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## Unexpected histopathology of acute appendicitis

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## ABSTRACT

**INTRODUCTION:** Appendicular diverticula and associated diverticulitis is a rare disease. Patients present commonly with symptoms of acute appendicitis and require laparoscopic or open surgery. Diagnosis is usually made only on histology. Here, we present a rare case of acute diverticulitis of the appendix.

**CASE PRESENTATION:** A 33-year old gentleman presented with right iliac fossa pain of 3 days duration. On admission, appendicitis was diagnosed on Computerized Tomography (CT) scan and laparoscopic appendicectomy was subsequently performed. Intra-operative findings were unremarkable and recovery was uneventful. Histopathology however revealed diverticulitis of appendix with acellular mucin.

**DISCUSSION:** Acute diverticulitis of the appendix is an exceptionally rare condition and reported in 0.004%–2% of appendicectomies. It presents usually when complicated with perforation and bleeding. There is however a strong association with certain malignancies such as mucinous neoplasm, carcinoid and Pseudomyxoma peritonei. Radiological proven appendicular diverticulum requires early intervention due to higher chance of diverticulitis related complication. Surgeons should be aware about this rare disease and may consider elective surgery in view of potential risk of complications and malignancy.

**CONCLUSION:** We concluded that because of strong malignant association, it would be recommended that all appendix specimens should inspect during and after surgery and concurrent examination of peritoneal cavity is recommended.

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## 1. Introduction

Acute appendicitis is a common surgical condition encountered very frequently. However, the diverticulum or diverticulitis of appendix is very rare and recognition is important as it requires early intervention. Patients present with symptoms similar to appendicitis but are not diagnosed on routine CT scans. It is suggested however, that if there is CT proven appendicular diverticulitis, surgical intervention is necessary rather than conservative management due to higher risk of concomitant complications [3]. This case report was prepared according to the SCARE guidelines [7].

## 2. Case report

A 33-year old Chinese male presented with a three days history of central abdominal pain, with subsequent localization of pain to the right iliac fossa (RIF) region. The intensity of pain was moder-

ate to severe and colicky in nature. Physical Examination revealed a temperature of 37.8 °C and there was RIF tenderness with positive guarding and rebound tenderness. Total white cells count was  $14.2 \times 10^9/L$  with leftward shift. The Alvarado score was 6. CT scan was performed and resulted fluid filled acute appendicitis with surrounding fat stranding and prominent ileocolic lymph node likely due to acute appendicitis (see Figs. 1 and 2).

An emergency laparoscopic appendicectomy was performed and intra-operative findings revealed a densely adherent inflamed retrocecal appendix with no perforation. The rest of peritoneal inspection were unremarkable, Histology revealed acute suppurative appendicitis with acellular mucin and diverticulitis of appendix (See Figs. 3 and 4). There were no neoplasms in the appendix. The patient was discharged with no complications.

## 3. Discussion

Diverticulitis of appendix is a rare disease and reported in approximately 0.004%–2% of appendicectomies [1–3]. It is a rare clinical entity and the clinical significance of it is unknown. Diverticulosis of appendix was first described by Kelynack in 1893 [2] and can be congenital or acquired. The congenital type is however very rare and contains all layers of the bowel wall. There are currently less than 50 cases reported of congenital diverticulitis of appendix

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Fig. 1. CT Scan Abdomen; acute appendicitis with fat stranding.

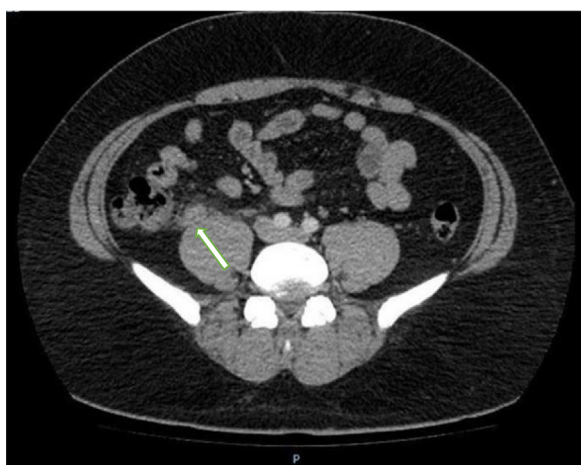


Fig. 2. CT Abdomen Axial view: Acute appendicitis unable to view diverticulum of appendix.

