International Surgery Journal
Teixeira RM et al. Int Surg J. 2026 Feb;13(2):283-286
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20260141

Case Report

When diverticulitis of the appendix mimics appendicitis: a case report

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Received: 19 December 2025
Revised: 15 January 2026
Accepted: 19 January 2026

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ABSTRACT

Appendiceal diverticulosis is a rare and often incidental finding, with significant clinical relevance due to its association with increased risk of perforation and malignancy. It is frequently misdiagnosed as conventional appendicitis due to overlapping clinical presentations. A patient presented to the Emergency Department with a 3-day history of progressively worsening abdominal pain, localized to the right iliac fossa. The patient had a recent history of hospitalization for acute appendicitis with formation of an appendiceal mass (plastron), which was managed conservatively with antibiotic therapy. Elective surgical intervention was planned following resolution of the acute phase. The patient subsequently underwent a laparoscopic appendectomy without intraoperative complications. Histopathological examination of the surgical specimen revealed a vermiform appendix with multiple diverticula, without evidence of acute inflammation. Subserosal haemorrhage was noted. No signs of neoplasia were identified. The patient had an uneventful postoperative recovery and was discharged on postoperative day one. This case highlights the importance of considering appendiceal diverticulosis in the differential diagnosis of acute appendicitis. Awareness of this entity can aid in better risk stratification and postoperative management.

Keywords: Appendiceal diverticulosis, Acute appendicitis, Appendectomy, Diverticulitis, Case report

INTRODUCTION

Appendiceal diverticulosis is a rare entity and often remains asymptomatic until complicated by inflammation (diverticulitis) or other sequelae.[1,4] Clinical presentation frequently mimics acute appendicitis, which makes preoperative recognition challenging.[3,4,6] The diagnosis is usually confirmed on histopathology after resection by demonstrating mucosal outpouchings through the muscularis propria of the appendix, consistent with true diverticula, with or without associated inflammatory changes.[1,4]

The literature suggests that appendiceal diverticulitis tends to present in older patients than "classic" acute appendicitis, often in the fourth or fifth decade, with a more insidious onset and a higher risk of complications (particularly perforation).[5-7] There is also an increased association with neoplastic lesions of the appendix (e.g., mucinous tumors, carcinoids).[1,4]

Because of these features, there is growing support for a lower threshold to perform surgical resection (appendectomy) when appendiceal diverticular disease is suspected or discovered, even in less severe presentations, to prevent complications and allow thorough pathological examination.[1,3,5]

In this report, we present a case of a 45-year-old male with recurrent episodes of right lower quadrant pain who was ultimately found to have appendiceal diverticulosis with multiple diverticula on histology. We review the sequence of events, imaging, management decisions, and discuss the rationale in light of the current literature.

CASE REPORT

A 45-year-old man, with a prior history of left ventricular hypertrophy and treated gonorrhea, no regular medications, and a smoking history of 24 pack-years, presented with a 4-day history of abdominal pain and fever. Notably, he had no significant leukocytosis, but an elevated C-reactive protein (CRP 18.9 mg/dl). Abdominal ultrasonography suggested an inflamed, distended appendix with periappendiceal changes. Computed tomography (CT) demonstrated right colonic wall thickening and suspected appendiceal plastron (i.e. localized inflammatory mass) (Figure 1).

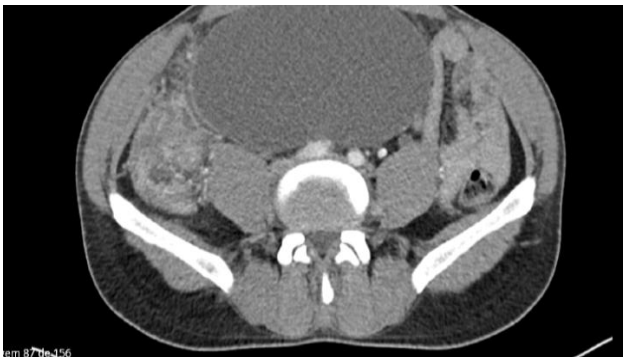

Figure 1: CT confirmed wall thickening of the right colon and a suspected appendiceal plastron.

The patient was managed conservatively with broad-spectrum antibiotics and urinary catheterization (due to urinary retention). Over six days hospitalization, his CRP declined and his clinical condition improved; he was discharged.

On follow-up imaging, only a small periappendiceal collection remained; no signs of diffuse peritonitis (Figure 2).

