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CASE REPORT

Appendiceal mucocele presenting as acute appendicitis; a case report

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ABSTRACT

Background: Appendiceal mucocele represents cystic expansion of the appendix caused by mucin accumulation, frequently mimicking acute appendicitis clinically.

Case Report: We present a case of elderly male who developed periumbilical discomfort, loss of appetite, and demonstrated positive rebound tenderness on examination. Imaging studies revealed an enlarged, perforated appendix which was initially interpreted as acute appendicitis. Intraoperatively, a significantly distended appendix measuring 4.0 x 2.5 cm containing thick, gelatinous mucoid contents was identified. Histological analysis established the diagnosis of appendiceal mucocele with mucin deposition and clear surgical margins. Postoperative recovery was uneventful. Complete surgical excision remains the primary treatment modality, with minimally invasive techniques being suitable for selected patients, although conventional open surgery was chosen in this instance due to perforation risk.

Conclusion: This case emphasizes the importance of preoperative radiological assessment, good surgical technique to prevent rupture with subsequent pseudomyxoma peritonei, and definitive histopathological diagnosis.

Keywords: Appendiceal Mucocele, Appendectomy, Mucinous Cyst Adenoma

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Introduction

Appendiceal mucocele is a rare pathological condition characterized by abnormal accumulation of mucin within the appendiceal lumen, leading to its cystic dilation. This accounts for approximately 0.2-0.3% of appendectomies, with a higher incidence in individuals over 50 years and a slight female predominance (1, 2).

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The descriptive term "mucocele" applies to simple retention cysts secondary to luminal obstruction (e.g., by fecoliths or fibrosis) to neoplastic in nature like mucinous cystadenoma or cystadenocarcinoma. Obstructive mechanisms lead to progressive distension which is responsible for complications such as perforation, intussusception, or pseudomyxoma peritonei (PMP), a feared consequence involving peritoneal dissemination of mucin producing cells (3). Clinically, appendiceal mucocele often manifests insidiously, with about 25-50% of cases discovered incidentally during imaging or surgery for unrelated conditions. Symptomatic presentations typically mimic acute appendicitis,

including right lower quadrant pain, anorexia, nausea, or a palpable mass, as seen in majority of cases (4). Ultrasonography may reveal a hypoechoic cystic mass with the characteristic "onion skin" sign, indicative of layered mucin (5). Computed tomography (CT) is superior, demonstrating a low-attenuation, well-circumscribed mass arising from the appendix, often with curvilinear calcifications in 50% of cases (6). Magnetic resonance imaging (MRI) aids in differentiating mucin content through hyper intense T2 signals. Colonoscopy can identify the "volcano sign," a bulging appendiceal orifice with central dimpling. Elevated tumor markers like CEA and CA19-9 may suggest neoplastic etiology but lack specificity (7).

Histopathologically, mucocele are classified into four subtypes as per the World Health Organization: simple retention cysts (non-neoplastic), hyperplastic mucocele, mucinous cystadenomas (benign neoplastic, comprising 52%), and mucinous cystadenocarcinomas (malignant, 10%) (8). Low-grade appendiceal mucinous neoplasms (LAMNs) represent an intermediate category with potential for local invasion but low metastatic risk. Accurate classification is crucial, as it dictates management and prognosis.

Surgical management is the definitive treatment, aimed at complete resection while preventing rupture. For benign or low-grade lesions confined to the appendix, simple appendectomy suffices if the base is uninvolved and margins are negative. Laparoscopic appendectomy has gained favor for its minimally invasive benefits, reduced hospital stay, and lower complication rates, provided careful handling avoids spillage using endobags for extraction and avoiding direct grasping of the mucocele. In suspected malignancy or base involvement, right hemicolectomy is recommended to ensure oncologic clearance, with lymph node sampling.

Appendiceal mucocele occurs infrequently and may present with symptoms indistinguishable from acute appendicitis. Diagnosis relies on microscopic analysis. This case underscores the necessity of detailed histological review of all appendectomy specimens and provides additional documentation of non-malignant Mucinous appendiceal pathology.

Case Presentation

A 55-year-old man came to the outpatient department with a one-day history of acute onset periumblical pain and loss of appetite. He characterised the pain as sharp and localized without radiation, and denied febrile associated symptoms, nausea, or emesis. His only medical history was hypertension diagnosed five years ago, currently managed with amlodipine 5 mg daily. He denied previous abdominal surgery, chronic illness, or drug allergy. Family history of disease was not positive for gastrointestinal conditions or cancer, such as appendicitis and colorectal neoplasia. Physical examination described an alert and oriented patient with mild discomfort. Hemodynamic parameters were within normal limits: blood pressure 130/85 mmHg, heart rate 82 beats per minute, respiratory rate 16 breaths per minute, and core temperature 36.8°C. Physical examination eliminated pallor, icterus, or adenopathy. Abdominal assessment revealed tenderness on the periumblical region and right iliac fossa