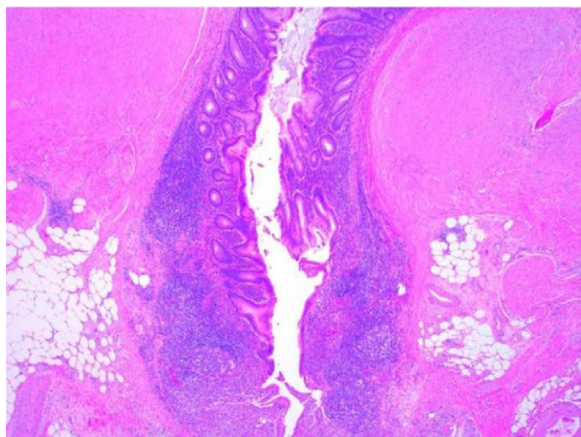


Fig. 3. Histology slide of Acute diverticulitis of appendix with exudate of inflammatory cells and mucin.

worldwide [1]. Diagnosis of this condition is rarely made radiologically or intra-operatively. It is usually diagnosed by the pathologist after surgery [1,3].

Acquired diverticulitis is more common and can lead to perforation or bleeding [3]. The proposed pathophysiology is due to an obstructed lumen that causes inflammatory changes and subsequent formation of false diverticula from the thinned wall. Complications such as bleeding may occur which may require blood transfusions [4]. There is a 25% association with mucinous neoplasms [6] and 48% association with carcinoid tumor, mucinous

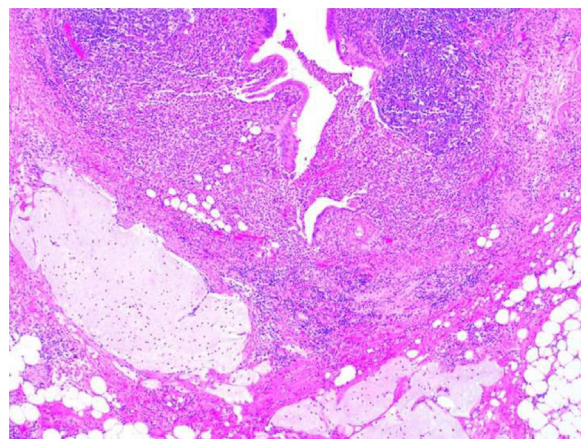


Fig. 4. Histology slide of appendicular diverticulitis surrounded with inflammatory cells and acellular mucin, suspicious for mucinous neoplasm.

adenoma, tubular adenoma, adenocarcinoma and Pseudomyxoma peritoneii [3,5]. The actual risk of malignancy is uncertain however, due to the rarity of the condition. It is prudent therefore to the clinician in the management of appendicular diverticula to perform a thorough examination of the peritoneal cavity during surgery. In addition, if there are incidental radiological proven diverticula of appendix, elective resection may be required due to risk of perforation, haemorrhage and underlying neoplasms [1].

While the diagnosis of acute appendicitis is usually clinical, with the increasingly common use of CT, it is possible that large appendix diverticulum may be diagnosed. Nonetheless, in the presence of acute inflammation, radiological features of diverticulum in the appendix may not be clearly seen. Laparoscopic appendicectomy has also gained routine use in many countries and this technique is unlikely to have any contraindication even if appendicular diverticulum is diagnosed pre-operatively. This will allow close inspection of surrounding peritoneum and other structures which may be limited if open appendicectomy is performed. What is important is meticulous surgical technique for such cases to avoid rupturing the appendix during dissection as due to the risk of concurrent malignancy. In addition, surgery may be challenging as mucin discharge from the diverticulum causes dense adhesions between with contiguous structures. The risk of bleeding is also high and the need for blood transfusions has been reported [4].

**4. Conclusion**

Although acute diverticulitis of appendix is a rare problem and rarely diagnosed preoperatively, surgeons need to be aware of the occurrence of this pathology. As appendicular diverticulitis is having a strong malignant association, it would be recommended that all appendix specimens are inspected after surgery and concurrent examination of peritoneal cavity is recommended. This is made easier now with the routine use of laparoscopy as compared to the traditional open techniques.

For incidental findings of radiological proven diverticula of appendix, we would also recommend elective intervention due to higher risks of potential complications such as perforation and hemorrhage. Surgical intervention however is routine but surgeons may have technical difficulties due to adhesions.

**Conflicts of interest**

None.

**Funding**

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**Ethical approval**

This is case report no ethical approval required.

**Consent**

Written consent was taken from patient by institutions, that all pictures and video can be used for the purpose of academic/research and education where patient identify will not be revealed.

**Guarantor**

Dr. Mutee Ur Rehman.

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