

# International Journal of Health Science

ISSN 2764-0159

vol. 5, n. 34, 2025

••• **ARTICLE 11**

Acceptance date: 24/12/2025

## APPENDICULAR MUCOCELE DUE TO LOW-GRADE MUCINOUS NEOPLASIA: INCIDENTAL DIAGNOSIS AND LAPAROSCOPIC TREATMENT

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**Abstract:** Appendiceal mucocele is a rare condition defined by dilation of the appendicular lumen due to mucus accumulation, often associated with neoplastic lesions. We report the case of a 66-year-old previously healthy patient with an incidental finding of an appendicular lesion during routine gynecological examination. The patient underwent laparoscopic appendectomy without complications, and histopathological examination confirmed low-grade appendiceal mucinous neoplasm (LAMN), with clear margins and no signs of peritoneal dissemination. This case reinforces the importance of early diagnosis and careful surgical management to avoid serious complications, such as peritoneal pseudomyxoma, in addition to highlighting the association with synchronous colorectal neoplasms.

**Keywords:** appendicular mucocele; low-grade appendiceal mucinous neoplasm; laparoscopic appendectomy; peritoneal pseudomyxoma; incidental diagnosis.

## Introduction

Appendiceal mucocele is an uncommon entity, accounting for less than 1% of appendicular resections. It consists of dilation of the appendicular lumen due to accumulation of mucinous material, which may originate from non-neoplastic or neoplastic processes. Histologically, mucoceles can be classified as simple retention, mucosal hyperplasia, low-grade mucinous neoplasms (LAMN), and high-grade mucinous neoplasms/cistoadenocarcinomas.

The clinical picture is quite variable. Many patients remain asymptomatic, and the diagnosis ends up being made incidentally on imaging exams or during surgical procedures indicated for other reasons,

mainly gynecological and gastrointestinal. When not identified and treated appropriately, mucoceles can rupture, causing mucin and neoplastic cells to leak into the peritoneal cavity, progressing to peritoneal pseudomyxoma (PMP), a condition that is difficult to manage and has high morbidity.

Therefore, recognition of imaging characteristics, timely surgical indication, and intraoperative care to prevent rupture are essential. This study presents a case of incidentally diagnosed LAMN, managed by laparoscopic appendectomy, with favorable evolution, in addition to discussing relevant diagnostic and therapeutic aspects.

## Case report

A 66-year-old female patient with no known comorbidities was referred for surgical evaluation after routine gynecological investigation identified a cystic mass in the right adnexal topography, later characterized in imaging tests as an appendicular mucocele. She was asymptomatic, denying abdominal pain, changes in bowel habits, digestive bleeding, or weight loss.

There was no history of previous surgeries, continuous use of medications, or relevant family history of gastrointestinal neoplasms. On physical examination, she was in good general condition, with a flat, flaccid abdomen, painless on palpation, without masses, visceromegaly, or signs of peritoneal irritation.

Additional tests were performed:

- Pelvic magnetic resonance imaging: distension and volumetric increase of the middle and distal third of the appendix, measuring approximately 10.7 cm in length and 2.5 cm in maximum diameter, with

hyperintense content on T2 and hypointense on T1, suggesting appendicular mucocele.

- Computed tomography of the abdomen: distended vermiform appendix with homogeneous liquid content, measuring approximately  $103 \times 34$  mm, with no signs of acute inflammation or collections.

- Colonoscopy: mild edema in the appendicular topography, in addition to a flat superficial lesion (LST-NG) in the descending colon and a sessile polyp in the rectum.

- Histopathology of colonic lesions: tubular adenoma with low-grade dysplasia (WHO).

Given the findings, laparoscopic appendectomy was indicated. During the procedure, a markedly dilated appendix was observed, with a smooth surface and mucinous content, without signs of rupture. The appendicular base and cecum appeared preserved. A complete inventory of the abdominal cavity was performed, with no evidence of peritoneal implants, ascites, or other suspicious lesions. The specimen was removed in an endoscopic bag, avoiding excessive manipulation and the risk of extravasation.

