

# Case Report

## Epiploic Appendagitis

**Urgent message:** Because pain in the lower abdomen is a symptom that can indicate many diseases, including acute appendicitis and acute diverticulitis, it is easy to misdiagnose epiploic appendagitis (EA). Thus, it is important that urgent care practitioners be able to distinguish EA from many other entities, especially because surgery presents the risk of complications.

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### Introduction

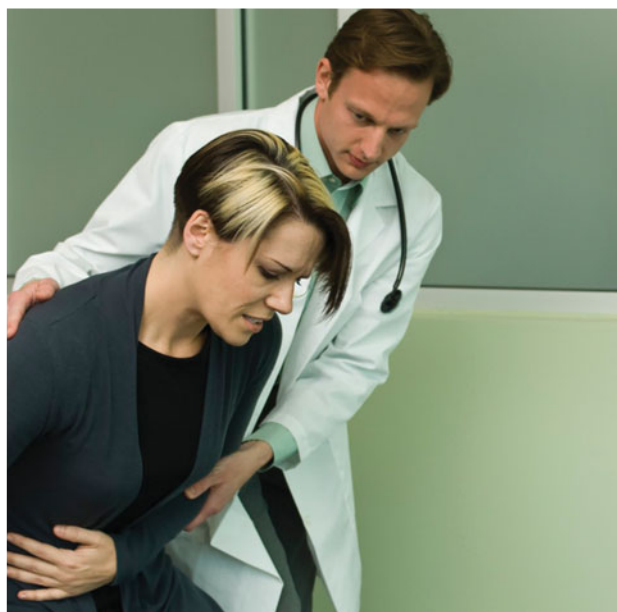
An epiploic appendage is a fat-filled sac (1–2 cm thick and 0.5–5 cm long) that is found along the surfaces of the colon, primarily located in the transverse and sigmoidal regions (**Figure 1**). The human body contains anywhere from 50 to 100 appendages that run anteriorly and posteriorly in 2 rows parallel to the taenia coli (longitudinal muscles of the large intestine).<sup>1</sup> Epiploic appendagitis (EA), also referred to as appendicitis epiploica, hemorrhagic epiploitis, epiplopericolitis, or appendagitis, is an infection of an epiploic appendage.

Though the function of epiploic appendages is unknown, it is proposed that they may play a role in cushioning the colon as well as in immune responses. Each appendage is supplied by 1 or 2 colonic arteries and a small draining vein. Lymphatic channels run around an appendage or through it as a part of the mesenteric nodal system. Any torsion, elongation, irritation, or venous thrombosis of an appendage may impair the vascular supply and lead to an ischemic infarction, necrosis, and appendagitis.

### Case Presentation

A 56-year-old Caucasian woman presented to our urgent

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care center with acute onset of right lower quadrant abdominal pain. The patient noted that these symptoms started a few hours before presentation and that the pain worsened with movement. She said that she had no fever, chills, nausea, vomiting, or diarrhea.

The patient had a medical history significant for diverticulitis, superior mesenteric vein thrombosis, hypercoagulopathy, a right breast mass, gastroesophageal reflux disease (GERD), anxiety, and hyper-

