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Macroscopic Normal Appendix in Patients Presented with Features Suggestive of Acute Appendicitis

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Abstract:
Background: Acute appendicitis is one of the most common causes of abdominal pain requiring surgical intervention. However, a subset of patients presents with classical symptoms suggestive of appendicitis, but intraoperative findings reveal a macroscopically normal appendix. This study aimed to evaluate the clinical, radiological, and histopathological characteristics of such cases. **Methods:** This prospective study included 100 patients who presented with clinical features suggestive of acute appendicitis and underwent appendectomy. Only those with macroscopically normal appendices were included. Clinical symptoms, physical signs, laboratory and radiological findings, intraoperative observations, and histopathological results were collected and analyzed. **Results:** Out of 100 patients 65 were females and 35 males. All of them reported right iliac fossa pain. Nausea was present in 80%, fever in 67%, and vomiting in 49%. Tenderness in the right side of the abdomen was noted in 97 patients (69 females, 28 males), while 3 patients (2 females, 1 male) presented with flank pain, anorexia, elevated white blood cell count, and negative β-hCG. Per rectal examination in these 3 patients revealed tenderness. Clinical examination showed RIF tenderness in 56% and rebound tenderness in 41%. Fever was documented in 53%. White blood cell count was elevated in 45% of patients. Ultrasound, performed in female patients only (40 cases), was non-diagnostic in all. Intraoperatively, all appendices were macroscopically normal. Thirteen females were found to have ruptured ovarian follicles. Histopathological examination revealed true appendicitis in 19 patients (13 males and 6 females), including 6 with normal white blood cell counts. **Conclusion:** A macroscopically normal appendix may still harbor histological evidence of inflammation. Clinical judgment should be supported by histopathology, especially in female patients, where gynecological conditions may mimic appendicitis. Improved diagnostic tools and imaging protocols are essential to reduce negative appendectomy rates.

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Introduction:

Acute appendicitis remains the most common surgical emergency worldwide. Early diagnosis is critical to avoid complications such as perforation and peritonitis. Despite technological advancements in imaging, diagnosis often relies on clinical judgment, which can be misleading in atypical presentations. A peculiar subgroup of patients presents with classical symptoms, yet intraoperative findings show a macroscopically normal appendix. This raises critical questions:

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Should such appendices be removed? Can subclinical inflammation be detected histologically? Are alternative diagnoses, particularly gynecological ones in females, being overlooked?

This study aims to explore the clinical, imaging, intraoperative, and histopathological findings in patients with normal-appearing appendices during surgery for suspected acute appendicitis.

Discussion:

This study highlights the diagnostic dilemma posed by patients presenting with clinical features of acute appendicitis but found intraoperatively to have a macroscopically normal appendix. Despite normal gross findings, histopathological evaluation revealed subclinical appendicitis in 19% of cases, underscoring the importance of routine histological examination even in seemingly normal specimens.

The findings reinforce previous literature indicating that a macroscopically normal appendix can harbor microscopic inflammation or other subtle pathology not evident to the naked eye. This supports the surgical decision to proceed with appendectomy based on clinical suspicion, as withholding surgery based solely on intraoperative appearance could lead to missed diagnoses and potential complications.

Of particular note is the high incidence of gynecological conditions, especially ruptured ovarian follicles, found intraoperatively in female patients. This emphasizes the necessity for comprehensive preoperative gynecologic assessment and better integration of imaging techniques such as transvaginal ultrasound in female patients of reproductive age presenting with right iliac fossa pain.

The study also illustrates the limitations of current diagnostic modalities. Laboratory markers such as leukocytosis were absent in more than half of histologically confirmed appendicitis cases. Similarly, ultrasound, performed only in female patients, yielded non-diagnostic results, further complicating decision-making.

To reduce the negative appendectomy rate, especially in females, a multidisciplinary approach including enhanced imaging protocols, gynecological consultation, and potentially diagnostic laparoscopy should be considered. Moreover, these findings advocate for the development of clinical scoring systems that integrate gender-specific presentations and non-inflammatory mimics of appendicitis.

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