

## Abdominal CT scan findings in Acute Appendicitis

**Pathophysiology of acute appendicitis.** Acute appendicitis occurs when the lumen is **obstructed**, leading to fluid accumulation, luminal distention, inflammation and ultimately, perforation. Distension of the appendiceal lumen causes the sensation of vague, diffuse abdominal pain. Intraluminal bacterial overgrowth causes mucosal breakdown and bacterial invasion of the appendiceal wall. Inflammation of the wall causes peritonitis and localized pain.

Typical bacteria causing appendicitis include *E. coli*, *Peptostreptococcus*, *B. fragilis*, and *Pseudomonas*.

CT findings of appendicitis fall into 3 categories

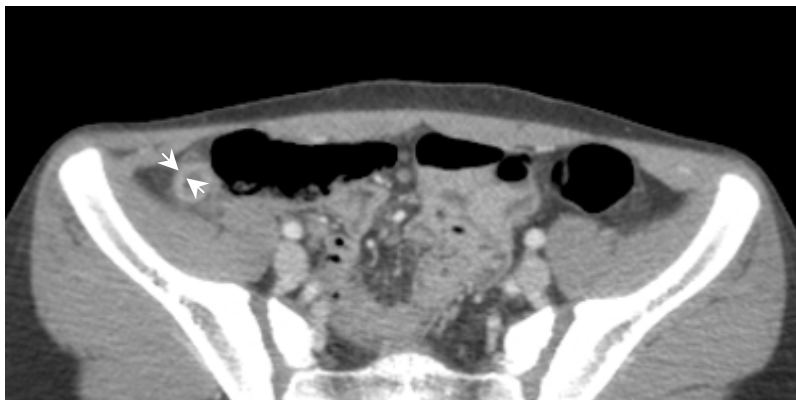
1. appendiceal changes
2. cecal apical changes
3. inflammatory changes in the right lower quadrant

Most useful CT scan findings of the diagnosis of Acute Appendicitis<sup>1</sup>

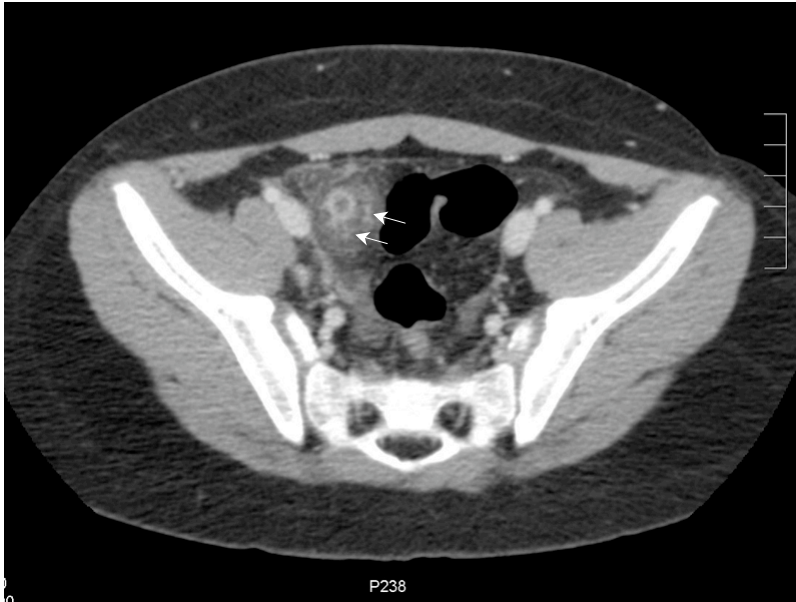
1. enlarged appendix (>6mm is abnormal)



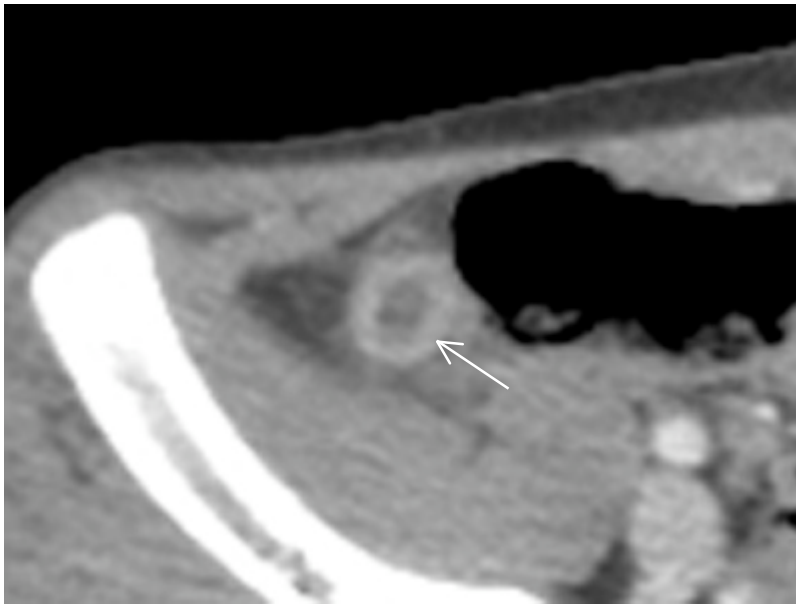
2. appendiceal wall thickening (>2mm is abnormal)



