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Unusual Clinical Case Report of Acute Appendicitis: Appendiceal Mucocele

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Abstract

One of the most commonly performed emergency surgeries is appendectomy. A condition of the appendix that could be confused with common appendicitis is the mucocele appendix. It can change the prognosis of the patient and management. We present a 65-year-old male patient with hypertension, type 2 diabetes, and dyslipidemia who presented to the emergency department with a two-day history of abdominal pain; tenderness was noted in the right iliac fossa and at McBurney's point. A tomography report confirmed acute appendicitis, prompting surgical intervention using McBurney's technique. Intraoperatively, approximately 300 ml of seropurulent fluid was identified. A 9x4x4 cm inflammatory mass was observed in the right iliac fossa, containing yellow gelatinous material with mucous discharge. Histopathological analysis confirmed appendiceal mucocele.

Appendiceal mucocele is a rare condition, and diagnosis is generally made through incidental surgical exploration or using a computed tomography (CT) scan. This underdiagnosis can expose patients to a higher risk of complications due to the potential spread of this condition. In this report, we aim to emphasize the importance of considering this etiology to ensure proper preoperative planning and reduce the morbidity and mortality associated with complications beyond the mucocele itself.

Categories: General Surgery
Keywords: appendectomy, appendiceal mucocele, appendicitis, mucocele, parker-kerr, spread tumor

Introduction

Appendiceal mucocele is an infrequent pathology, estimated to occur in approximately 0.3% of appendectomies [1]. First described by Rokitansky in 1842, it is characterized by cystic dilatation of the appendiceal lumen with accumulation of intraluminal mucus, with mucinous cystadenoma being the most common type (50%) [2]. The average age at diagnosis is 55 years, and more than 75% of cases occur in the fifth and sixth decades of life [3]. It may result from four distinct underlying pathological processes: (1) obstruction of the cecoappendiceal lumen; (2) focal or diffuse mucosal hyperplasia, without cellular atypia; (3) Mucinous cystadenoma, with some degree of cellular atypia; and (4) mucinous cystadenocarcinoma [4]. Preoperative diagnosis of appendiceal mucocele is crucial for appropriate management. In the literature, various clinical and radiological features have been described to differentiate it from other pathologies such as acute appendicitis [5]. Typical ultrasound findings of appendiceal mucocele include a cystic mass in the expected location of the appendix, with internal echogenicity that may vary depending on the content (serous or gelatinous) [6]. The presence of enhancing mural nodules on contrast-enhanced computed tomography (CT) may suggest mucinous adenocarcinoma [7]. It is critically important for surgeons to be familiar with this condition, given its potential to mimic other acute abdominal diseases, to avoid complications resulting from inappropriate management, such as hemorrhage, intestinal obstruction, melena, and pyonephrosis [8].

Case Presentation

A 65-year-old male patient with significant medical history, including systemic arterial hypertension diagnosed 15 years ago, currently managed with losartan 50 mg orally every 24 hours; type 2 diabetes mellitus diagnosed 20 years ago, under treatment with insulin glargine 10 IU subcutaneously every 24 hours and metformin 850 mg orally every 12 hours; and mixed dyslipidemia diagnosed 10 years ago, treated with bezafibrate 200 mg orally every 24 hours and atorvastatin 20 mg orally every 24 hours. He had no history of previous surgeries, trauma, or blood transfusions. The patient presented with a two-day history of abdominal pain, initially located in the mesogastric region and later migrating to the right iliac fossa. Pain was colicky in nature, scored 8-10 on the Visual Analog Scale (VAS), worsened by movement, and relieved with rest. Upon admission, vital signs were: heart rate 98 bpm, respiratory rate 14 bpm, blood pressure 130/91 mmHg, temperature 36.4°C, and oxygen saturation 94%. Physical examination revealed a slightly distended abdomen due to adipose tissue, soft to palpation with normal bowel sounds. Tenderness was noted in the right iliac fossa and at McBurney's point. Rovsing's sign, heel-drop test (talo-percussion), and obturator sign were all positive. Laboratory tests revealed leukocytosis predominantly due to

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neutrophilia (Table 1).

