

# Chronic appendicitis: uncommon cause of chronic abdominal pain

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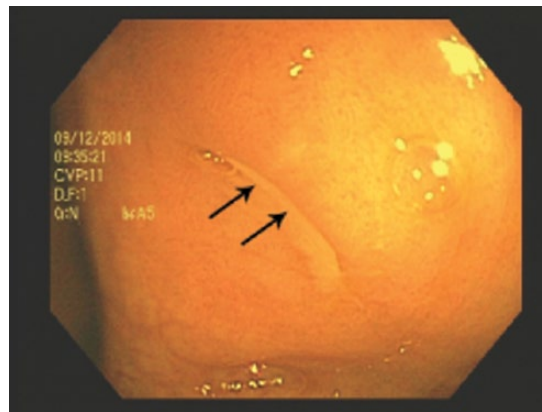
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## Introduction

The exact pathophysiology of acute appendicitis is well known, but the existence of chronic appendicitis (CA) appears to be controversial among many physicians. Several case reports and case series from the last two decades have provided supporting evidence that CA, although uncommon, does occur [Mattei *et al.* 1994; Rao *et al.* 1998; Mussack *et al.* 2002]. CA is a rare clinical entity that poses a diagnostic and therapeutic dilemma for clinicians since a majority of patients present with atypical symptoms. The incidence of CA is 1.5% of all cases with a history of acute appendicitis [Shah *et al.* 2013], and is thought to be secondary to partial and transient obstruction of the appendix [Vanwinter and Beyer, 2004; Shah *et al.* 2013]. Although not considered a surgical emergency, it is often a missed diagnosis with complications such as perforation or abscess formation [Shah *et al.* 2013]. computed tomography (CT) scan is considered to be the best test for diagnosis of CA [Shah *et al.* 2013]. We describe a 39-year-old man with a history of chronic right lower quadrant pain greater than 6 months duration who was found to have CA while undergoing a colonoscopy.

## Case report

A 39-year-old male patient with a history of quiescent proctitis presented with 6 months of intermittent sharp stabbing right lower quadrant pain. The patient reported the pain to be intermittent, “7/10” in severity, sharp in nature, nonradiating, and located mainly in the right lower quadrant with no aggravating or relieving factors. The pain lasted for 6–12 h, sometimes associated with nausea and chills. He was seen in multiple emergency rooms, typically 24–48 h after each episode. He underwent three CT scans without an identifiable source; his blood work and urine studies were normal. Each episode resolved spontaneously after 3–4 days with conservative measures.



**Figure 1.** Endoscopic picture of the appendiceal orifice showing oozing pus (arrow).

The patient then underwent a colonoscopy for his abdominal pain. At the time the patient was in mild distress secondary to pain. The abdomen was soft with moderate tenderness in the right lower quadrant without guarding. The bowel sounds were normal, and no masses were palpable. During colonoscopy, pus was seen to emanate from the appendiceal orifice (Figure 1) with a mild left-sided colitis. The patient was referred to the nearest emergency department for CT of the abdomen and pelvis that demonstrated minimal inflammatory stranding of the periappendiceal fat and thickening of the mid-portion of the appendix (up to 11 mm) compatible with CA (Figures 2 and 3). After a 2-week course of antibiotics, he underwent an uneventful laparoscopic appendectomy. Pathologic evaluation showed the appendix with florid reactive follicular hyperplasia, transmural chronic inflammation with lymphoid aggregates, foci of xanthomatous inflammation, and fibrous obliteration of the lumen, all suggestive of CA without any evidence of Crohn’s disease or malignancy. The patient was seen as an outpatient for 3 months follow up and

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**Figure 2.** Axial computed tomography scan with contrast of the abdomen demonstrating a thickened and ill-defined appendix (arrow).

reported no further attacks of right lower quadrant pain.

### Discussion

Although the pathophysiology of acute appendicitis is well understood, the diagnosis and management of CA and recurrent appendicitis remains controversial. The typical presentation of acute appendicitis is characterized by 48 h of periumbilical pain localized to the right iliac fossa. It is often associated with nausea, vomiting, anorexia, abdominal guarding, rebound tenderness, and leukocytosis with neutrophil predominance [See *et al.* 2008; Shah *et al.* 2013]. Recurrent appendicitis is defined as one or more episodes of acute appendicitis, usually, lasting 24–48 h, and it subsides on its own [See *et al.* 2008], whereas CA mainly presents as a less severe, nearly continuous abdominal pain lasting longer than the typical 1–2-day period, and often extending to weeks, months, or even years [See *et al.* 2008].

