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A Rare Case of Fibrosing Obliterative Appendicitis in a Young Patient: Case Report

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Abstract: Fibrosing obliterative appendicitis is an uncommon inflammatory condition of the appendix that can lead to significant diagnostic challenges, particularly in younger patients. In a patient presenting with abdominal pain at the emergency department, appendicitis must be considered and ruled out. However, due to various causes of abdominal pain, the diagnosis of appendicitis may be challenging. Therefore, thorough history taking and a careful clinical examination are essential for identifying appendicitis and ensuring prompt treatment. This study describes a young patient who presented with a complaint of right lower abdominal pain for the past 4 days. A 14-year-old male presented to the emergency department with right lower abdominal pain, without associated symptoms. He had a similar episode three months earlier and was treated conservatively. Ultrasound suggested mesenteric lymphadenitis. Diagnostic laparoscopy was initially performed, but was then converted to open surgery due to an invisible appendix. The procedure revealed an inflamed, slender appendix adhering to the cecum with enlarged mesenteric lymph nodes. Appendectomy and lymph node excision were performed. Histopathology confirmed fibrosing obliterative appendicitis with reactive lymphadenitis. The patient was discharged after two days in stable condition. This case highlights the diagnostic challenge of chronic appendicitis in paediatric patients. Diagnostic laparoscopy proved valuable in identifying fibrosing obliterative appendicitis, allowing for effective surgical intervention.

Keywords: chronic appendicitis, obstructive appendicitis, appendiceal inflammation, mesenteric lymphadenitis

1. Introduction

Fibrosing obliterative appendicitis is an atypical and often challenging form of appendicitis, distinguished by the gradual replacement of normal appendiceal tissue with fibrous tissue, resulting in progressive obstruction of the lumen. Simple forms of acute appendicitis have classical symptoms including fever, nausea, vomiting, and localized abdominal tenderness; conversely, symptoms associated with fibrosing obliterative appendicitis may be less apparent or unusual, leading to an even more complicated diagnosis. This form of appendicitis is particularly rare in children and may be mistaken for gastrointestinal disease. The exact pathogenesis of this lesion is unclear; however, the etiology of the complaint is believed to be secondary to recurrent inflammatory processes, which lead to neuroendocrine cell hyperplasia in the submucosa and lamina propria of the wall of the appendix. The recurrent cycles of subclinical inflammation lead to fibrosis and scarring over time, and as such, chronic inflammation progresses to fibrosis and scarring, resulting in a narrowed or totally obliterated appendiceal lumen (Zarghami et al., 2024). The fibrotic appendix itself can also form adhesions, particularly if the appendix is adherent to other structures in the surrounding area, which can complicate the diagnosis as well as the surgical management based on visualization. In general, fibrosing obliterative appendicitis has a subtle presentation and could be mistaken for mesenteric lymphadenitis or other chronic abdominal pain disorders. Advanced imaging studies, such as ultrasound, may not often show the characteristic presentation of acute appendicitis and may complicate diagnosis. If the diagnosis is unclear and further evaluation is needed, diagnostic laparoscopy is helpful for either diagnosis directly through visualization or therapeutic treatment.

This article presents a rare case of fibrosing obliterative appendicitis seen in a young patient that highlights the difficulty in the diagnosis and management of this clinical problem. This case highlights the importance of including fibrosing obliterative appendicitis in the differential diagnosis of chronic or recurrent abdominal pain when standard imaging studies and clinical evaluations suggest a different diagnosis.

Fibrosing obliterative appendicitis differs from typical appendicitis. Appendicitis is defined as inflammation of the appendix, which is located at the terminal end of the ileum. One of the most frequent abdominal surgical emergencies is appendicitis, which affects 10% of the general population and most frequently affects patients between the ages of 10 and 30. (Lee et al., 2021). This inflammation occurs due to obstruction of the lumen by faecal matter, parasites, and food (Shahba et al.,