3. periappendiceal fat stranding



4. appendiceal wall enhancement



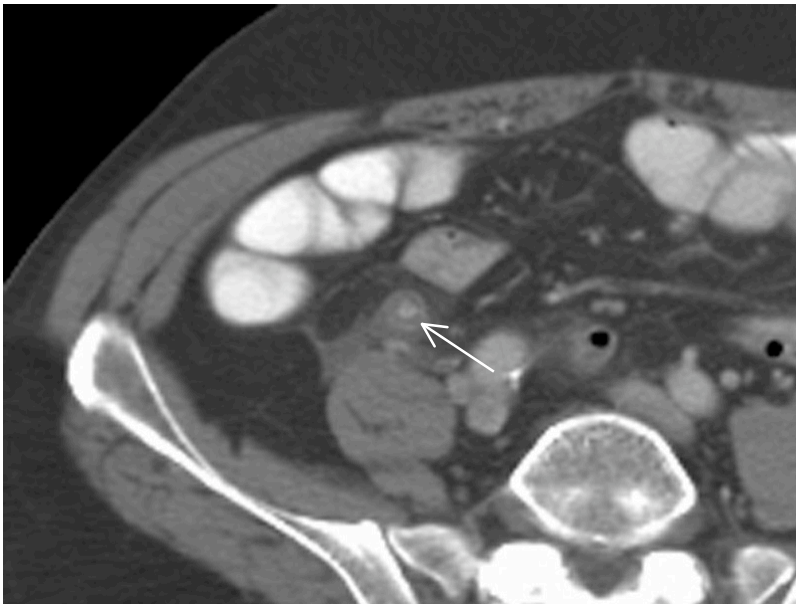
Possible findings in acute appendicitis

1. enlarged appendix
2. appendiceal wall thickening
3. appendiceal wall enlargement
4. periappendiceal fat stranding
5. focal cecal apical thickening

6. appendicolith (seen in 20-40% of patients with appendicitis<sup>4</sup>)



7. target structure (concentric thickening of the inflamed appendiceal wall)



8. extraluminal air

9. intraluminal air



10. phlegmon
11. arrowhead sign
12. cecal bar
13. abscess
14. lymphadenopathy
15. terminal ileum wall thickening
16. colonic wall thickening

Is there a need for contrast?

90% sensitive for appendicitis with no contrast

98% sensitive for appendicitis with IV contrast

Why is appendicitis missed on CT scan?

- Most common reason for a false-negative CT scan in a patient with acute appendicitis is a paucity of intraabdominal fat which serves as a natural contrast agent.<sup>3</sup>
- Dilation of the small bowel also makes the diagnosis of appendicitis difficult.
- Deceiving clinical history
- Lack of contrast

Equivocal Findings<sup>2</sup>

- When acute appendicitis is present, there are usually **multiple** tomographic findings suggesting appendicitis such as wall thickening, appendiceal enlargement, appendicolith, appendiceal wall enhancement, or fat stranding.
- When appendicitis absent, there are usually **no** tomographic findings of appendicitis.
- An **equivocal result** is defined as a study where there is only one tomographic finding or a questionable finding to suggest appendicitis.

- Appendicitis was seen in only 50% of patients if the appendix size was greater than 9mm if there were no other tomographic findings to suggest disease.
- Thirty percent of patients with equivocal CT scan findings of appendicitis will have the disease.

#### Common mimics of appendicitis

- Crohn's disease
- Pelvic inflammatory disease
- Pyelonephritis
- Renal and urinary tract obstruction
- Hemorrhagic ovarian cyst
- Right-sided diverticulitis
- Mesenteric adenitis
- Epiploic appendagitis
- Bowel ischemia
- Right-sided colon cancer

#### Uncommon mimics of appendicitis

- Mucocele of the appendix
- Ovarian vein thrombosis
- Ovarian dermoid
- Necrotic uterine leiomyoma
- Ovarian torsion
- Endometriosis
- Ruptured ectopic pregnancy
- Typhlitis
- Sigmoid colon diverticulitis
- Intussusception
- Pseudomembranous colitis
- Perforated peptic ulcer

#### References:

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