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Case Report

Surgery Section

Appendicular Diverticulum Mimicking Acute Appendicitis: A Case Report

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ABSTRACT

Acute appendicitis is one of the most common surgical emergencies encountered in clinical practice. It typically presents with right iliac fossa pain, nausea, vomiting and leukocytosis and is often managed surgically with appendicectomy. Despite a well-established clinical presentation, several rare pathological entities can mimic acute appendicitis, posing diagnostic challenges for clinicians. Appendicular diverticulum is an uncommon condition characterised by sac-like protrusions of the appendiceal wall. The authors report a 44-year-old male who presented to the surgical Outpatient Department with abdominal pain for 20 days, associated with episodes of vomiting and intermittent fever. The pain was predominantly localised to the right iliac fossa and was described as intermittent rather than acute in onset. There was no history of similar episodes. The patient had no known co-morbidities such as diabetes mellitus or hypertension. The laboratory profile was within normal limits. The appendicular diverticulum was confirmed by histopathological and immunohistochemical tests without any evidence of neoplasia. The patient was advised to undergo periodic clinical surveillance, given the known association between appendicular diverticulum and appendiceal neoplasms. There was no evidence of any postoperative complication or recurrence. The present case highlights a rare presentation of appendicular diverticulum mimicking acute appendicitis. It emphasises the importance of histopathological evaluation and immunohistochemistry in all appendicectomy specimens.

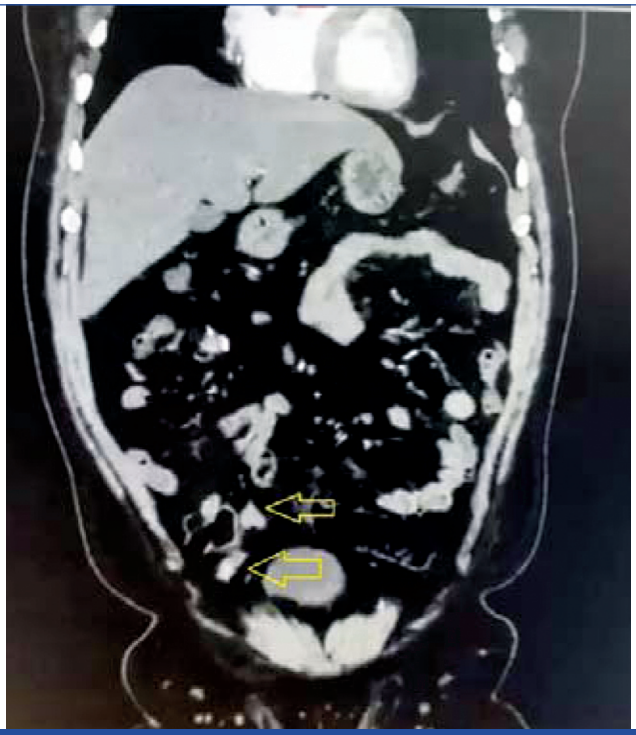
Keywords: Appendicectomy, Diverticula, Gastrointestinal surgery, Pseudomyxoma peritonei, Surgical emergency

CASE REPORT

A 44-year-old male presented to the surgical Outpatient Department with complaints of abdominal pain for the last 20 days, associated with episodes of vomiting and intermittent fever. The pain was predominantly localised to the right iliac fossa and was described as intermittent rather than acute in onset. There was no history of similar episodes in the past. The patient had no known co-morbidities such as diabetes mellitus, hypertension, or previous abdominal surgeries. On general physical examination, the patient was afebrile with stable vital parameters. Abdominal examination revealed localised tenderness in the right iliac fossa without guarding or rigidity. No palpable mass was noted and bowel sounds were present. Laboratory investigations were within normal limits with Haemoglobin- 14.6 g/dL, total leukocyte count- 6200 cells/mm^3 and platelet count within normal range. Coagulation profile showed an International Normalised Ratio (INR) of 0.9. Biochemical parameters i.e., serum creatinine (0.7 mg/dL) and Glycated Haemoglobin (HbA1c) (6.6%) were recorded. Although the preoperative HbA1c was mildly elevated (6.6%), repeat HbA1c assessment after three months was within the normal range. In view of the transient mild elevation and normalisation on follow-up, the patient was managed with lifestyle modification alone and no formal diagnosis of diabetes mellitus was established.