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2024). Without prompt treatment, the obstruction can cause perforation of the gastrointestinal tract. The terminal ileum and duodenal C-loop are the most frequent sites of gastrointestinal tract perforation due to accidental ingestion of sharp foreign bodies. One case report has highlighted a rare case of appendicitis that perforated due to ingestion of a fish bone, and the fish bone was found in the appendix (Uchihara et al., 2022). Appendicitis can be divided into two types: acute and chronic. Acute appendicitis is a common surgical emergency with a lifetime risk of approximately 7%, requiring surgical treatment (Ljubas et al., 2024). Conversely, chronic appendicitis (CA) is an uncommon medical disorder that lasts for months or even years and is defined by less intense and intermittent abdominal pain as well as a longer-lasting clinical picture than 1-2 days (Ljubas et al., 2024). Therefore, it is difficult for physicians to diagnose chronic appendicitis because it is not always appropriate to consider it as a first diagnosis (Kothadia et al., 2015). The clinical manifestations of acute and CA in any patient vary from one another. However, one common chief complaint that can be identified is abdominal pain. Abdominal pain is the main complaint in any patient suspected of having appendicitis and one of the most common and challenging symptoms to report, particularly in children. The majority of children who come to the hospital with abdominal pain that lasts longer than three days comprise 5.1% (Kurian et al., 2024). In cases of chronic abdominal pain with no clear cause, diagnostic laparoscopy (DL) may be performed to identify the underlying cause. This minimally invasive procedure often reveals conditions such as adhesions, chronic appendicitis, hernias, or enlarged mesenteric lymph nodes. Current evidence supports DL as a safe and effective approach for uncovering organic aetiologies of persistent abdominal discomfort (Zhao et al., 2020). This method not only assists in diagnosis but also allows for immediate treatment in many cases.

2. Case profile

A 14-year-old male patient, Master Sanjay, came to the emergency department with complaints of right lower abdominal pain. The patient revealed no associated symptoms such as fever, nausea, vomiting, migratory pain, diarrhoea, or urinary issues. Notably, the patient had experienced similar abdominal pain three months ago, which was managed conservatively. An abdominal ultrasound suggested mesenteric lymphadenitis. The three-month delay from the initial presentation to surgery occurred due to several factors. Initially, the patient's symptoms were mild and did not include fever or nausea, which are expected in acute appendicitis. Instead, a conservative approach was applied. An ultrasound indicated possible mesenteric lymphadenitis, a self-limiting process typically improved by conservative treatment, leading us not to pursue surgery at that time. Because the symptoms remained stable, and the patient did not show alarming signs, he was closely monitored, and conservative management continued. Eventually, when the symptoms persisted without improvement, the decision was made to attempt a diagnostic laparoscopy. Mesenteric lymphadenitis was the working diagnosis based on the initial symptoms and imaging studies. The patient was a 14-year-old male, presenting with right lower quadrant abdominal pain, a common complaint seen in numerous gastrointestinal conditions, including appendicitis and mesenteric lymphadenitis. Particularly, the absence of additional classic appendicitis symptoms (fever, nausea, vomiting, migratory pain, etc.) made it necessary to consider alternative causes of abdominal pain. Further questioning of mesenteric lymphadenitis was an abdominal ultrasound that showed enlarged mesenteric lymph nodes, commonly associated with mesenteric lymphadenitis, an inflammatory response typically caused by viral or bacterial infection. Mesenteric lymphadenitis is frequently associated with abdominal pain, especially in the right lower quadrant, and is often misdiagnosed or mistaken for appendicitis due to the clinical overlaps of symptoms. The ultrasound findings of enlarged lymph nodes indicated this diagnosis, resulting in an initial diagnosis of mesenteric lymphadenitis as the cause of her symptoms. However, in light of the ultrasound findings, the patient continued with recurrent pain and no improvement, which warranted further evaluation for the cause of her symptoms. This ultimately resulted in diagnostic laparoscopy being performed, which finally identified fibrosing obliterative appendicitis. The diagnosis can be somewhat elusive by imaging alone, as it is not always definitive of acute appendicitis and can clinically and radiographically mimic other conditions, such as mesenteric lymphadenitis.

Given the persistent nature of the symptoms, a diagnostic laparoscopy under general anaesthesia was planned. During the procedure, the appendix was not immediately visible, requiring conversion to an open surgery. Upon exploration, an inflamed, slender appendix was found adherent to the cecum. The mesoappendix was difficult to separate, and enlarged mesenteric lymph nodes were observed.