The precise etiology is unknown. Recurrent appendicitis is thought to occur from transient obstruction of the appendix or secondary to excessive mucus production, while CA is secondary to partial but persistent obstruction of the appendiceal lumen [Mattei *et al.* 1994; Vanwinter *et al.* 2004; Shah *et al.* 2013]. In both cases luminal secretions accumulate until they are subsequently released [Rao *et al.* 1998]. The causes of intermittent or partial appendiceal obstruction

include fecalith, tumors, lymphoid hyperplasia, foreign bodies, and appendiceal folding [Rao *et al.* 1998; Drezner and Harmon, 2002].

Pathologic findings in acute appendicitis are mucosal hyperemia and ulceration with polymorphonuclear leukocyte infiltration into the luminal wall [Rao *et al.* 1998]. Partial or complete necrosis or infection of the appendix with or without perforation and/or abscess formation occurs in approximately 10–30% of cases [Rao *et al.* 1998]. In patients with appendectomy, up to 5% of the specimens show chronic inflammatory changes with infiltration of both lymphocytes and plasma cells into the muscular wall and serosa [Rao *et al.* 1998]. A case series by Rao and colleagues described chronic inflammation of the appendix noted to have lymphocytic and eosinophilic infiltration, fibrosis and granulomatous reaction, and foreign body giant-cell reaction [Rao *et al.* 1998]. A very small percentage of patients with CA or recurrent appendicitis show pathologic changes consistent with CA. Thus, there is a possibility of a prolonged subclinical course of appendicitis before patients become symptomatic [Rao *et al.* 1998]. The significance of fibrous obliteration of the lumen in patients with CA has been controversial. This finding is considered a normal involution of the appendix with age [Mattei *et al.* 1994]. Mattei and colleagues considered that the fibrous obliteration of the lumen may be secondary to acute inflammation of the appendix that remained subclinical or resolved spontaneously [Mattei *et al.* 1994].

Imaging that can aid in the diagnosis of CA or recurrent appendicitis includes barium enema, ultrasonography, and CT scan of the abdomen. In the case of acute appendicitis barium enema shows partial filling or nonfilling of the appendicular lumen and indentation of the cecal apex [Rao *et al.* 1998]. Contrast filling of the appendicular lumen is the most significant criteria for excluding appendicitis. Ultrasonography is used for evaluating patients with suspected appendicitis. It shows a dilated and noncompressible appendix more than 6 mm in diameter with or without associated fecolith and abscess formation [Rao *et al.* 1998]. There is no consensus regarding sonographic appearance of CA or recurrent appendicitis [Rao *et al.* 1998]. A CT scan of the abdomen is considered the most accurate imaging modality of choice for diagnosing and excluding appendicitis with an overall accuracy ranging from 93% to 98% [Rao *et al.* 1998; Babb and



**Figure 3.** Coronal computed tomography scan with contrast of the abdomen demonstrating a thickened, dilated appendix (arrow) without any abscess, perforation, or fecalith.

Trollope, 1999; Drezner and Harmon, 2002]. Rao and colleagues considered the CT scan finding of CA similar to acute appendicitis [Rao *et al.* 1998]. The classic CT scan findings in patients with CA include a dilated appendix, periappendiceal fat stranding, appendiceal wall thickening with surrounding edema, calcified appendolith(s), abscess, phlegmon, and inguinal lymphadenopathy [Rao *et al.* 1998; Mazeh *et al.* 2009].

Our patient had 6 months history of right lower quadrant pain that remained undiagnosed despite multiple emergency department visits and imaging studies. He was found to have an unusual presentation of pus draining from the appendicular lumen while undergoing a colonoscopy (Figure 1). His surgical pathology findings were consistent with CA.

Unlike acute appendicitis, CA and recurrent appendicitis are not considered a surgical emergency [Shah *et al.* 2013]. Diagnosis can be missed or delayed secondary to atypical presentation or prior treatment with antibiotics, which may lead to resolution of the infection. A missed diagnosis can have serious complications such as perforation, abscess formation, and peritonitis [Shah *et al.* 2013].

### Conclusion

Although acute appendicitis is the most common disorder affecting the appendix, patients can present with CA or recurrent appendicitis. This rare clinical entity poses a diagnostic and therapeutic dilemma for clinicians with delay in diagnosis. CA or recurrent appendicitis should be considered in the differential diagnosis of the patient with recurrent or chronic right lower quadrant pain. It is of prime importance to review all prior CT scans to evaluate the cause of abdominal pain to reach the correct diagnosis. Appendiceal CT is the best test for diagnosing CA or recurrent appendicitis and appendectomy can be curative.

### Conflict of interest statement

The authors declare that there is no conflict of interest.

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