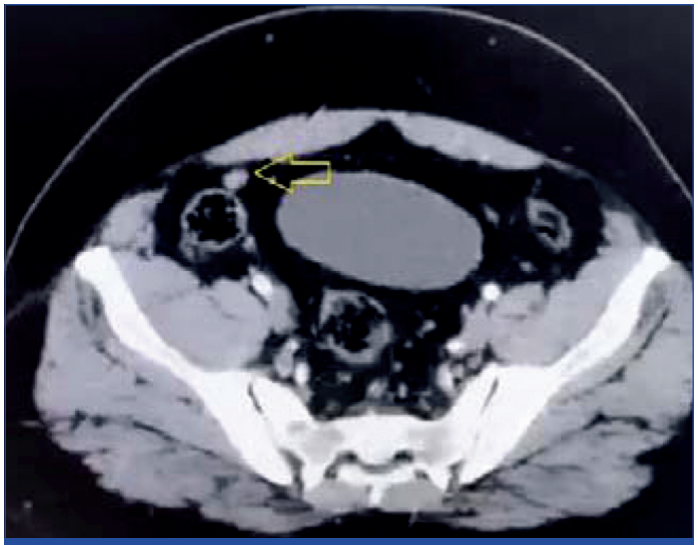
Given the clinical suspicion of appendicitis, a Contrast-Enhanced Computed Tomography (CECT) scan of the abdomen was performed. Imaging revealed a dilated appendix measuring approximately 12 mm in diameter, with intraluminal air foci and the presence of an appendicolith measuring 5.8 mm [Table/Fig-1,2].

These findings were suggestive of acute appendicitis. No obvious perforation, abscess formation, or periappendiceal collection was noted. Based on the clinical and radiological findings, a diagnosis of acute appendicitis was made and the patient was planned for laparoscopic appendicectomy. Intraoperatively, the appendix appeared inflamed and no gross abnormalities such as perforation or mass lesion were identified. The procedure was completed uneventfully [Table/Fig-3].

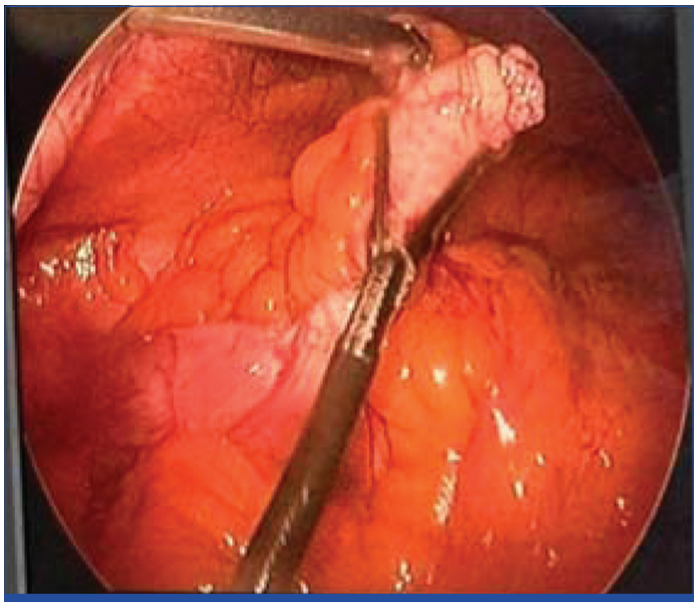


[Table/Fig-1]: Contrast-Enhanced Computed Tomography (CECT) scan of the abdomen (highlighted arrows showing faecolith).

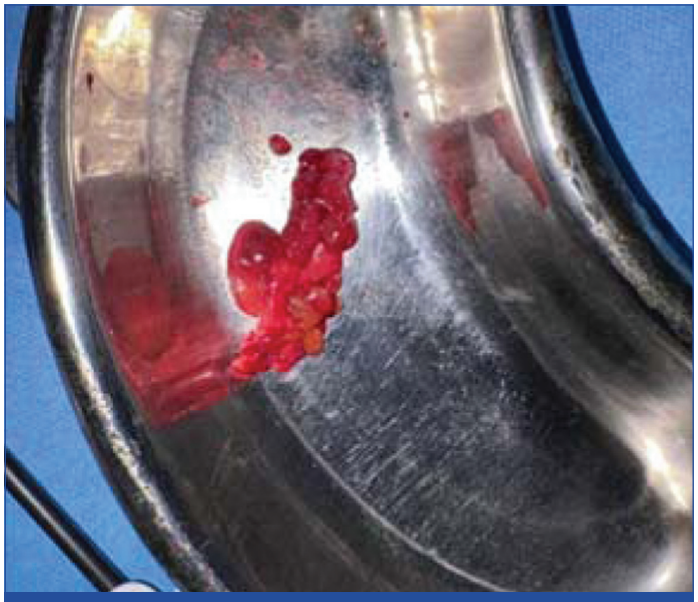
The postoperative period was smooth and the patient recovered well without any complications. Oral feeds were resumed and the patient was discharged in stable condition. The resected appendiceal specimen was sent for histopathological examination as per routine protocol, which showed mucosa consisting of hyperplastic glands, predominantly lined by mucinous epithelium with intracytoplasmic mucin. Pencillate nuclei with mild hyperchromasia and pseudostratification were seen in occasional glands. Microscopic examination revealed features suggestive of appendicular diverticulum, with a possibility of low-grade mucinous neoplasm [Table/Fig-4,5].



[Table/Fig-2]: Contrast-Enhanced Computed Tomography (CECT) scan of the abdomen (Yellow arrow showing renal microlith).