During the surgical procedure, the observation of "appendicitis adherent to the mesoappendix" indicates a challenging clinical situation. The inflamed appendix, rather than being loose and movable, is firmly attached to the mesoappendix, the fold of peritoneum supporting the appendix and containing its blood supply. This adhesion often results from chronic inflammation, which can lead to scar tissue formation and

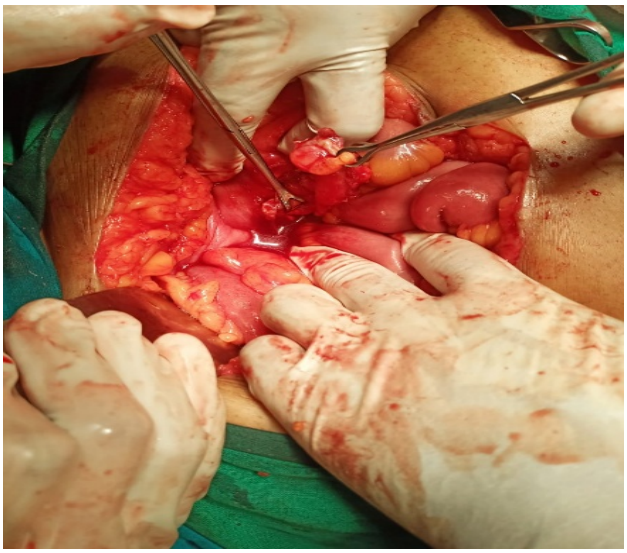

Figure 1. Intraoperatively appendicitis adherent to mesoappendix

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Malaysian Journal of Science 44 (Special Issue 1): 61-65 (December 2025)

complicate the surgical approach. The presence of such adhesions may suggest a more advanced or complicated appendicitis, necessitating careful dissection to prevent damage to surrounding structures and vessels. This finding highlights the importance of thorough intraoperative assessment and may influence the surgical technique employed to ensure safe and effective removal of the appendix while minimizing complications. With considerable technical difficulty, an appendectomy was performed, along with excision of one lymph node for biopsy (Figure 1).

In Figure 2, both the inflamed appendix and the attached mesoappendix are excised during the appendectomy. This method is commonly used when appendicitis occurs with significant inflammation or adhesion to the mesoappendix, requiring precise resection to achieve complete removal of the infected tissue. Additionally, division of the mesoappendix, which contains the blood vessels and lymphatics supplying the appendix, reduces the risk of residual inflammation or infection, thus preventing complications such as abscess formation or persistent pain after surgery. This comprehensive approach ensures a clearer surgical field and contributes to a more effective resolution of appendicitis, ultimately improving postoperative outcomes for the patient.

Histopathological examination of the specimens disclosed features that are consistent with fibrosing obliterative appendicitis and reactive lymphadenitis. These findings offer insights into the chronic nature of the patient's symptoms and the challenges encountered during surgery. The patient recovered well from the surgery, and he was discharged in stable condition two days after the procedure.

3. Discussion

Fibrosing obliterative appendicitis is a rare form of appendiceal pathology that poses significant diagnostic challenges due to its unusual presentation. In contrast to classical acute appendicitis, which typically presents with well-defined symptoms and imaging findings, fibrosing obliterative appendicitis can manifest insidiously, frequently mimicking other gastrointestinal conditions. The cause of fibrosing obliterative appendicitis remains poorly understood (Agha et al., 2020; Al-Janabi et al., 2022; Greenson, 2019; Molina et al., 2020; Scoazec, 2010), although it may be associated with chronic inflammation, previous infections, or foreign body reactions. The initial ultrasound suggesting mesenteric lymphadenitis highlights the limitations of imaging studies and emphasizes the need for careful clinical correlation (Choi et al., 2014). In this case, ultrasound imaging is an important tool for differentiating between appendicitis and mesenteric lymphadenitis (ML) in children. This approach has proven highly accurate in diagnosing appendicitis, with a 78% positive predictive value. Characteristic ultrasound findings in appendicitis cases include closed-loop patterns and free fluid between intestinal loops, which are observed less frequently in ML.

Enlarged lymph nodes on ultrasound are more commonly present in appendicitis than ML. These distinct imaging features are necessary for rapid differentiation between appendicitis and ML, which is essential as ML typically resolves with conservative treatment, avoiding unnecessary surgical procedures. The surgical challenges encountered, including the necessity to convert from laparoscopy to open surgery and the adherent nature of the appendix, demonstrate the difficulties in managing chronic appendicitis cases. In rare cases, it may result from an autoimmune process that leads to persistent inflammation and fibrosis of the appendiceal wall (Choi et al., 2014). This chronic inflammatory response can form adhesions between the appendix and adjacent structures, such as the mesoappendix, complicating surgical intervention. During surgery, the identification of an appendix adherent to the mesoappendix highlights the need for careful dissection to prevent injury to surrounding tissues. The decision to excise the mesoappendix along with the appendix is critical in ensuring complete removal of all inflamed tissue and minimizing the risk of postoperative complications. By excising both the appendix and the associated mesoappendix, surgeons can reduce the likelihood of complications such as abscess formation or chronic pain.