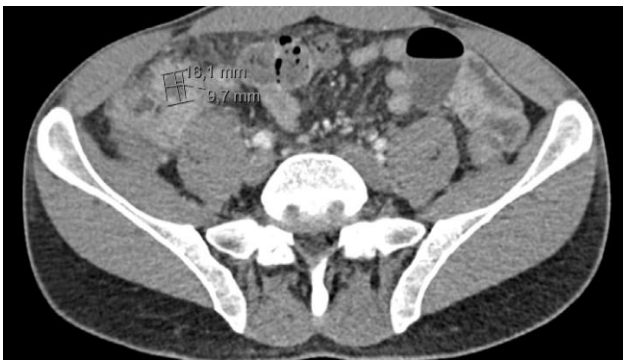

Figure 2: Subsequent imaging: small peri-appendiceal collection (14 mm), no peritonitis.

Ambulatory colonoscopy was latter performed, showing two small sigmoid diverticula without evidence of inflammatory bowel disease. During subsequent months, the patient experienced persistent bladder dysfunction requiring a suprapubic catheter; he had intermittent diarrhea and soft stools but no overt gastrointestinal pathology. No immediate appendectomy was undertaken, and a 1-year follow-up was planned.

In June (approximately one year later), he returned with renewed right lower quadrant pain and fever. Laboratory tests now showed a markedly elevated CRP (57 mg/dl) and leukocytosis. Imaging once again revealed an inflamed appendix with plastron formation, but no clearly drainable abscess. He was hospitalized again, given intravenous antibiotics, and discharged after 6 days.

Given the recurrence and risk of further episodes, the decision was made to proceed with surgical intervention. He underwent laparoscopic appendectomy. Dissection was technically challenging but secure section was achieved with an endoscopic stapler. Postoperative course was uneventful; he was discharged on postoperative day 1.

Histopathological examination revealed the vermiform appendix with multiple diverticula, no overt acute inflammation in the mucosa, but areas of subserosal hemorrhage; critically, there was no evidence of malignancy (Figure 3).

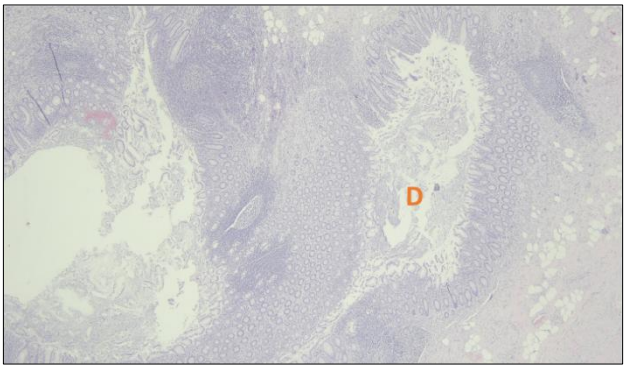

Figure 3: Vermiform appendix with multiple diverticula (D). No evidence of acute inflammation. Subserosal hemorrhage present. No signs of malignancy.

Table 1 shows key findings of the case.

A focused review of the recent literature on appendiceal diverticulosis/diverticulitis was performed, including assessment of incidence, risk of perforation, associations with neoplasia, recommendations on surgical management, and radiologic features.

Comparative data on rates of perforation and association with malignancy were used to inform discussion.

In this case, the final histopathological diagnosis was appendiceal diverticulosis (with prior diverticular inflammation) rather than primary acute appendicitis, aligning with the notion that many cases of appendiceal diverticulitis are only definitively identified postoperatively.

Table 1: Key findings.

Finding	Description/significance
Clinical course	The patient had a subacute onset (4 days) of right lower quadrant pain and fever, without leukocytosis initially, but elevated CRP. This pattern is somewhat atypical for classic appendicitis and is more in keeping with diverticular inflammation
Response to conservative therapy	The initial episode responded to antibiotics, with radiologic regression of the inflammatory mass. However, recurrence occurred about one year later, with increased inflammatory markers (CRP 57 mg/dl, leukocytosis)
Imaging features	CT imaging repeatedly demonstrated an inflamed appendix and plastron formation, but no clearly drainable abscess. The diagnosis of appendiceal diverticulitis was not made prospectively
Surgical findings	The laparoscopic procedure was challenging due to peritoneal adhesions and prior inflammation, but was completed successfully
Histopathology	Multiple appendiceal diverticula were identified; there was no acute appendicitis in the mucosa, but subserosal hemorrhage was present. Importantly, no neoplastic changes were detected
Outcome	The patient recovered uneventfully and was discharged early. No further complications were reported

DISCUSSION

Appendiceal diverticulosis and diverticulitis remain under-recognised entities, often indistinguishable clinically from acute appendicitis.[1-3] Appendiceal diverticula are classified as congenital (true) or acquired (false). Congenital diverticula, which are extremely rare and may be linked to chromosomal abnormalities, involve all layers of the appendiceal wall. Acquired diverticula are more common and consist of mucosal and submucosal herniation through a defect in the muscular layer.[4-6]

Preoperative diagnosis is rare, with most cases identified incidentally after histopathological analysis.[1-3] Several features, however, may raise suspicion.