with positive rebound sign for peritoneal inflammation. Examination revealed no palpable masses, muscular guarding, or abdominal rigidity, while intestinal sounds remained physiologic. Initial diagnostic workup included complete blood count analysis, C-reactive protein measurement, and comprehensive metabolic profile. CBC showed a white blood cell count of 12.5 x 10^9/L with 80% neutrophils, indicating an inflammatory response, while haemoglobin (14.2 g/dL) and platelets (250 x 10^9/L) were within normal limits. CRP was elevated at 45 mg/L. Serum electrolytes, renal, and liver function tests were unremarkable. An abdominal ultrasound was performed, revealing a thickened appendix with a hypoechoic, cystic appearance, suggestive of appendicitis. Ultrasound also noted minimal periappendiceal fluid, with no evidence of free intraperitoneal air or abscess. Initial diagnosis was acute appendicitis, prompting urgent surgical intervention. Appendectomy was performed, Gross examination revealed a specimen consisting of a markedly dilated tubular appendix measuring 4.0 x 2.5 cm, with a bulbous, cystic tip region measuring 2.5 x 2.0 x 1.5 cm located 2.5 cm from the appendicular resection margin. Serosa was smooth and glistening with focal congestion and firm fibrous adhesions to periappendiceal fat, particularly around the dilated tip. Serial sectioning showed a markedly distended lumen filled with thick, gelatinous, translucent mucoid material. The wall was thin and fibrotic without solid nodules or mass lesions. The resection margin, painted black, appeared grossly uninvolved. Microscopic description demonstrated the appendiceal wall with lumen filled with mucin. The wall was thin and fibrotic without evidence of acute inflammation. No tuberculosis or malignancy was evident in the examined material

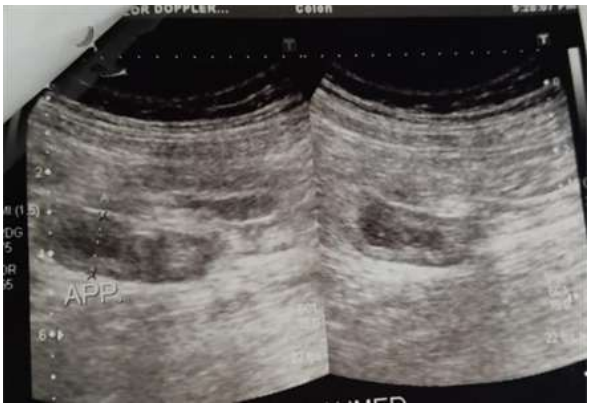

Figure 1: Ultrasound Image of the Appendix Showing a Hypoechoic Cystic Lesion with thickened appendiceal wall

Figure 2: Gross appearance of the dilated appendiceal mucocele showing cystic tip and mucoid content.

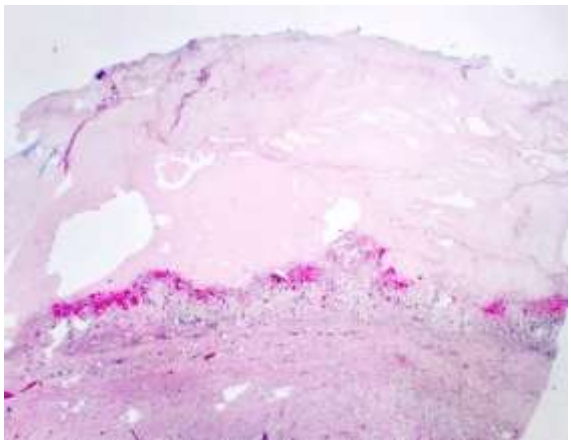

Figure 3: Microscopic view of the appendiceal wall with mucin-filled lumen and fibrotic changes.

Discussion

Appendiceal mucocele, a condition often masquerading as acute appendicitis but histopathology confirmed benign mucin accumulation without malignancy or inflammation.(9) The gross features i.e. 4.0 x 2.5 cm dilated appendix with gelatinous mucin and fibrotic walls represent benign mucinous cystadenoma, the most common subtype, emphasizing the need for complete resection to prevent recurrence or pseudomyxoma peritonei (PMP) (10).

Surgical management in appendiceal mucocele hinges on extent, histology, and intraoperative findings. Simple appendectomy, as performed here, is curative for confined benign lesions with negative margins (11). The choice of open appendectomy was prudent given the perforation, allowing direct visualization and minimizing spillage risk, which can precipitate PMP, mucin filled peritoneum with poor prognosis if neoplastic cells disseminate (12). Recent multicenter reviews affirm that elevated white blood cell counts, correlate with rupture risk, supporting cautious open approaches in such scenarios (13).

Laparoscopic surgery has emerged as a viable alternative for non-perforated mucocele, offering shorter recovery and comparable safety. However, iatrogenic perforation occurs in mishandled cases. In this case, the mid-shaft perforation precluded laparoscopy, aligning with guidelines favouring open surgery for complicated presentations to ensure oncologic integrity. Endoscopic interventions, are limited to low-pressure, non-malignant variants and require expertise to avoid incomplete treatment (14).

For giant mucoceles (>6 cm), twisted or impending rupture variants necessitate urgent intervention, often laparoscopic if feasible, to avert complications. Multidisciplinary consensus, per (Peritoneal Surface Oncology Group International) PSOGI guidelines, advocates tailored surgery: appendectomy for low-grade, hemicolectomy for high-grade or perforated neoplastic cases, and hyper thermic intraperitoneal chemotherapy (HIPEC) for PMP. In resource-limited settings, as possibly here, open surgery remains reliable, with outcomes comparable to minimally invasive methods when executed meticulously.

Conclusion: This report reinforces that while appendiceal mucocele is rare, awareness facilitates optimal management.

Disclosure Statements

Conflict of Interest: The authors declare no conflicts of interest.

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Ethical Approval: Ethical approval was obtained from Institutional Review Board with *Ref: No. 59/LRH/ MTI*

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All the authors agree to take responsibility for every facet of the work, making sure that any concerns about its integrity or veracity are thoroughly examined and addressed.	

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A. Conception/Study/Designing/Planning
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