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# Partner in Crime: A Rare Case of Duplicated Appendix Presenting as Acute Appendicitis

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## ABSTRACT

Duplication of the vermiform appendix is an exceedingly rare congenital anomaly, with an estimated incidence of 0.004–0.009% and fewer than 150 cases reported worldwide since it was first described by Picoli in 1892. Preoperative diagnosis is difficult, and the condition is usually identified incidentally at surgery. We report the case of a 24-year-old male who presented with classical features of acute appendicitis, in whom intraoperative exploration revealed two adherent tubular structures with separate bases, one of which showed a necrosed base. Appendicectomy was performed on both structures, and histopathology confirmed appendiceal duplication with acute appendicitis in one specimen and acute suppurative necrotizing appendicitis in the other. The patient recovered uneventfully. This case highlights the need for careful intraoperative exploration in cases of right iliac fossa pain, as a missed second appendix can result in recurrent or unresolved symptoms.

***Keywords:*** *duplicated appendix, appendiceal duplication, acute appendicitis, congenital anomaly, appendicectomy*

## INTRODUCTION

Acute appendicitis is an acute inflammation of the vermiform appendix and remains one of the most common surgical emergencies. Although the position of the appendix may vary, it is rarely subject to extreme anatomical variation such as duplication. Appendiceal duplication is among the rare congenital anomalies of the gastrointestinal tract, with an estimated incidence ranging from 0.004% to 0.009%; it was first described by Picoli in 1892, and approximately 141 cases have been reported worldwide to date. Although the normal embryogenesis of the appendix is well understood, the exact cause of appendiceal duplication remains unclear. Preoperative diagnosis of this anomaly is often difficult, and it is usually identified incidentally during surgery. We describe a case of duplicated appendix presenting with classical clinical features of acute appendicitis, diagnosed intraoperatively.

## CASE REPORT

A 24-year-old male presented to the emergency department with right lower quadrant pain of 48 hours' duration, associated with low-grade fever. The pain was initially periumbilical and subsequently migrated to the right iliac fossa. On clinical evaluation, the patient was febrile (38.2°C) and tachycardic. Abdominal examination revealed localised tenderness at McBurney's point. Laboratory investigations showed leukocytosis (16,300 cells/mm³). Abdominal

ultrasonography demonstrated an aperistaltic, non-compressible, blind-ending tubular structure measuring 9 mm in the right iliac fossa, suggestive of acute appendicitis. The patient was planned for open appendicectomy.

**Intraoperative Findings**

A McBurney's incision was made, and on exploration, omental adhesions were noted. Further dissection revealed two tubular structures adherent to each other, each with a separate base. Both structures were inflamed, and a part of the base of one was necrosed. Appendicectomy was performed on both structures. The patient had an uneventful postoperative recovery and was discharged on the fifth postoperative day.

**Figure 1:** Intraoperative picture showing two inflamed appendices

***Figure 1. Intraoperative photographs showing two adherent tubular appendiceal structures with separate bases.***

**Histopathology**

Histopathological examination confirmed the intraoperative findings of appendiceal duplication. The first specimen showed features of acute appendicitis, while the second specimen showed acute suppurative necrotizing appendicitis, with the muscle layer of both specimens infiltrated predominantly by neutrophils.

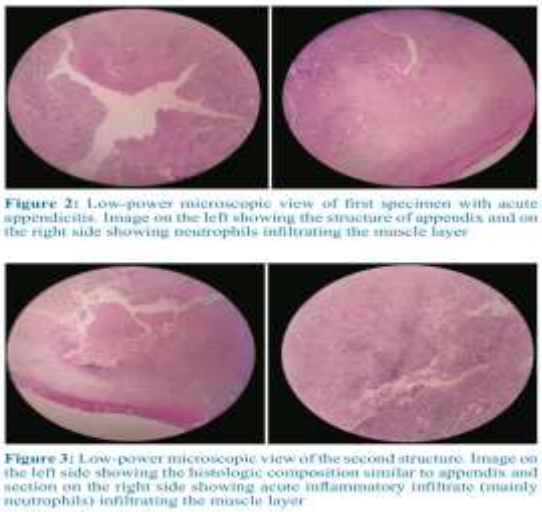

**Figure 2:** Low-power microscopic view of first specimen with acute appendicitis. Image on the left showing the structure of appendix and on the right side showing neutrophils infiltrating the muscle layer

**Figure 3:** Low-power microscopic view of the second structure. Image on the left side showing the histologic composition similar to appendix and section on the right side showing acute inflammatory infiltrate (mainly neutrophils) infiltrating the muscle layer

***Figure 2. Low-power photomicrographs of the two appendiceal specimens showing acute inflammatory infiltrate, predominantly neutrophils, within the muscle layer.***

## DISCUSSION

The position of the vermiform appendix may vary, but it is rarely subject to extreme variations such as duplication. Although the normal embryogenesis of the appendix is well described, the exact aetiology of appendiceal duplication remains unclear. Appendiceal duplications were first classified by Cave in 1936, and this classification was later modified by Wallbridge in 1962 and by Biermann in 1993 (Table 1). Some authors have also described more complex presentations, including horseshoe appendix and triple appendix.

**Table 1. Classification of duplicated appendix**

| Type | Description |
|---|---|
| Type A | Single caecum with various degrees of partial duplication. |
| Type B1 (bird type) | Two appendices symmetrically placed on either side of the ileocecal valve. |
| Type B2 (taenia coli type) | One appendix arises from the caecum at the usual site, and the second appendix branches from the caecum along the lines of the taenia at various distances from the first. |
| Type B3 | One appendix arises from the usual site, and the second appendix arises from the hepatic flexure. |
| Type B4 | One appendix arises from the usual site, and the second appendix arises from the splenic flexure. |
| Type C | Double caecum, each with an appendix. |

Preoperative diagnosis of appendiceal duplication is rarely made, as clinical presentation and imaging findings are indistinguishable from those of a solitary inflamed appendix, as was the case in our patient. The diagnosis is therefore usually made intraoperatively, as in this case, or occasionally only on histopathological examination. Awareness of this anomaly is important because failure to identify and remove a second, unaffected-appearing appendix can result in recurrent right iliac fossa pain and a subsequent diagnostic and surgical dilemma. Careful and complete exploration of the caecal pole at the time of appendicectomy is therefore essential whenever the operative findings appear atypical or when only a single, partially visualised structure is identified.

## CONCLUSION

Duplicated appendix represents a challenging clinical scenario in cases of right iliac fossa pain, given its rarity and the difficulty of preoperative diagnosis. Surgeons should remain aware of this rare congenital anomaly during appendicectomy to avoid missing a duplication, which may otherwise result in serious consequences for the patient.

***Declaration by Authors***

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