Patient age and presentation timing

Appendiceal diverticulitis tends to present in older adults (mean age 40–50) compared with typical appendicitis (often 20s–30s).[1,4,5] In our case, the patient was 45, consistent with that demographic.

Subacute or protracted symptoms

The onset of pain may evolve more gradually over several days, or waxing and waning symptoms, rather than the abrupt onset more typical of appendicitis.[1,3-6]

Laboratory markers

Elevated CRP is common, but leukocytosis may be less striking initially. In our patient's first presentation, leukocytosis was absent despite elevated CRP. Later, upon recurrence, leukocytosis emerged.

Radiologic findings

On CT, one might see small outpouchings (diverticula) adjacent to the inflamed appendix, focal enhancement or wall thickening localized at a diverticular site, periappendiceal fat stranding, and sometimes absence of an appendicolith or luminal obstruction. However, these findings can be subtle and easily missed.[3,4,6,7]

In our patient, although CT imaging was performed, the possibility of diverticular disease of the appendix was not entertained prospectively.

A critical reason to maintain a low threshold for surgical management in suspected appendiceal diverticular disease is the elevated risk of complications compared with standard appendicitis. Several key points from the literature:

Increased perforation risk

Appendiceal diverticulitis is estimated to have a 4-fold higher risk of perforation than typical appendicitis. Some reports cite perforation rates of 60–70% in diverticulitis cases versus 10–30% in standard appendicitis.[5,6]

Higher mortality in complicated cases

Because of delayed presentation or atypical symptoms, perforation may be more common, and mortality may be increased (some older studies suggest a 30-fold higher mortality compared to nonperforated appendicitis, although more contemporary series show lower absolute rates).[1,3]

Association with neoplasia

The presence of appendiceal diverticula is strongly associated with concurrent or future appendiceal neoplasms, especially mucinous neoplasms and carcinoids.[1,2]

Technical challenges

Surgeries in the setting of diverticulitis and prior inflammation tend to be more difficult, with increased

operative time, complexity, blood loss, adhesion dissection, and risk of complications.[6]

Given these risks, many authors advocate for appendectomy not only when appendiceal diverticulitis is clinically manifest, but even in asymptomatic patients in whom diverticula are incidentally identified (a "prophylactic appendectomy" approach). Some caution is needed, however, due to surgical morbidity in selected patients.[1,3]

In our patient, the decision to defer surgery initially (because of lack of alarming features and resolution with antibiotics) was defensible. However, recurrence and the inherent risks tipped the balance in favor of laparoscopic removal.

This patient's course emphasizes several lessons- the subacute onset, modest initial lab abnormalities, and radiologic mass effect without a distinct abscess are characteristic of many diverticulitis cases, conservative therapy may result in temporary remission, but the risk of recurrence is present, and recurrence may present more aggressively, the absence of neoplastic findings on pathology in this patient is reassuring, but given the documented strong association of diverticula with malignancy, thorough histopathologic evaluation was essential, the surgical challenge posed by inflammation and adhesions did not result in morbidity, demonstrating that even delayed appendectomy may be safely accomplished in skilled hands and given the rarity and diagnostic difficulty of the condition, each case contributes to the growing body of evidence on when and how to intervene.

This is a single case, and generalization is limited. Imaging did not prospectively identify diverticula, reflecting the challenge of radiologic diagnosis; increasing awareness and improved imaging protocols may help. Long-term follow-up is needed to ensure no delayed complications or neoplastic transformation. Larger case series or registries would help clarify optimal timing of surgery (immediate vs delayed), the benefit of prophylactic appendectomy, and risk stratification (which patients with incidental diverticula should undergo removal). Molecular and histopathological studies of resected specimens may elucidate mechanisms linking diverticula to neoplasia.

CONCLUSION

This case of appendiceal diverticulosis with recurrent inflammation highlights several teaching points: appendiceal diverticulitis should be considered in middle-aged adults with atypical or protracted right lower quadrant pain; preoperative imaging clues may be subtle and often missed; the disease carries a higher risk of perforation and a notable association with appendiceal neoplasia; surgical removal (appendectomy) is typically the treatment of choice once recurrent or complicated disease is evident; and thorough histopathology is critical to exclude malignancy.

ACKNOWLEDGEMENTS

Authors would like to thank the patient for his cooperation and consent to share this case. They also acknowledge the support of the medical and nursing staff involved in the patient's care.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Teixeira RM, Cruz M, Cortesão A, Vilela F, Santos R, Maldonado J, et al. When diverticulitis of the appendix mimics appendicitis: a case report. Int Surg J 2026;13:283-6.