



## APPENDICEAL DIVERTICULITIS WITH PERFORATION – CASE REPORT

Jurij Janež\* and Klemen Mihelčič

<sup>1</sup>Department of Abdominal Surgery, University Medical Centre Ljubljana, Zaloška cesta 7, 1525 Ljubljana, Slovenia, Europe

<sup>2</sup>Medical Faculty Ljubljana, Vrazov trg 2, 1104 Ljubljana, Slovenia, Europe

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## ABSTRACT

We present a case of a male patient, who was referred to our department due to severe pain beginning in the lower abdomen and then spread diffusely over the whole abdomen lasting for a couple of days. The abdominal ultrasound showed an appendicolith in the appendix with a suspicion of an acute appendicitis with perforation. The patient underwent a laparoscopy with a subsequent conversion to a conventional laparotomy. Appendectomy was performed. The appendix was sent to the pathology department and the pathohistological diagnosis was a moderate chronic appendicitis with the appendix containing an inflamed diverticulum with perforation.

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## INTRODUCTION

Appendiceal diverticulitis was first described in 1893 by Kelynac (1). It is usually an incidental finding and does not produce any symptoms. If symptomatic, it means the diverticulum has probably become inflamed (acute or chronic diverticulitis). Acute appendicitis can or not be present. Its clinical presentation consists of atypical abdominal signs and symptoms. It is most prevalent in adult males (2). The incidence of diverticula found in appendectomy specimens ranges from 0.004% to 0.6% (3). Acute appendiceal diverticulitis is a rare cause of appendicitis with a frequency between 0.004% to 2.1% (4). It is important to make an accurate diagnosis due to the higher rate of complications such as perforation (33% vs 9.8% according to Yamana *et al.*) (2).

We present a case of a rare appendiceal diverticulitis diagnosed in the setting of postoperative pathohistological diagnostics.

## Case Report

In this case report we present a case of a 59-year-old male patient, who was referred to our department due to the severe sharp pain at the beginning localized to the lower abdomen and then spread diffusely over the whole abdomen lasting for 4 days. The patient has had diarrhea

for the past 3 days without traces of blood in the stool. He had chills but did not have elevated body temperature. He was not nauseous and did not vomit. Vital signs were normal. Abdomen was diffusely tender to palpation and rigid. Abnormal laboratory values included leukocytosis ( $17 \times 10^9/L$ ) and C-reactive protein (CRP - 157 mg/L). He wasn't on any regular therapy and had no allergies.

The abdominal ultrasound showed free intraperitoneal fluid (up to 300 ml) around liver, spleen, in both paracolic recesses and in the rectovesical pouch. Fat stranding was apparent in the lower right abdominal quadrant. A structure containing hyperechogenic content with a diameter of 17 mm was visualized in the lower right quadrant - blind end of the appendix with an appendicolith but the path towards caecum couldn't be visualized - suspicion of a perforated appendix.

The patient was sent to the operating room. He was placed in a supine position and endotracheally intubated. Gentamicin and metronidazole were administered intravenously. The operative field was prepared in a sterile manner. Veress needle was inserted through a transverse incision just above the belly button. Pneumoperitoneum was created and laparoscopy was performed. On initial exploration of the abdominal cavity a diffuse peritonitis with loads of purulent fluid in the abdominal cavity was found. Conversion to the lower

\*Corresponding author: Jurij Janež

Department of Abdominal Surgery, University Medical Centre Ljubljana, Zaloška cesta 7, 1525 Ljubljana, Slovenia, Europe

median laparotomy was then performed due to the encountered circumstances. Appendix was visualized and removed. The abdominal cavity was irrigated with saline, two abdominal drains were inserted, one from the right into the lesser pelvis and one from the left into the left subphrenic space. The laparotomy was sutured with interrupted slowly resorbable sutures and the skin wound was closed with staples.

The appendix was sent to the pathohistological analysis. The pathohistologic report spoke for moderate chronic appendicitis with a moderate fibroproductive peritonitis with the appendix containing an inflamed perforated diverticulum in its upper part.

The postoperative course was uneventful. He completed a 7 day antibiotic therapy course (gentamicin and metronidazole). On the 8th postoperative day he was discharged from the hospital.

## DISCUSSION

Appendiceal diverticula can be acquired pseudodiverticula or true congenital diverticula. The latter are very rare (2-4). The former are small (2-5 mm), formed by herniation of mucosa and submucosa through a defect in the muscular layer. They are most commonly found along the mesenteric edge in the distal third of the appendix and are associated with other diseases such as Patau syndrome (trisomy 13) (2, 4). The incidence is 0.014% and 1.9%, respectively (2).

An average age of a patient presenting (and later correctly diagnosed) with appendiceal diverticulitis is 38 years (3, 4). The etiology and the pathogenesis of acquired appendiceal diverticulosis is poorly understood. Risk factors are: male gender, adult age (>30 years), cystic fibrosis and Hirschprung's disease (2). Appendiceal diverticulitis is an individual pathologic entity. It differs from acute appendicitis in several clinical and pathological aspects. It has been shown to be more than 4 times as likely as the acute appendicitis to cause the appendix to perforate (occurring in 66% of cases) and is associated with increased mortality (30-fold compared with acute appendicitis). Therefore when we have a patient with chronic abdominal pain (especially a male) appendiceal diverticulitis should be considered in the differential diagnosis (1, 3, 4). The abdominal pain can be present up to 14 days prior to the hospitalization. It has been reported that some patients went through multiple episodes of right lower quadrant pain, and these may have been mistakenly labeled as "chronic appendicitis" (4).

**Table 1** Appendiceal diverticulitis classification according to Phillips *et al.* (2)

| Type 1 | Primary acute diverticulitis, with or without acute peridiverticulitis |
|--------|--|
| Type 2 | Acute diverticulitis secondary to acute appendicitis                   |
| Type 3 | Diverticulum without inflammation                                      |
| Type 4 | Diverticulum with acute appendicitis                                   |
| Type 5 | Chronic peridiverticulitis with acute appendicitis                     |

Appendiceal diverticulosis has shown a significant association with appendiceal neoplasms (1, 2). There is a 25% association with mucinous neoplasms and 48%

association with carcinoid tumor, tubular adenoma, mucinous adenoma, adenocarcinoma and Pseudomyxoma peritonei (6). Diagnosis of this condition is rarely made pre or peri-operatively. It is usually diagnosed postoperatively by the pathologist but an abdominal ultrasound before the surgery can also be helpful if performed by an experienced radiologist. On abdominal ultrasound diverticula appear as round cysts with enhanced walls attached to an enlarged appendix. In case of a doubt, abdominal computed tomography can be performed (2, 6).

When discovered either by preoperative radiological investigations or during surgery, it is recommended to remove the appendix even in an asymptomatic patient in order to prevent the risk of complications (1, 6). Treatment consists of operative removal and should not be delayed. Appendectomy is the appropriate treatment. It can be performed with laparoscopy or laparotomy (4). Meticulous examination of abdominal cavity and thorough histological examination of the entire removed appendix are essential due to appendiceal diverticulitis having higher malignant association (2, 6).

## CONCLUSION

Acute appendiceal diverticulitis is a rare disease that may mimic acute appendicitis in its clinical presentation. Surgeons need to be aware of this pathological entity as it has strong malignant association. Abdominal cavity needs to be thoroughly searched and regular follow up after surgery is needed. If appendiceal diverticulum is found, it needs to be removed in order to avoid the high risk of perforation even in an asymptomatic patient.

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