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## Pictorial Review

# Clinical mimics of acute appendicitis: Is there any role of imaging?



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## ABSTRACT

Acute appendicitis (AA) is a common surgical emergency. Accurate and timely diagnosis of AA is essential for successful outcome. Imaging plays an important role in the diagnosis, exclusion of AA as well as diagnosing alternative clinical conditions which can closely simulate AA. A correct alternative diagnosis may obviate the need of unnecessary appendectomy or may even change the treatment regime altogether. This pictorial essay illustrates various clinical conditions which mimicked AA clinically during our day to day practice.

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## Introduction

Acute appendicitis (AA) is the most common cause for acute abdomen requiring surgical intervention for all ages and both sexes. Despite being a common entity with improved clinical understanding of the disease process, incredible advancement in the field of laboratory sciences and imaging, many a time, accurate and timely diagnosis of AA remains challenging. Even today, clinicians often face the dilemma of balancing between

negative appendectomy and perforation rates. Traditionally AA has always been considered as essentially a clinical diagnosis. A number of scoring systems have been developed over last three decades which take into account of various clinical and laboratory parameters. Role of imaging (ultrasound, CT scan, MRI) has also been well established amidst occasional debate. Usage of CT scan has seen a sharp increase for the diagnosis of AA. Computer aided artificial intelligence based techniques are being increasingly advocated for an accurate diagnosis of AA. Ironically, most of the researches/

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studies on AA focus only on the presence or absence of AA. It is often forgotten that a patient presents with pain at the right fossa (RIF) rather than AA. There are many conditions which can present as pain RIF and simulate AA. While timely and accurate diagnosis of AA remains crucial, it is equally important to diagnose alternative conditions which can mimic AA clinically or otherwise as the treatment options and prognosis may vary drastically. The role of imaging in establishing alternate diagnosis in clinically suspected AA has often been underestimated. The following pictorial review illustrates some of the common as well as uncommon clinical mimics of AA resolved on the basis of imaging. Ultrasonography was done using 5 MHz convex, 7.5 MHz linear and 6 MHz transvaginal probes (Wipro GE, LOGIQ P5) in appropriate cases.

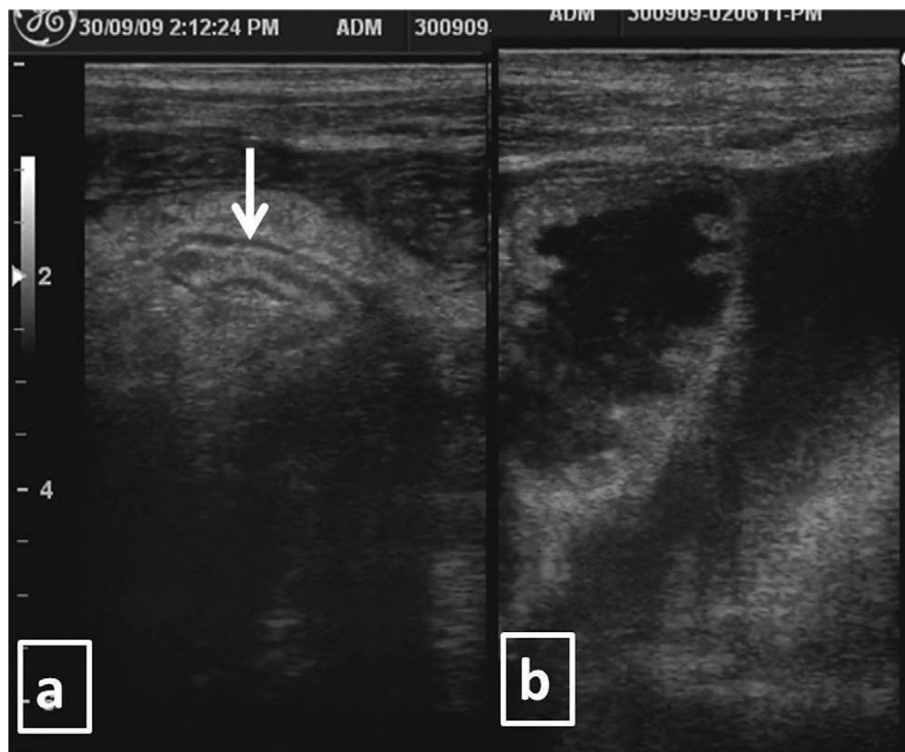
### Case 1

A 60 year old male patient presented with sudden onset central abdominal pain which radiated later on to the right iliac fossa. On examination, he had tachycardia (pulse rate: 96/minute), fever (temp: 101 °F), guarding and rebound tenderness at the RIF. Clinically, he was diagnosed to have AA and was advised an urgent ultrasonography (USG) study. USG study revealed presence of free fluid in the abdomen particularly in the RIF and pelvis. The appendix was visualized and was normal in size and morphology. Small bowel loops were distended, fluid filled and showed reduced peristaltic activity (Fig. 1). A non contrast CT scan abdomen revealed presence of pneumoperitoneum with possible perforation of

D1 segment of duodenum. The patient underwent laparotomy through a right paramedian incision which confirmed presence of perforation of D1 segment of duodenum with peritonitis. Localized peritonitis due to collection of bowel contents at the RIF through the right paracolic gutter may have been responsible for simulating AA clinically.

### Case 2

A 30 year old patient, primigravida at 33 weeks 3 days of gestation reported to the emergency department of a tertiary care hospital with complaints of pain RIF and 3 episodes of vomiting for last 6-8 h. There was no history of bleeding per vaginum. On clinical examination, she had tachycardia and was afebrile. Local examination revealed acute tenderness at the RIF above the Mc Burney's point. Her laboratory parameters were within normal limit. Clinically she was diagnosed to have AA and was referred for an urgent USG. On USG, there was a viable fetus of 33 weeks duration in longitudinal lie and cephalic presentation. No evidence of any placental/retroplacental pathology was noted. The appendix as such could not be convincingly identified on USG. Instead, a cystic lesion was noted in the RIF in relation to the right ovary. The lesion did not reveal any vascularity except at its pedicle (Fig. 2a). There was significant probe tenderness over the cystic lesion. Based on the clinical presentation and sonographic findings, a diagnosis of twisted ovarian cyst (right) with viable singleton fetus of 33 weeks 3 days gestation was made. She underwent urgent surgery which confirmed the diagnosis of twisted right



**Fig. 1 – USG reveals normal sized appendix (a) and dilated, hypoperistaltic ileal loops with free fluid in the RIF and pelvis (b) A non contrast CT scan demonstrated (not shown here) presence of pneumoperitoneum with possible perforation of D1 segment of duodenum which was confirmed at surgery. The appendix was found to be normal at per-operative inspection.**

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