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Case Report
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# Bifid Vermiform Appendicitis: A Case Report

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***Abstract***

*Anomalies of the appendix are extremely rare, with a reported incidence of 0.004 to 0.009. Due to the wide range of variations, failing to recognize these anomalies may lead to failure of treatment and complications. We report a case of a 35-year-old male patient who presented to the Emergency Department with a clinical picture of acute appendicitis. After performing the proper laboratory and radiological tests, a decision was made to do a laparoscopic appendectomy which revealed a bifid vermiform appendix with features of acute appendicitis.*

## Introduction

Duplication of the appendix is a rare congenital anomaly with an incidence rate ranging from 0.004 to 0.0009 [1]. Due to the rarity of these anomalies, correct identification is important in order to avoid any harmful medico-legal consequences associated with missing a second appendix during surgery.

## Case Report

A35-year-old male patient present to the emergency room for sudden onset of abdominal pain localized to the right iliac fossa, accompanied by nausea, vomiting, fever, and tachycardia. Despite the absence of significant medical or surgical history, the severity of symptoms and physical examination findings, including generalized abdominal tenderness with focal tenderness in the right iliac fossa, warranted further investigation.

Blood tests revealing a grossly elevated white cell count of 20 x 109 cells/ liter, provided additional evidence suggestive of an inflammatory process. Ultrasound examination was difficult given the abdominal pain, which had not improved with symptomatic treatment.

The decision was to carry out an abdominal CT scan with contrast who revealed a swollen and inflamed appendix, raising suspicion of a bifid appendix, an uncommon anatomical variant characterized by the presence of two appendices. This imaging finding underscores the importance of advanced radiological techniques in delineating anatomical anomalies and guiding surgical decision-making.

Upon confirmation of the diagnosis, the patient underwent laparoscopic appendectomy, a standard surgical approach for uncomplicated cases of acute appendicitis. However, the presence of a bifid appendix posed additional challenges during the surgical procedure. Initial diagnostic laparoscopy confirmed the diagnosis of bifid appendix, with two appendices displaying gross gangrene, a concerning finding indicative of advanced appendiceal pathology.

A traditional laparoscopic appendectomy was performed, involving meticulous dissection of the mesoappendix and the mesocaecum and remove both appendices and part of the coecum, which was the site of inflammation, reflects the need to mitigate the risk of complications associated with untreated appendicitis, such as perforation and peritonitis.

Histopathological analysis of the excised appendices confirmed the presence of gangrenous appendicitis with marked tissue damage in both appendices, further emphasizing the severity of the underlying pathology and the necessity of surgical intervention.

A 35-year-old male patient presented to the emergency department complaining of abdominal pain that started 4 hours ago. the pain is mainly located in the right iliac fossa. He had nausea and occasionally accompanied by vomiting. The patient was otherwise healthy with no previous past medical or surgical history.

On physical examination, the patient was febrile and had tachycardia. Examination of the abdomen revealed generalized abdominal pain on palpation, more marked in the right iliac fossa. Blood tests were normal apart from a grossly elevated white cell count of 20 x 109 cells/ liter.

Ultrasound examination was difficult given the abdominal pain, which had not improved with symptomatic treatment. An abdominal CT scan with contrast was then carried out showing a swollen and inflamed appendix with suspicion of a bifid appendix. Fig 1.

The patient was planned to undergo laparoscopic appendectomy. Initial diagnostic laparoscopy confirms the diagnosis of bifid appendix, the two appendices hadn't the same base (Type B). the two appendices were grossly gangrenous. A traditional laparoscopic appendectomy was performed by dissecting the mesoappendix and ligating the base of the two appendices. Fig 2.

The appendices were then exteriorized and sent for histopathology which confirm gangrenous appendicitis with marked tissue damage in two appendices.

