



## Duodenitis Secondary to Appendicitis and Appendiceal Location: A Case Report

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### Abstract

Appendicitis has variable presentations due to the inconsistent appendiceal location. The most common location is arguably retrocecal with others being pelvic, subcecal, and pre- and post-ileal. The retrocecal location may extend periduodenally causing confusion as it can be mistaken for duodenitis. We present a case of a 35-year-old female who presented with Right Upper Quadrant (RUQ) and bilateral flank pain. Initial workup included a RUQ ultrasound, which was negative for gallbladder wall thickening. The diagnosis of true duodenitis secondary to appendicitis at the porta hepatis adjacent to the descending duodenum was established with computed tomography. The patient underwent a laparoscopic appendectomy and her inflammation resolved post-procedurally with antibiotics. She was discharged on post-operative day two.

**Keywords:** Appendicitis; Retroperitoneal appendix; Retrocecal; Pelvic

### Introduction

Appendicitis is a common complaint amongst patients with a lifetime risk of 8.6% for males and 6.7% for females [1]. The common presentation of appendicitis includes right lower quadrant pain (likelihood ratio + 7.3 to 8.5), abdominal rigidity (likelihood ratio + 3.8), and migratory periumbilical pain (likelihood ratio + 3.2) [1]. However, variable presentations are not infrequent and originate from unusual positions of the appendix. The locations include retrocecal, paracecal, subcecal, pelvic, or pre- and post-ileal with arguably the most common positions being retrocecal or pelvic [2-4].

In this case study, the appendix is cephalad and retrocecal. The patient presented with epigastric and bilateral flank pain, which detracted from the ultimate diagnosis of duodenitis caused by retroperitoneal appendicitis. As clinical presentation is factored into criteria such as the Alvarado score or modified criteria for imaging, it is critical to recognize anomalous cases [5,6].

Retroperitoneal appendicitis with periduodenal location has been mistaken for duodenitis or a duodenal ulcer [2]. However; our case report is unique in that duodenitis is secondary to the appendiceal location and inflammation.

### Case Presentation

A 35-year-old female patient with morbid obesity, otherwise no prior medical or surgical history presented to the hospital emergency department with complaints of sudden onset, sharp epigastric abdominal pain that radiated towards both flanks. This was accompanied by nausea and four episodes of non-bloody emesis. She denied any genitourinary symptoms, any recent drug or alcohol use, and any prior history of similar symptoms.

On initial examination, her temperature was 99.5° F, pulse was 112, and blood pressure was 156/91. Her physical examination revealed tenderness in the epigastric region and Right Upper Quadrant (RUQ). Pertinent negatives include Murphy's sign, McBurney's point, guarding, rebound, or rigidity. The rest of her examination was unremarkable.

A complete blood count, chemistry panel, coagulation panel, and urinalysis were ordered in the emergency room. Laboratory values of note include leukocytosis of 15.9 K/uL, lactic acid of 2.25 mmol/L, total bilirubin of 1.6 mg/dL, and elevated liver function tests (AST 77 U/L, ALT 127 U/L). The rest of her laboratory testing was normal.

Due to the physical exam findings, a gallbladder Ultrasound (U/S) was ordered which found

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Figure 1: Coronal view of appendicitis and duodenitis.



Figure 2: Axial view of appendicitis and duodenitis.

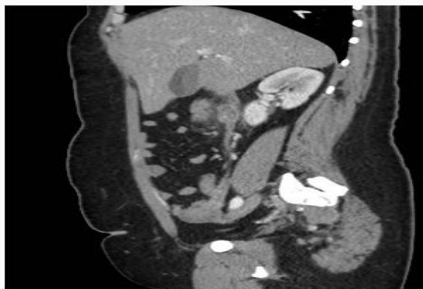


Figure 3: Sagittal view of appendicitis.

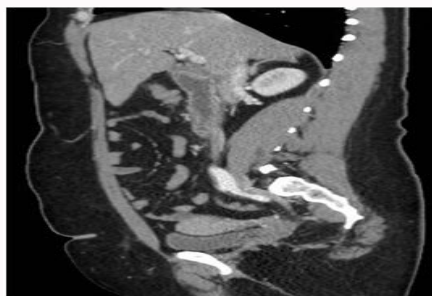


Figure 4: Sagittal view of duodenitis.

multiple small-to-moderate sized gallstones and hepatic steatosis but no evidence of gallbladder wall thickening or distention. This study was followed by a Computed Tomography (CT) which showed severe tip appendicitis with a markedly dilated appendiceal tip. Select images from the CT are shown in Figures 1-4. The appendix was in an atypical location at the porta hepatis adjacent to the second portion of the duodenum anterior to the right kidney and near Morison's pouch, resulting in a secondary duodenitis. The proximal appendix appeared normal and gallbladder contained sludge.

Patient was placed on piperacillin/tazobactam, ondansetron, morphine, and acetaminophen and surgery consult was placed. The

following day, the patient underwent a diagnostic laparoscopy. A long retrocecal appendix was seen traveling cephalad. The dissection followed the appendix. The tip was seen opposed to the duodenal wall and portal vein with adhesions between the appendix and these structures.

The appendix was carefully dissected off these structures, mesoappendix was transected using an energy device, and base of the appendix was transected off the cecum using a laparoscopic stapler.

Post-procedure, patient's leukocyte count decreased to 9.1 K/uL, lactic acidosis resolved with intravenous fluids, surgical drain removed, and patient was discharged on oral antibiotics on postoperative day two.

## Discussion

The classical physical examination sign for a retroperitoneal appendix is the iliopsoas sign; however, other signs include Dunphy's sign, Rovsing's sign, Obturator sign, and Pointing sign as listed and described by Verghese et al. [7]. However, our patient only presented with epigastric and RUQ pain. Variable presentations may lead to the pursuit of an incorrect diagnosis. Therefore, diagnostic imaging is critical in the workup. As seen in this case, U/S failed to detect the inflammatory structures whereas CT has been instrumental in discovering both diagnoses of duodenitis and appendicitis as well as the variant location. In our case, the decision was to laparoscopically remove the appendix; however, others advise for an open retrograde appendectomy as a standard approach given difficulty in visualization during a laparoscopic approach [7]. We recommend a laparoscopic, robotic, or open approach depending on the expertise of the surgeon and capabilities of the institution. This is a high-risk surgery and can have severe complications including duodenal injury and injury to structures in porta hepatis so appropriate surgical expertise should be sought.

## Conclusion

Atypical presentation of appendicitis is rare but should be considered if the clinical picture is unclear. Imaging is critical to achieving the diagnosis in such cases. This article was written to share a rare case as well as the approach taken by the authors.

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