The recurrent right lower abdominal pain is an example of diagnostic difficulties associated with chronic appendicitis in paediatric patients. [14] The unique presentation, lacking classic symptoms such as fever, nausea, vomiting, and migratory pain,

Figure 2. Excised appendicitis along with mesoappendix

underscores the importance of considering chronic appendicitis in cases of recurrent abdominal pain. The histopathological diagnosis of fibrosing obliterative appendicitis with reactive lymphadenitis provides a clear explanation for the patient's chronic symptoms and represents a rare pathology, especially in young patients. This case emphasizes the value of diagnostic laparoscopy in cases of chronic abdominal pain with unclear aetiology, as it allowed for both diagnosis and treatment in a single procedure. This case report highlights that chronic appendicitis poses a significant diagnostic challenge for clinicians. This condition frequently manifests with nonspecific symptoms and may present ambiguous findings on physical examination. In such cases where the clinical picture is unclear, yet symptoms persist, surgical intervention appears as a viable diagnostic and therapeutic option (Amadea & Jurnalis, 2022).

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One study reports a case of a young man with abdominal pain and signs of acute appendicitis, in which an appendix-dependent tumour was discovered during surgery. Histopathological examination showed lympho-plasmocytic infiltrate, storiform fibrosis, and obliterative phlebitis (Cabrales-Escobar et al., 2021). In this case, it was fibrosing obliterative appendicitis, which developed without typical signs of appendicitis and was delayed by 3 months.

In a study conducted by Jenkin et al., a 75-year-old female with a history of chronic, intermittent abdominal pains presented to the general surgery clinic after abnormal thickening of the appendix was discovered on abdominal and pelvic computed tomography imaging. The patient underwent a laparoscopic appendectomy for suspicion of malignancy. The histologic evaluation of the specimen demonstrated a diverticulum at the distal end of the appendix with fibrosing obliteration of the lumen. Fibrosing obliterative appendicitis (FOA) is a rare and unusual form of appendicitis that can occur in children. It is characterized by chronic inflammation, fibrosis, and obliteration of the appendiceal lumen, meaning that the appendix becomes scarred and narrowed, potentially leading to complete obstruction (Jenkins et al., 2022).

In one report, a single Caucasian woman aged 21 presented to the hospital complaining of dull, intermittent abdominal pain localized in the upper portion of her abdomen, where the pain was not referred to any other part of the body. This pain lasted a few days (1-2 days) and was experienced about two times a week. The pain was regular and accompanied by fever, and on two or three occasions was also associated with nausea and vomiting. Ultrasonic imaging disclosed an appendix that was thickened, hypoechoic, hyperemic, and also edematous in the neighbouring fat region. Confirmation was provided by a CT scan performed with clinical suspicion of chronic appendicitis, revealing both segmental and circumferential sanguineous thickening of the appendix. No course of antibiotics was administered. Elective surgery was planned for the patient; however, because the abdominal pains worsened, the patient required emergency surgery one and a half months after the initial hospital visit, approximately three and a half months after symptoms first appeared (Holm et al., 2022). Similarly, in our study, the operation was delayed from the initial visit.

This approach not only allows for direct visualization and assessment of the appendix but also offers the opportunity for definitive treatment if pathology is identified. Further studies are needed to investigate the underlying mechanisms of this condition and to establish standardized treatment protocols that can assist in the timely identification and management of fibrosing obliterative appendicitis.

4. Conclusion

In conclusion, this report is both distinctive and interesting because it describes an uncommon form of appendicitis, fibrosing obliterative appendicitis, in a young patient. This contrasts with the typical acute presentation of appendicitis, which generally presents with acute symptoms such as fever and nausea. Fibrosing obliterative appendicitis has a more gradual onset and often manifests as chronic or recurrent abdominal pain, which made the diagnosis challenging, particularly in a paediatric patient (initially, a diagnosis of mesenteric lymphadenitis was being considered). The patient exhibited persistent symptoms for several months. The initial imaging did not report appendicitis but suggested criteria for mesenteric lymphadenitis. Diagnosis was ultimately confirmed during diagnostic laparoscopy, where an inflamed and fibrotic appendix was found, with firm adhesion to the mesoappendix. The need to convert from laparoscopy to open surgery for adequate visualization of the appendix highlights the difficult nature of this unusual and chronic form of appendicitis. This article emphasizes the importance of including fibrosing obliterative appendicitis in the differential diagnosis of chronic abdominal pain, particularly when conventional diagnoses fail, and underscores the necessity of laparoscopy in unusual paediatric cases for both diagnosis and treatment.

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