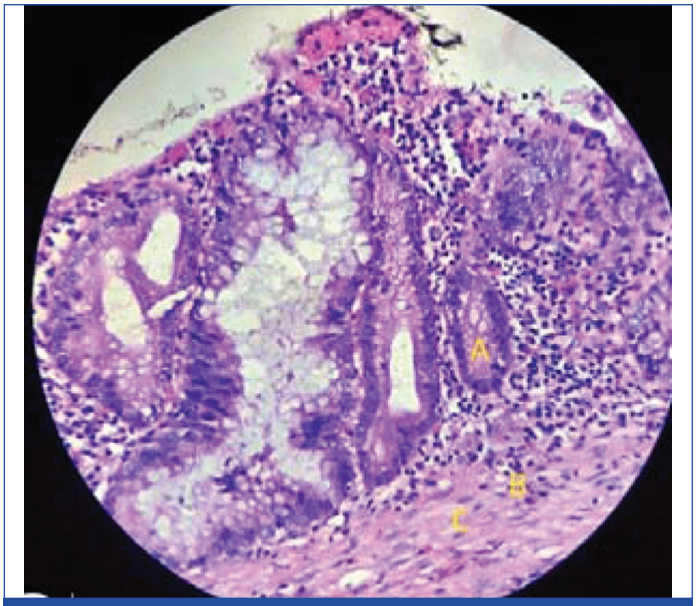


[Table/Fig-3]: Intraoperative image of appendix.



[Table/Fig-4]: Excised specimen of appendix.

The findings raised suspicion of an underlying mucinous pathology, warranting close follow-up. This was ruled out by SATB2, CDX2, MUC2 and p53 immunohistochemistry staining, which did not demonstrate features supporting an appendiceal mucinous neoplasm or intestinal-type epithelial proliferation. Hence, the final diagnosis of appendiceal diverticulum was established based on the histomorphological findings.



[Table/Fig-5]: Histopathological image showing glands lined predominantly by mucinous epithelium with intracytoplasmic mucin. Lamina propria shows presence of chronic inflammatory cells composed of lymphocytes and plasma cells (H&E, 100x): A-Glands, B- Lymphocytes, C- Lamina Propria.

DISCUSSION

Appendicular diverticulum is a rare but clinically significant condition that is often underdiagnosed due to its non specific presentation. The majority of cases are acquired diverticula, which result from increased intraluminal pressure that leads to mucosal herniation through weak points in the appendix's muscular wall. An incidence of 0.014 to 1.9% has been reported for appendicular diverticulum [1]. The pathogenesis of acquired appendicular diverticula is thought to involve obstruction of the appendiceal lumen, commonly due to an appendicolith, faecalith, or chronic inflammation. Increased intraluminal pressure leads to outpouching of the mucosa and submucosa, forming a false diverticulum. In contrast, congenital diverticula are true diverticula involving all layers of the appendiceal wall and are exceedingly rare [2,3]. All the layers of the appendiceal wall were involved in the present patient.

Patients with appendicular diverticulum often present with a longer duration of symptoms, intermittent or less severe pain and relatively normal leukocyte counts compared to classical appendicitis [4]. The present patient presented with a 20-day history of abdominal pain and a normal leukocyte count, which is atypical for acute appendicitis and presents a diagnostic challenge. The presence of a renal microlith made it difficult to arrive at a definitive diagnosis.

Radiological diagnosis of appendicular diverticulum is challenging. While ultrasound and Computed Tomography (CT) scans are commonly used to evaluate suspected appendicitis, diverticula are often small and may not be easily visualised. CT findings may include appendiceal dilatation, wall thickening, or subtle protrusions, but these are frequently overlooked or misinterpreted [1,5]. In the present case, the CT scan suggested acute appendicitis with an appendicolith, without definitive identification of a diverticulum.

Several case reports in the literature have highlighted the clinical significance of appendicular diverticula. Bachlitzanakis E et al., reported a case presenting with localised peritonitis, emphasising the higher risk of perforation compared to classical acute appendicitis in a patient with a perforated appendiceal diverticulum [6]. A similar case of appendiceal diverticulitis masquerading as uncomplicated acute appendicitis was reported by Chen JL et al., in which histopathological examination after appendicectomy confirmed the diagnosis [7]. Similarly, in this patient, histopathological assessment confirmed the presence of an appendicular diverticulum. Management of appendiceal

diverticulum typically involves appendicectomy, which is both diagnostic and therapeutic [1]. However, additional interventions such as right hemicolectomy or long-term surveillance may be required in cases with neoplastic changes. Given these considerations, surgeons should maintain a high index of suspicion in patients with atypical presentations of appendicitis; all appendicectomy specimens should undergo histopathological evaluation to establish the final diagnosis.

CONCLUSION(S)

Appendicular diverticulum is a rare entity that can closely mimic acute appendicitis both clinically and radiologically. The present case highlights the importance of considering alternative diagnoses in patients with atypical presentations, such as prolonged symptoms and normal leukocyte counts. Histology remains crucial for appendicectomy specimens, as it might provide valuable clinical insights regarding neoplastic changes. Early identification of such conditions is essential to prevent complications such as perforation and pseudomyxoma peritonei and to guide appropriate postoperative management and follow-up.

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