Reagent	Result	Reference values
Glucose	174 mg/dL	74-106 mg/dL
Urea	34 mg/dL	13-43 mg/dL
Creatinine	0.7 mg/dL	0.5-1.5 mg/dL
Na	134 mEq/L	135-145 mEq/L
K	3.6 mEq/L	3.5-5.3 mEq/L
Cl	101 mEq/L	96-109 mEq/L
White Blood Cells	14,000 /µL	4.5-11 /µL
Neutrophils	89%	37-75%
Lymphocytes	16%	20-55%
Hemoglobin	13.4 g/dL	11-18 g/dL
Hematocrit	41%	35-60%
Platelets	246,000 /µL	150-450 /µL
Prothrombin time	11.5 seconds	9.1-12.1 seconds
Partial thromboplastin time	26.3 seconds	21.8-37.7 seconds
International normalized ratio	1.01	0.0-1.6
Total bilirubin	0.8 mg/dL	0.0-1.2 mg/dL
Direct bilirubin	0.2 mg/dL	0.0-0.5 mg/dL
Indirect bilirubin	0.6 mg/dL	0.00-1.1 mg/dL
Aspartate aminotransferase	28 U/L	0-40 U/L
Alanine aminotransferase	32 U/L	0-41 U/L
Albumin	4.1 g/dL	4.0-5.0 g/dL
Total proteins	6.8 g/dL	6.3-8.2 g/dL

TABLE 1: Laboratory tests

Non-contrast abdominal computed tomography (CT) scan showed a tubular and dilated structure in the right iliac fossa, adjacent to the cecum, with signs of acute inflammatory process and fat stranding. The structure measured approximately 9 cm in length and up to 4 cm in diameter, with thickened but regular walls, and no clear evidence of pneumatosis or intraluminal gas. Free fluid was observed in the abdominal cavity. A conventional appendectomy was performed via McBurney's technique. During the procedure, approximately 300 ml of seropurulent and serous fluid was observed, with no evidence of perforation. An inflammatory mass measuring 9 x 4 x 4 cm was found in the right iliac fossa, containing yellow gelatinous material with mucous discharge, as demonstrated in Figure 1.

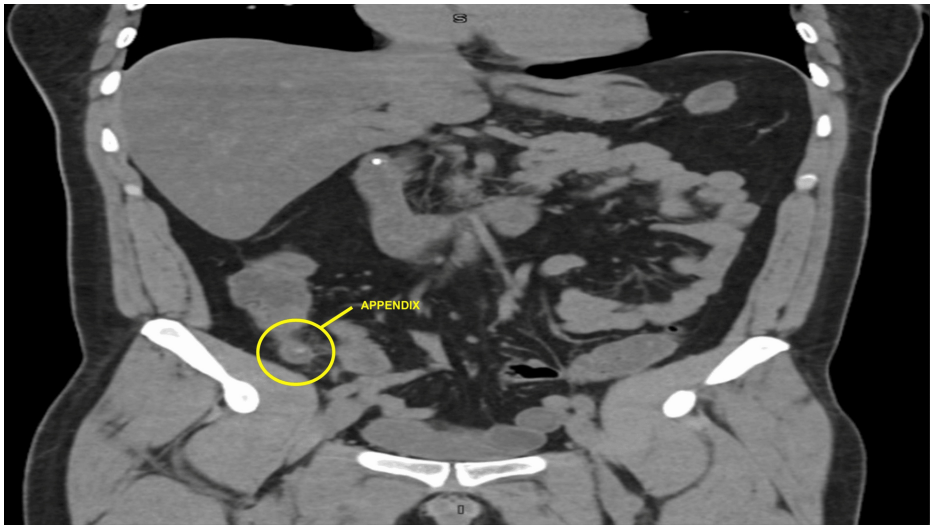


FIGURE 1: Simple abdominal CT

Computed tomography (CT) scan of the abdomen, coronal reconstruction with contrast, showing a tubular structure with well-defined walls and homogeneous density in the right iliac fossa, located in the area corresponding to the cecal appendix with periappendicular inflammation.

The procedure consisted of an appendectomy with closure of the stump using the Parker-Kerr technique [9]; macroscopically, the appendix was consistent with a mucinous neoplasm or a cystic mucocele, with no macroscopic evidence of infiltration toward the base of the cecum, no regional lymphadenopathy, no peritoneal implants, and no findings suggestive of peritoneal pseudomyxoma. The specimen was removed in its entirety, preventing its rupture and the spillage of mucinous contents into the abdominal cavity, as shown in Figure *2*.