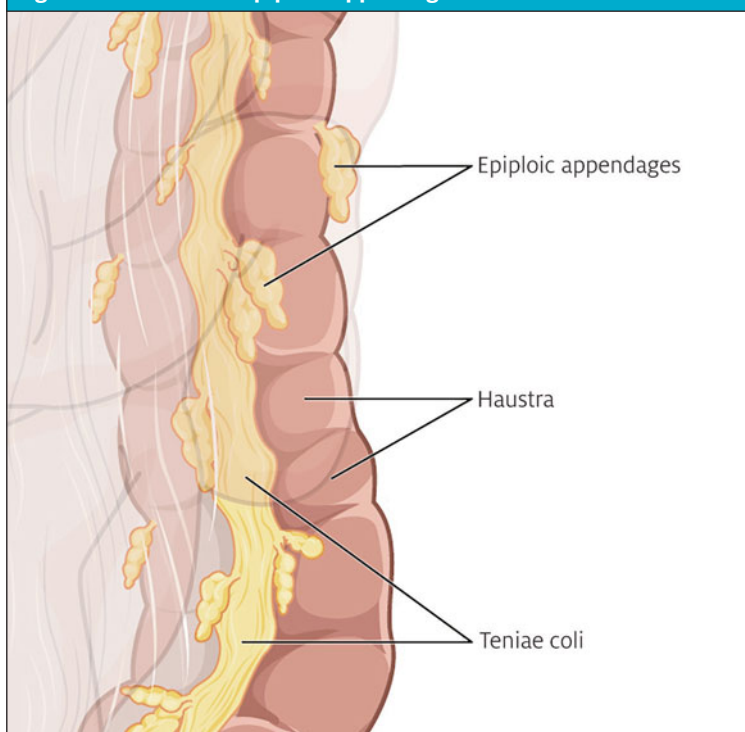
**Figure 1. Location of epiploic appendages on the colon.**

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cholesterolemia. She had a surgical history of left colon resection for recurring sigmoid diverticulitis and of cholecystectomy, appendectomy, tubal ligation, lumpectomy, and dilation and curettage. At the point when she presented to the urgent care center, she was taking a vitamin D<sub>3</sub> supplement, pantoprazole for GERD, and venlafaxine for anxiety. She reported no history of tobacco use, but she had a remote history of abuse of illegal drugs and of alcohol addiction.

### Observations and Findings

At the patient's initial presentation, her vital signs were as follows:

- Oral temperature: 36.7°C
- Blood pressure: 112/73 mm Hg
- Heart rate: 77 beats/min
- Respiratory rate: 20 breaths/min
- Oxygen saturation: 95% on room air

Physical examination findings were significant for tenderness to palpation in the patient's right lower quadrant, with rebound tenderness and voluntary

guarding. Bowel sounds were present in all quadrants, and there was no hepatosplenomegaly. All other findings on physical examination were benign.

### Diagnostic Studies

The patient underwent a workup that included the following laboratory tests and imaging studies:

- Electrocardiography
- Complete blood count with differential
- Comprehensive metabolic panel
- Lipase test
- Troponin I assay
- Urinalysis
- Computed tomography (CT) of the abdomen and pelvis without contrast

An electrocardiogram was obtained because of the patient's midepigastria pain, but it showed a normal sinus rhythm. Findings for the complete metabolic panel and complete blood count were within normal limits, and urinalysis showed moderate amounts of blood and red blood cells. Troponin and lipase levels were also within normal limits and did not raise any suspicion of a myocardial infarction or acute pancreatitis.

The abdominal CT scan showed mild fat stranding in peritoneal reflection of the anterior abdominal fat, with a 9-mm confluent nodule of edema, new since a CT scan done 15 months earlier. The area of fat stranding was adjacent to the transverse colon. There was no thickening of the bowel wall and no obstruction. Findings were suggestive of a small area of fat necrosis or epiploic appendagitis (**Figures 2 and 3**).

### Diagnosis

Epiploic appendagitis.

### Course and Treatment

The patient was given a 1000-mL intravenous bolus of 0.9% sodium chloride, Zofran for nausea that developed during the course of her evaluation, and morphine as needed for pain. The patient was given prescriptions for Zofran and Percocet and then discharged home, with instructions to follow up with a gastroenterologist in 2 days and to go to an emergency department immediately if her symptoms worsened.

Two days after onset of symptoms, the patient had

complete pain resolution, and she has had no recurrences since then.

## Discussion

### Epidemiology

Eiploic appendagitis is reported in 2% to 7% of patients originally thought to have an acute diverticulitis and in 0.3% to 1% of those originally thought to have acute appendicitis.<sup>1</sup> EA occurs most often during the second through fifth decades of life, with patients having a mean age of 44.6 years (range, 12–82 years), and it is found four times more often in men than in women.<sup>2</sup> Though EA can occur in any part of the colon, it is most commonly found at the rectosigmoid junction (57%), followed by the ileocecal region (27%), ascending colon (9%), transverse colon (6%), and descending colon (2%). Appendages are found more commonly in obese individuals or those who have recently lost weight. Therefore, EA is more commonly found in these individuals as well.