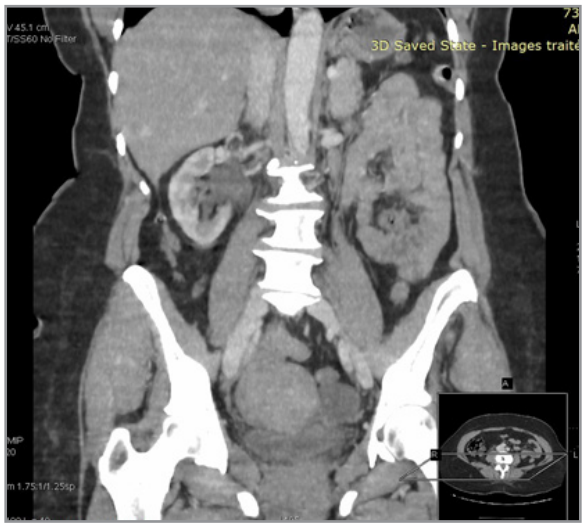



**Figure 1:** Gross view of the bifid appendix (arrowheads).

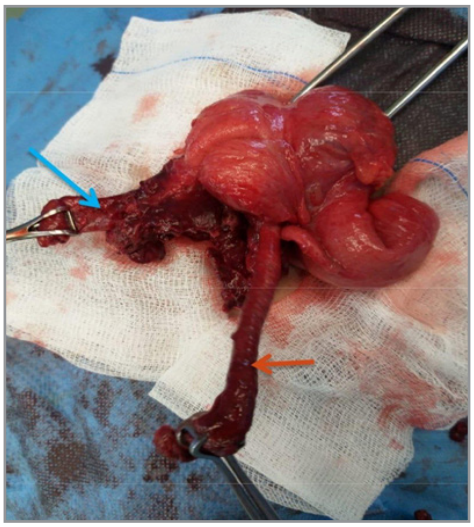


**Figure 2:** Laparoscopic view of the bifid appendix.

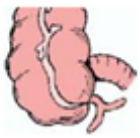
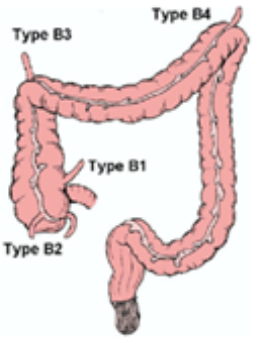
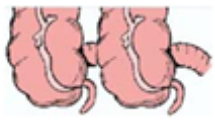
| | | |
|---|---|---|
| Type A | Partial duplication with both appendices sharing a common base |  |
| Type B | Classified according to the location of the second appendix:<br>B1—arises from the other side of the ileocaecal valve, contralateral to the normal appendix<br>B2—arises from the cecum a variable distance along the lines of the tenia<br>B3—arises from the hepatic flexure<br>B4—arises from the splenic flexure |  |
| Type C | Complete duplication of the cecum, each having its own appendix |  |

**Table 1: Modified Cave-Wallbridge classification [2].**

The post-operative course was uneventful and the patient had a full recovery without complications and was discharged on the second postoperative day.

## Discussion

Anatomical anomalies of the vermiform appendix are rare, the incidence ranges from 0,004% to 0,009%. espite their rarity, the prevalence of these anomalies may be underestimated due to their often-asymptomatic nature. The true incidence of appendiceal duplications may thus be higher than currently reported, necessitating increased awareness among clinicians [1].

The clinical presentation of appendiceal duplications can vary widely, ranging from asymptomatic incidental findings to acute abdominal emergencies. Common symptoms include abdominal pain, nausea, vomiting, and fever, mimicking classical appendicitis. However, the location and severity of symptoms may differ depending on the specific type and location of the duplicated appendix. Accurate diagnosis relies on a thorough clinical evaluation, supplemented by radiological imaging and intraoperative findings.

The diagnosis of appendiceal duplications presents several challenges due to their rarity and nonspecific clinical presentation. Imaging modalities such as ultrasound and computed tomography (CT) scans play a crucial role in detecting appendiceal anomalies. However, differentiating between a duplicated appendix and other intra-abdominal pathologies can be challenging, necessitating a high index of suspicion. In cases where preoperative diagnosis is inconclusive, laparoscopic exploration remains essential for definitive diagnosis and appropriate surgical management.

Several classification systems have been proposed to categorize appendiceal duplications based on anatomical variations. The 'Modified Cave–Wallbridge' classification is the most widely used systems (Table 1). In this classification the anatomical variation of the appendix was grouped into three major categories based on the appendicular localization, namely category A, B and C, with category B and C being further divided into more subgroups.

Category A, Type A is partial duplication with both appendices sharing a common base. Type B is complete appendiceal duplication, and it is subclassified according to the origin of the second appendix. These malpositioned appendices may arise contralateral to the cecum (B1), more distally from ascending colon (B2), hepatic flexure (B3), or from the splenic flexure (B4). Finally, Type C is where there is complete duplication of cecum with each one having a corresponding appendix. More recently, cases that do not fit into this classification system have been described such as the “horseshoe appendix” and “triple appendix” [3-5].

Our case corresponds to type B2 according to the ‘Modifited Cave–Wallbridge’ classification, which is the most common type. According to the publication of Nageswaran et al in 2017, which is a comprehensive review of more than 140 cases of appendiceal anomalies, the type B2 was by far the most common with 73(59%) cases [6].

## Conclusion

In conclusion, appendiceal duplications are a rare finding. They may be confused with cecal diverticular disease or even colorectal cancer. The classification system for these anomalies is based on the classification of the ‘Modifited Cave–Wallbridge’ classification Radiological examinations are important to alert the surgeon to their presence because a forgotten type B appendix can have serious clinical and medico-legal consequences.

## References


1. COLLINS D. C. (1955). A study of 50,000 specimens of the human vermiform appendix. Surgery, gynecology & obstetrics, 101(4), 437–445.
2. Griffiths, E. A., Jagadeesan, J., Fasih, T., & Mercer-Jones, M. (2006). Bifid vermiform appendix: a case report. Current surgery, 63(3), 176–178. https://doi.org/10.1016/j.cursur.2006.02.001
3. DasGupta, R., Reber, P. U., & Patel, A. G. (1999). Horseshoe appendicitis. The European journal of surgery = Acta chirurgica, 165(11), 1095–1096. https://doi.org/10.1080/110241599750007973
4. Mesko, T. W., Lugo, R., & Breitholtz, T. (1989). Horseshoe anomaly of the appendix: a previously undescribed entity. Surgery, 106(3), 563–566.
5. Tinckler L. F. (1968). Triple appendix vermiformis--a unique case. The British journal of surgery, 55(1), 79–81. https://doi.org/10.1002/bjs.1800550122
6. Nageswaran, H., Khan, U., Hill, F., & Maw, A. (2018). Appendiceal Duplication: A Comprehensive Review of Published Cases and Clinical Recommendations. World journal of surgery, 42(2), 574–581. https://doi.org/10.1007/s00268-017-4178-1