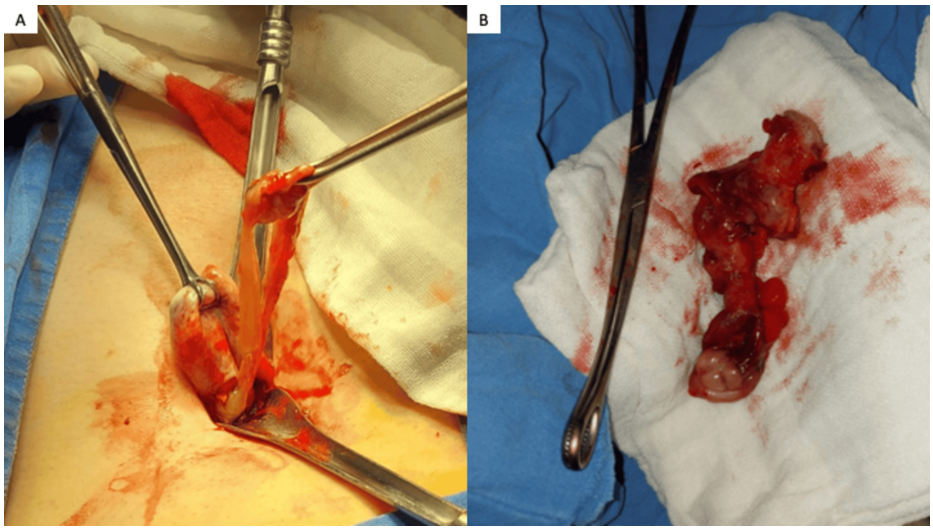


FIGURE 2: Open appendectomy

(A) A tubular cecal appendix is observed with walls thickened due to inflammation, containing an accumulation of thick, gelatinous, apparently mucinous material; (B) A surgical specimen of the complete, intact cecal appendix measuring approximately 9 x 4 cm, with thickened, erythematous walls and an accumulation of thick, gelatinous, mucinous material.

Based on the intraoperative findings and the histopathological diagnosis consistent with a low-grade mucinous neoplasm of the appendix confined to the appendix, a simple appendectomy was considered an adequate surgical treatment.

The patient had a favorable postoperative course, with adequate tolerance of oral intake, recovery of bowel function, and adequate pain control; therefore, he was discharged 72 hours after the procedure.

Histopathological analysis confirmed the diagnosis of appendiceal mucocele, compatible with a mucinous neoplasm, as demonstrated in Figure 3.