Our patient was in the age range of most patients with EA, but location of appendages near the transverse colon, as was the case for her, is not common in EA.

### Pathogenesis

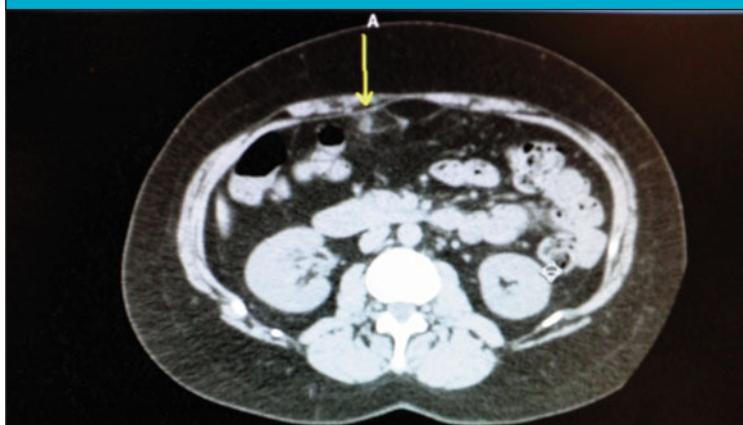
As already mentioned, EA is caused by any torsion or elongation of an appendage or thrombosis of a vein within the appendage. When this occurs acutely, ischemia and infarction will occur, leading to fat necrosis. Gradual torsion results in chronic inflammation and thus chronic appendagitis, and it often has no clinical symptoms.

### Clinical Presentation

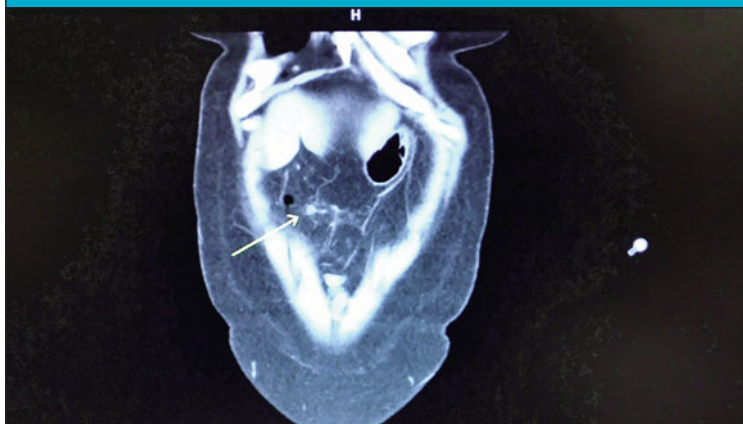
Patients with EA present with localized, sharp, acute lower abdominal pain that is nonradiating and exacerbated with physical movement. Sixty percent to 80% of patients with EA have pain in the left abdomen. Patients also report postprandial fullness, bloating, vomiting, early satiety, diarrhea, and sometimes a low-grade fever. However, symptoms vary and are often vary among patients. Symptomatically, patients with EA have a presentation that is almost identical to that of patients with acute appendicitis (right-side abdominal pain) or acute diverticulitis (left-side abdominal pain).

In 10% to 30% of patients with EA, physical exami-

**Figure 2. Computed tomography scan of the abdomen showed mild fat stranding (arrow).**



**Figure 3. Findings on a computed tomography scan of the abdomen were suggestive of fat necrosis or eiploic appendagitis (arrow).**



nation findings are benign, besides the abdominal pain, with occasional guarding and a palpable mass. White blood cell count, erythrocyte sedimentation rate, and C-reactive protein levels are usually normal but may be mildly elevated because of inflammatory responses.

