appendicitis. The condition is significant due to its potential involvement of not only the appendix but also adjacent anatomical structures, such as the ovaries and fallopian tubes, through the dissemination of endometrial cells. Most cases predominantly affect the serosa of the appendix; however, some may penetrate into deeper layers.¹⁻³

Histopathological examination of excised specimens is essential for confirming the presence of endometrial tissue contributing to appendicitis. In rare instances, endometrial growth within the appendiceal lumen may lead to obstruction, potentially

resulting in appendicitis and gastrointestinal bleeding.³⁻⁵

Patient Report

A 36-year-old woman presented to the hospital with abdominal pain that had begun less than 24 hours prior to admission. Initially, the patient experienced discomfort in the upper abdomen, accompanied by episodes of vomiting, which subsequently localized to the RLQ. Upon admission, laboratory tests indicated a white blood cell count exceeding 17,000 cells/mL, characterized by a predominance of polymorphonuclear leukocytes and elevated C-reactive protein (CRP) levels. An abdominal ultrasound revealed a right ovarian cyst, a smaller left ovarian cyst, and minimal fluid in the abdominal cavity, suggestive of potential cyst leakage. The appendix was not visualized during this imaging, leading to a

^{*}Professor, Department of General Surgery, Iran University of Medical Sciences, Tehran, Iran

^{**}Assistant Professor, Department of Pathology, Islamic Azad University, Tehran, Iran

Received: 10/10/2024

Accepted: 08/03/2025

Corresponding Author: Dr. Seyed Ali Jalali

Tel: 88766331-6

E-mail: s.alijalali@Yahoo.com

provisional diagnosis based on the clinical presentation. Upon examination, the patient exhibited tenderness in the RLQ and slight tenderness in the left lower quadrant, with rebound tenderness notable on the right side. While the patient's overall condition remained stable, she indicated that the discomfort had persisted intermittently for approximately a week prior to her hospital visit. Based on these clinical findings, a diagnosis of acute appendicitis was established, and the patient was subsequently taken to the operating room. During surgical intervention, the cecum was observed to be markedly swollen and adherent to the parietal peritoneum. Additionally, the right ovary was enlarged, demonstrating adhesions to the cecum. The appendix was located retrocecal and was only slightly palpable. To access the inflamed appendix, careful separation of the adhesions was performed, during which purulent fluid was released, indicating that the adherence of the appendix to the ovary resulted from an abscess. After the adhesions were detached, the cecum was separated from the parietal peritoneum, revealing that approximately one-third of the proximal segment of the appendix was necrotic. The appendiceal stump was subsequently ligated, and a purse-string technique was employed to invaginate the stump into the cecal wall, with plans for retrograde removal. However, significant

adhesions between the appendix and cecum necessitated the placement of a drain, prompting the conclusion of the procedure at that stage. Postoperatively, after drainage of the abscess, the swollen and gangrenous appendix was resected and sent for pathological examination. A drain was placed in the peritoneal cavity, and the abdominal layers were meticulously closed. On the first postoperative day, the drain produced secretions, originating initially from the wound, which gradually decreased. By the second postoperative day, the patient was able to resume oral feeding and was discharged on the fourth day in stable condition, with a clean wound.

Unexpectedly, the pathological examination confirmed the presence of endometriosis. A review of the relevant literature revealed that similar abdominal presentations have been documented in multiple reported cases, including instances necessitating ileocolostomy due to severe adhesions. For patients suspected of appendicitis, continuous clinical evaluations and comprehensive patient histories, as advocated by surgical experts, remain the most effective diagnostic approaches. Notably, although the patient was informed of the pathological results, she faced difficulty accepting that the painful symptoms associated with her menstrual cycles had entirely resolved (see Figures 1 and 2).

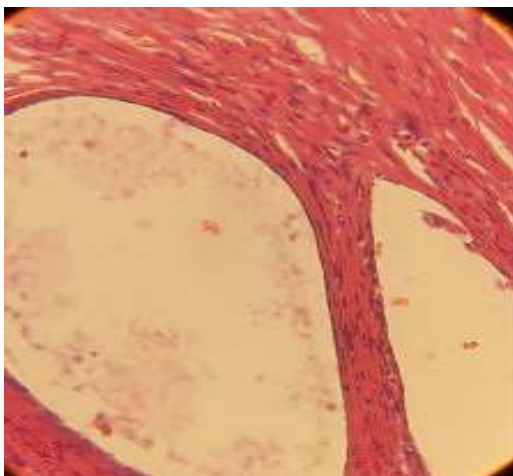


Figure 1- Endometriosis in the muscular wall of the appendix. Hematoxylin-eosin staining (×100)

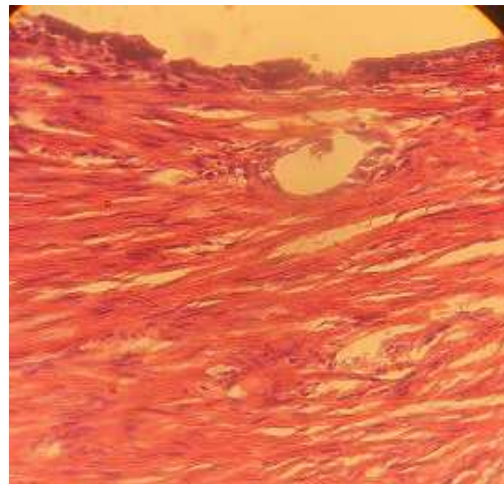


Figure 2- Endometriosis in the muscular wall of the appendix. Hematoxylin-eosin staining (×400)

