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Comprehensive Management of Endometriosis: Implementation from Research to Clinical Practice

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Abstract

Appendiceal endometriosis (AE) represents a clinically significant yet frequently overlooked manifestation of endometriosis that may contribute to persistent symptoms and suboptimal treatment outcomes. Multiple comprehensive reviews demonstrate that appendiceal involvement occurs in a notable percentage of women with endometriosis and can present with distinctive symptom patterns. Despite this growing body of evidence, routine appendiceal evaluation during surgical exploration for endometriosis remains inconsistently implemented across surgical practices. The failure to identify and treat AE may result in continued symptomatology despite otherwise successful endometriosis surgery, potentially necessitating additional interventions and compromising patient quality of life.

Keywords: Endometriosis, Appendicitis, Appendiceal endometriosis, Dysmenorrhea, Primary dysmenorrhea, Implementation, Chronic pelvic pain

Editorial

Endometriosis is a chronic inflammatory condition that occurs when endometrial-like tissue grows outside the uterus, commonly leading to symptoms such as dysmenorrhea and chronic pelvic pain (CPP) [1]. While diagnosis and treatment focus on pelvic reproductive organs, research shows that the appendix can also be involved in endometriosis patients and may contribute to symptom burden. This potential site of disease is commonly overlooked in clinical practice since routine appendiceal evaluation is not part of standard surgical protocols for endometriosis. Current clinical guidelines, including those established by the American College of Obstetricians and Gynecologists (ACOG), do not require appendiceal examination during surgical exploration for endometriosis, potentially leaving a treatable source of symptoms undetected [2,3].

Research shows that appendiceal endometriosis (AE) is more common than once thought, with infiltrative disease often present despite a normal-appearing appendiceal surface [4–7]. While surgeons routinely visually assess pelvic organs to identify superficial peritoneal implants and ovarian endometriomas during diagnostic laparoscopy, the appendix, whether in its typical anatomical position or retrocecally located, can be easily accessed and examined through both laparoscopic and open surgical approaches. Studies show that prophylactic appendectomy in patients undergoing endometriosis surgery provides both confirmatory histopathological diagnosis and symptom improvement with minimal additional morbidity [8].

Since the appendix is accessible during both laparoscopic and open endometriosis procedures, systematic appendiceal evaluation and prophylactic appendectomy represent an important consideration in comprehensive endometriosis management. This approach improves diagnostic accuracy, eliminates a frequently overlooked source of persistent symptoms, and leads to better long-term surgical outcomes for patients with endometriosis. Treating AE during the initial

surgery may reduce the need for subsequent interventions and improve overall patient satisfaction by providing better symptom relief [9].

Review of Current Data Regarding Endometriosis and the Appendix

An investigation involving the sonographic identification of deep infiltrating endometriosis (DIE) also identified cases of AE. In this study, gynecologic physicians collaborated to verify the presence of DIE through sonographic, surgical, and histological assessments [10]. AE was coincidentally identified in five of the seven cases (71%) in which appendectomy was performed (total of 5% of the 100 cases of DIE examined), with endometriotic implants affecting the appendix in five cases, though ultrasound did not detect AE in any of those cases preoperatively. Histologic evidence of endometriosis depends on finding at least two of the three associated elements (i.e. endometrial glands, stroma, and hemosiderin deposits) [11]. In each AE case from this series, all three elements were present but none of the operative reports indicated any specific signs of appendicitis.

Multiple studies across diverse patient populations have documented significant rates of AE. Ross and colleagues examined 609 women with CPP who underwent appendectomy and found histopathologic evidence of AE in 14.9% of cases [4]. Similarly, Nikou *et al.* studied 135 patients with clinically diagnosed endometriosis who had concurrent appendectomy, revealing AE in 25% of cases despite the absence of consistent preoperative indicators [5]. Guo *et al.* reported that among 108 patients with Stage IV endometriosis, 35.8% of those who had an appendectomy had evidence of AE [6]. Centini *et al.* found a lower prevalence of 2.8% among 486 patients undergoing surgery for presumptive endometriosis [7]. Collectively, these studies demonstrate that AE occurs in 2.8% to 35.8% of cases, with prevalence rates varying according to patient selection criteria and disease severity.

Additionally, Schrempf *et al.* evaluated 2,484 patients admitted for acute appendicitis without known endometriosis history and identified histologic evidence of AE in 0.7% of cases, suggesting that AE may occur even in the absence of recognized pelvic endometriosis [12]. This finding is supported by multiple case reports demonstrating that AE can present with acute symptomatology that closely mimics classic appendicitis, potentially leading to misdiagnosis [13–15]. Importantly, Ross and colleagues emphasized that the detection rate of AE is significantly influenced by the rigor and methodology of histopathologic examination, suggesting that AE may be underdiagnosed when standard pathologic protocols are employed [16]. A comprehensive review and analysis of AE was provided by Mabrouk *et al.* [17] and by Allahqoli *et al.* [18], further highlighting the clinical relevance of AE.

Surgical intervention for endometriosis occurs either for diagnostic confirmation when the diagnosis is uncertain or medical therapy has failed, or for definitive treatment of established disease. In diagnostic cases, histologic sampling of suspicious implants or deep infiltrating endometriosis is required, while therapeutic cases necessitate complete removal of all endometriotic tissue. Current evidence strongly supports concurrent appendectomy in both scenarios, as AE frequently lacks visual manifestations and can only be confirmed histologically. Multiple studies demonstrate that prophylactic appendectomy adds minimal morbidity during endometriosis surgery [5,6,18], with several authors advocating for this approach in all cases of suspected or confirmed endometriosis [7,15,16].

Endometriosis significantly impacts patients through dysmenorrhea, chronic pelvic pain, and infertility, yet diagnosis is frequently delayed by 5–12 years, contributing to patient dissatisfaction and physician mistrust [19–23]. Misdiagnosis or under-recognition of endometriosis' various manifestations, including peritoneal, ovarian, and deep infiltrating disease, prolongs patient suffering and delays appropriate treatment. Comprehensive interdisciplinary management is essential [24] and should include recognition of frequently overlooked AE.

Clinical Implications of Collected Data

Recognizing and diagnosing AE is essential for ensuring that patients receive appropriate medical and/or surgical treatment to effectively alleviate associated symptoms. Criticism of the less-than-ideal transferring of research findings toward standard clinical practice has been previously offered, and the slowness of adoption of this comprehensive management of endometriosis may be a modern example of this failed implementation. A thorough analysis of other past scientific implementation problems was presented by Dr. Evans [25], which may be relevant to this clinical review. The delay in translating compelling scientific data into standard care protocols may perpetuate suboptimal treatment outcomes for patients with endometriosis.

Conflicts of Interest

The authors deny any conflicts of interest.

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