Our case is unique because of the abnormal presentation of pain in the right lower quadrant instead of the more common left abdomen location. The patient's initial presentation would normally have led us to suspect acute appendicitis, but because she had already undergone an appendectomy, this was ruled out. Acute diverticulitis was also suspected, but the patient presented with pain in the right lower quadrant instead of the left lower quadrant, where most acute diverticulitis presents. Furthermore, abdominal CT scan findings ruled out diverticulitis. The patient's white blood cell count, ery-

throcyte sedimentation rate, and findings on endoscopic retrograde pancreatography were all normal, and no mass was palpated on physical examination.

### Diagnosis

EA is most often an unexpected diagnosis in patients undergoing imaging for acute abdominal pain or undergoing laparotomy. Furthermore, because EA presents similarly to acute appendicitis and acute diverticulitis, it is usually a diagnosis by exclusion when other causes of acute lower abdominal pain are ruled out.<sup>3</sup> Abdominal CT is the preferred methodology for diagnosis, but abdominal ultrasound is an option if CT is not available.

Abdominal CT scans showed a fat-density ovoid structure of 1.5 to 3.5 cm in diameter, with a thin, high-density rim adjacent to the colon and with a thickened peritoneal lining and surrounding inflammatory fat stranding. Often, a central hypodense dot is present in such structures, representing the thrombosed vasculature. In chronic EA, calcification of the infarcted appendage may occur, and it may detach and become an intraperitoneal loose body.<sup>2</sup>

Abdominal ultrasound showed that this patient had an oval, noncompressible, solid, hyperechoic mass with a subtle hypoechoic rim directly under the site of maximum tenderness. Doppler studies showed no central blood flow in the appendage but normal blood flow in the hyperechoic inflamed fat surrounding the appendage.

### Differential Diagnosis

The differential diagnosis for EA can be long, consisting of any pathology that leads to lower abdominal pain. However, the clinical presentation along with physical examination findings will most often cause confusion of EA with acute appendicitis and acute diverticulitis.<sup>4,5</sup> Most of the time, an abdominal CT scan can help differentiate between these 3 entities. Patients with acute appendicitis will most likely have fever, nausea, vomiting, and lower right abdominal pain. CT imaging will show a dilated appendix >6 mm, appendiceal wall thickening (>2 mm), periappendiceal fat stranding, and thickening of the cecal apex. CT imaging of acute diverticulitis shows thickening of the colon and paracolic fat stranding. The patient with diverticulitis will usually have a history of diverticulosis as well. Here are other etiologies to include in the differential diagnosis:

- Mesenteric panniculitis
- Omental neoplasm
- Omental infarction
- Crohn ileitis

- Ectopic pregnancy
- Ovarian torsion
- Ruptured or hemorrhagic ovarian cyst
- Ileitis

### Treatment

Only limited research has been done on treatment of EA. Some authors believe that it is a self-limiting condition and will resolve itself in 10 days, with a course of oral anti-inflammatory medicine and opiates if needed. However, there has been some controversy regarding research that hints at the recurrence of EA when it is treated conservatively instead of surgically. Some authors believe that surgical therapy is the only way to prevent recurrence and rare complications such as inflammation-induced adhesions and intussusception. Nevertheless, because of complications that come with surgery, operations are usually avoided unless absolutely indicated.

### Disease Course

In general, EA is a benign and self-limiting condition that can resolve in 2 to 14 days without surgery.<sup>1</sup> The risk of recurrence is substantially low, and complication rates are even lower. Under very rare circumstances, an epiploic appendage can fall into a hernia sac and be strangulated or, as already mentioned, it can calcify and break off to become a foreign body in the peritoneal cavity (one of the most common sources of intraperitoneal loose bodies). Such appendages also may adhere to other parts of the abdomen and be mistaken for a neoplastic process.

### Take-Home Points

EA is an underappreciated cause of acute abdominal pain. In the urgent care setting, it will most often be diagnosed during a work-up for suspected appendicitis or diverticulitis. The vast majority of patients with EA can be treated conservatively with analgesics and antiemetics. Referral to a surgeon should be considered when there are signs of strangulation and intussusception. ■

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