Discussion and Conclusion

Endometriosis is a benign gynecological condition characterized by the aberrant proliferation of endometrial glands and stroma outside the uterine cavity. This disorder predominantly affects women of reproductive age and is particularly notable for the responsiveness of the ectopic tissue to the body's hormonal cycles. Consequently, the secretions produced by these abnormal glands can provoke inflammation and lead to adhesion of surrounding tissues at the site of implantation. The most commonly affected sites of endometriosis include the ovaries, fallopian tubes, pelvic peritoneum, cervix, and vagina.⁶⁻⁸ The pathogenesis of endometriosis remains incompletely understood, and several hypotheses have been proposed to elucidate its origins. One widely accepted theory is the phenomenon of retrograde menstruation, which posits that menstrual blood can flow backward through the fallopian tubes into the peritoneal cavity, thereby transporting endometrial cells that may subsequently implant onto the peritoneum and adjacent structures.¹⁰⁻¹³ An alternative theory known as coelomic metaplasia suggests that specialized mesodermal cells present in the female reproductive organs and intestinal walls may undergo metaplastic changes within the pelvic cavity, resulting in the transformation of surrounding tissues into endometrial-like tissue as a consequence of chronic inflammation and repetitive stimulation.

Furthermore, the embryonic rest theory posits that remnants of Müllerian duct

structures within the adult abdominal cavity may proliferate similarly to embryonic tissue, potentially giving rise to chronic inflammation and complications such as acute appendicitis that may involve adjacent structures, including the appendix. Interestingly, many patients do not have a prior diagnosis of endometriosis. They often report experiencing pain in the right lower quadrant (RLQ) during menstruation, which can lead to delays in seeking medical attention for acute appendicitis due to their familiarity with such discomfort. This delay in intervention can result in serious complications such as appendiceal perforation, abscess formation, and gangrene. The symptoms of endometriosis can closely mimic those of acute appendicitis, often presenting with swelling and involvement of nearby structures; in some instances, surgical intervention such as ileocolic anastomosis has been necessitated due to severe adhesions. The management of endometriosis-related appendicitis typically aligns with established protocols for the treatment of acute appendicitis. However, a definitive diagnosis and identification of the underlying cause are often achievable only through histopathological examination. It is imperative for clinicians to maintain a heightened index of suspicion for endometriosis in patients presenting with abdominal pain, particularly when the symptoms overlap with those indicative of appendicitis. Such vigilance is crucial, as it may significantly influence management strategies and patient outcomes.¹³⁻¹⁵

References:

1. Dahabreh I J, Adam GP, Halladay C; et al. "Diagnosis of Right lower quadrant pain and suspected acute appendicitis" Agency for health care research and quality [internet] (U.S) Brown evidence-based practice center (ed), Rockville (MD). 2015. 157.
2. Jalali S. A. "Acute Abdomen in Special and Comorbid Cases," *Iranian J Surg.* Vol 28, n31. PP 1-11. 2021.
3. Adeboye A, Ologun GO, Njoku D, Miner J, "Endometriosis of the Vermiform Appendix Presenting as acute appendicitis" *Cureus.* 2019, 11: e 5816.10.7759/Cureus.
4. Gorter, Eker H. H, Gorter-Stam M. M, et al. "Diagnosis and management of acute appendicitis" EAES consensus Development conference 2015. *Surg Endos.* 2016: 668-690. 10-1007/5 00464-016-5247-7.
5. Mastsuurak, et al. "Endometriosis and Coelomic Theory" Pubmed National library of medicine national center for biotechnology information. *Gynecol Obstet Invest* 1999.
6. Dresckin. et al "Retrograde menstruation in endometriosis" *Dresckin. Com N.C.B.* Oct, 2, 2023.
7. Embryonic rest Theory in Endometriosis". www.Ncbi.nlm.nih.gov/pmc3107843.
8. Eskenazi B, Warner ML "Epidemiology of Endometriosis" *Obstet Gynecol Clin North Amer.* 1997, 24: 235-258.
9. Agarwal N, Subromanian A. "Endometriosis Clinical Presentation and Molecular Pathology. *J Lab Physicians.* 2010, 2: 1-9 10.41.3/ 0974-2737.666699.
10. Gustofsen R L, Kim N, Liu S, Stratton P. "Endometriosis and appendix a case series and comprehensive review of the literature" *Fertility and sterility. Endometriosis* 2005.12.076.
11. Ijaz S, Lidder S, Mohamid W, Cartet M, Thomson H, "Intussusception of the appendix secondary to endometriosis": a case report. *J med case Rep.* 2008, 2:12. 10.1186/1752-1947-2-12.
12. Alimi Y, Iwanaga J, Lukas M, Tubbs RS. "The clinical anatomy of endometriosis a review" *Cureus.* 2018. 10:e3361. 10.7759/Curevs. 3361.
13. Bhangu A, Soreidek, Di Saverio S, Assarsson JH, Drake FT,. "Acute appendicitis modern understanding of pathogenesis, diagnosis and management" *Lancet* 2015, 386" 12781287.10.1016/s 0140-6736(15)00275-5.
14. Awdenzuok S, Udoye E, Etebu E "Endometriosis of the appendix presenting as acute appendicitis": a case report and literature review. *Ethiop Health Science*, No1, vol 23- p68-72, 2023.
15. Yoon J, Sang Lee Y, Chag HS, Park CS: "Endometriosis of the appendix" *Ann Surg Res.* 2018, 87: 144-147.
16. Croon RD 3rd, Donovan ML. "Intestinal Endometriosis" *Am J Surg.* 1984, 148: 60-667. 10.1016/002-9610(84) 903747.