The postoperative period was uneventful. The patient recovered well, with adequate pain control, acceptance of diet, and early ambulation. She was discharged from the hospital on the first postoperative day, with instructions and scheduled outpatient follow-up.

Histopathological examination of the surgical specimen revealed low-grade appendicular mucinous neoplasia (LAMN), with neoplastic mucinous epithelium of mild to moderate atypia, presence of intraluminal mucin, clear surgical margins, and absence of serosal involvement or peritoneal mucinous deposits.

## Discussion

Appendiceal mucocele represents a dilation of the appendicular lumen due to mucus accumulation, which may result from benign or malignant etiologies. Histologically, they are classified into four main types: simple retention (non-neoplastic), mucosal hyperplasia, low-grade mucinous neoplasms (LAMN), and mucinous cystadenocarcinomas. The differentiation between these entities is crucial for therapeutic and prognostic definition.

In the present case, the patient was diagnosed incidentally, which is relatively common. A significant proportion of mucoceles are asymptomatic and are identified during imaging exams or procedures indicated for other gynecological or gastrointestinal conditions. The absence of symptoms contributes to late diagnosis in some scenarios, which may increase the risk of spontaneous rupture or rupture during surgery, with possible dissemination of mucin and neoplastic cells into the peritoneal cavity, culminating in peritoneal pseudomyxoma.

Computed tomography is the imaging test of choice for investigation, with high accuracy in identifying appendicular cystic lesions. Among the suggestive characteristics are appendicular dilation greater than 15 mm, homogeneous liquid or mucinous density content, parietal calcifications, and absence of acute inflammatory signs when there is no associated appendicitis. Magnetic resonance imaging, used in this case, also contributes, especially in women, by allowing better differentiation between adnexal and appendicular masses.

From a therapeutic point of view, appendectomy is considered the treatment of choice in cases of LAMN confined to the appendix, without perforation or peritoneal dissemination. When the appendicular base is affected, there is involvement of the cecum or compromised margins, right colectomy with oncological principles may be indicated. Regardless of the route, careful surgical manipulation is mandatory to avoid rupture and extravasation of mucinous content.

The histopathological aspect of low-grade mucinous neoplasia (LAMN) is characterized by mucinous neoplastic epithelium with mild to moderate atypia, villiform or papillary growth, and intraluminal mucin accumulation. Although classified as low-grade lesions, there is potential for peritoneal dissemination even in the absence of evident transmural invasion, especially when there is extravasation of mucin with viable cells. For this reason, patients with LAMN should be monitored clinically and radiologically, with individualized follow-up according to intraoperative and anatomopathological findings.

Another relevant point demonstrated by this case is the association between LAMN and other synchronous neoplastic lesions, such as colorectal adenomas. The presence of tubular adenoma with low-grade dysplasia in the descending colon and rectum reinforces the need for complete colonic screening, both in the initial evaluation and in follow-up, in search of other neoplastic changes.

Thus, the case presented illustrates an increasingly frequent scenario: an incidental finding in an asymptomatic patient, confirmed by imaging, treated in a minimally invasive manner, with good postoperative evolution, but requiring long-term surveillance due to the potential for recurrence and complications related to mucinous dissemination.

## Conclusion

Appendicular mucocele, especially when related to LAMN, is an uncommon and often silent clinical entity that may be underdiagnosed. The present case highlights the importance of adequate investigation of incidental findings in gynecological or abdominal examinations, allowing early diagnosis and adequate surgical planning.

Laparoscopic appendectomy, performed with a careful technique, removal of the specimen in a bag, and complete resection, proved to be safe and effective in the management of the case, with histological confirmation of LAMN confined to the appendix, free margins, and absence of peritoneal dissemination. The identification of synchronous colorectal adenoma reinforces the need for a multidisciplinary approach and continuous oncological surveillance, including periodic colonoscopy.

Outpatient follow-up, with clinical evaluation, imaging tests as indicated, and colonic screening, is essential to monitor local recurrence, development of peritoneal pseudomyxoma, and the emergence of new associated intestinal lesions. This report contributes to the literature by illustrating an atypical, asymptomatic form of presentation and reinforces the central role of the surgeon in the suspicion, diagnosis, treatment, and follow-up of these patients.

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