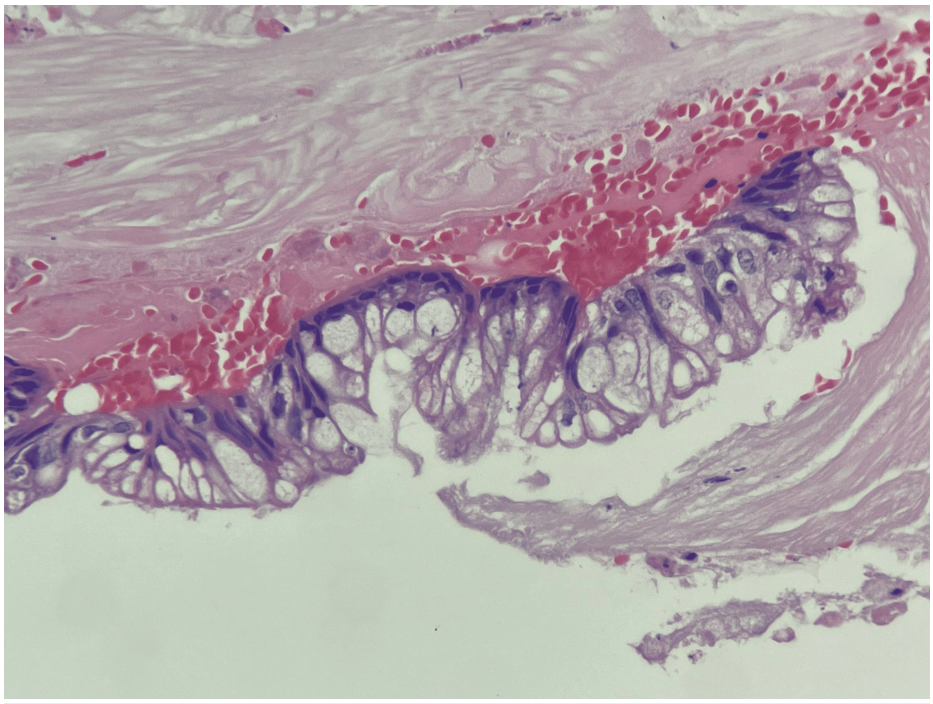


FIGURE 3: Histopathology

Histopathological examination of the appendectomy specimen revealed cystic dilation of the appendix lined by mucus-secreting columnar epithelium with a predominantly villous architecture and areas of epithelial atrophy. Abundant accumulation of acellular extracellular mucin was observed within the appendiceal lumen. The sections examined showed no evidence of infiltrative invasion of the stroma, desmoplastic reaction, or features consistent with invasive mucinous adenocarcinoma. These findings are consistent with a low-grade appendiceal mucinous neoplasm (LAMN).

Following confirmation of the histopathological diagnosis, the patient was referred to the Department of Oncology for an evaluation to determine the appropriate follow-up protocol. However, since the procedure was performed in a private practice, the patient decided to continue his follow-up at another healthcare facility; therefore, it was not possible to obtain subsequent information regarding the colonoscopy, tumor marker tests (carcinoembryonic antigen (CEA), carbohydrate antigen 19-9 (CA 19-9)), surveillance imaging studies, or data on recurrence or the development of peritoneal pseudomyxoma. This situation constitutes a limitation of the present case report.

Discussion

Appendiceal mucocele is an uncommon condition characterized by the accumulation of mucus within the appendiceal lumen, leading to cystic dilation. Many cases are diagnosed incidentally on imaging studies or during surgery due to the nonspecific nature of preoperative symptoms [10]. CT is the diagnostic modality of choice, typically identifying well-defined cystic lesions in the right iliac fossa [11]. Histological classification is crucial for determining appropriate treatment and prognosis [12]. Surgical management depends on the characteristics of the lesion; in most cases, laparoscopic appendectomy is the preferred approach as it is safe and effective. However, if malignancy or rupture is suspected, right hemicolectomy may be required [13]. In all cases, intraoperative rupture should be avoided to prevent the development of pseudomyxoma peritonei. Postoperative follow-up with imaging studies and tumor markers such as CEA and CA 19-9 is recommended, particularly in neoplastic lesions [14].

In this case, the patient presented with abdominal pain and clinical signs characteristic of acute appendicitis, along with clinical and imaging findings consistent with an appendicular lesion. At our hospital, intraoperative histopathological examination, which is essential for guiding the surgical approach, was not available. Given the rarity of this condition and the lack of resources, an open surgery was performed. The histopathological result confirmed appendiceal mucocele, and the patient was referred for follow-up with the oncology department.

Conclusions

An appendicular mucocele is a rare condition with nonspecific clinical manifestations that can be mistaken for acute appendicitis or an adnexal mass. The diagnosis may be suspected prior to surgery based on imaging findings or discovered incidentally during the operation or upon histopathological examination, as occurred in the present case. Preoperative radiological evaluation plays a key role in surgical planning, since failure to suspect the presence of a mucocele increases the risk of intraoperative rupture and mucin spillage, with possible peritoneal dissemination. Given that our patient presented with a mucinous lesion in the appendix accompanied by seropurulent fluid, this case underscores the importance of removing the specimen intact to prevent iatrogenic dissemination, along with adequate pathological risk stratification to distinguish between a benign mucocele and a mucinous neoplasm with malignant potential. Appropriate oncological follow-up should be considered when histopathology reveals features suggestive of LAMN or higher-grade lesions. As a general principle supported by the literature, early recognition and a personalized surgical approach to appendiceal mucocele can help reduce the risk of complications such as peritoneal pseudomyxoma, underscoring the importance of considering this diagnosis in the differential diagnosis of acute appendicitis.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

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Supervision: Luis Eduardo Escobar Rios, Roberto Rodriguez-Ramirez, Ivan Cruz Del Carmen

Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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