



FIGURE 356-3 Computed tomography with oral and intravenous contrast of acute appendicitis. There is thickening of the wall of the appendix and periappendiceal stranding (*arrow*).

specificity of 0.81. Ultrasonography, especially intravaginal techniques, appears to be most useful for identifying pelvic pathology in women. Ultrasonographic findings suggesting the presence of appendicitis include wall thickening, an increased appendiceal diameter, and the presence of free fluid.

The sensitivity and specificity of computed tomography (CT) are 0.94 and 0.95, respectively. Thus, CT imaging, given its high negative predictive value, may be helpful if the diagnosis is in doubt, although studies performed early in the course of disease may not have any typical radiographic findings. Suggestive findings on CT examination include dilatation >6 mm with wall thickening, a lumen that does not fill with enteric contrast, and fatty tissue stranding or air surrounding the appendix, which suggests inflammation (**Figs. 356-3 and 356-4**). The presence of luminal air or contrast is not consistent with a diagnosis of appendicitis. Furthermore, nonvisualization of the appendix is a nonspecific finding that should not be used to rule out the presence of appendiceal or periappendiceal inflammation.

SPECIAL PATIENT POPULATIONS

Appendicitis is the most common extrauterine general surgical emergency observed during pregnancy. Early symptoms of appendicitis



FIGURE 356-4 Appendiceal fecalith (*arrow*).

such as nausea and anorexia may be overlooked. Diagnosing appendicitis in pregnant patients may be especially difficult because as the uterus enlarges the appendix may be pushed higher along the right flank even to the right upper quadrant or because the gravid uterus may obscure typical physical findings. Ultrasonography may facilitate early diagnosis. A high index of suspicion is required because of the effects of unrecognized and untreated appendicitis on the fetus. For example, the fetal mortality rate is four times greater (from 5 to 20%) in patients with perforation.

Immunocompromised patients may present with only mild tenderness and may have many other disease processes in their differential diagnosis, including atypical infections from mycobacteria, *Cytomegalovirus*, or other fungi. Enterocolitis is a concern and may be present in patients who present with abdominal pain, fever, and neutropenia due to chemotherapy. CT imaging may be very helpful, although it is important not to be overly cautious and delay operative intervention for those patients who are believed to have appendicitis.

TREATMENT ACUTE APPENDICITIS

In the absence of contraindications, a patient who has a strongly suggestive medical history and physical examination with supportive laboratory findings should undergo appendectomy urgently. In this instance, imaging studies are not required. In patients in whom the evaluation is suggestive but not convincing, imaging and further study are appropriate. Pelvic ultrasonography is indicated in women of childbearing age. Thereafter, CT may accurately indicate the presence of appendicitis or other intraabdominal processes that warrant intervention. Whenever the diagnosis is uncertain, it is prudent to observe the patient and repeat the abdominal examination over 6–8 h. Any evidence of progression is an indication for operation. Narcotics can be given to patients with severe discomfort, especially if the first abdominal examination is completed before drugs are administered.

All patients should be fully prepared for surgery and have any fluid and electrolyte abnormalities corrected. Either laparoscopic or open appendectomy is a satisfactory choice for patients with uncomplicated appendicitis. Management of those who present with a mass representing a phlegmon or abscess can be more difficult. Such patients are best served by treatment with broad-spectrum antibiotics, drainage if there is an abscess >3 cm in diameter, and parenteral fluids and bowel rest if they appear to respond to conservative management. The appendix can then be more safely removed 6–12 weeks later when inflammation has diminished.

Laparoscopic appendectomy now accounts for approximately 60% of all appendectomies. Laparoscopic appendectomy is associated with less postoperative pain and, possibly, a shorter length of stay and faster return to normal activity. Patients who undergo laparoscopic appendectomy also appear to have fewer wound infections, although the risk of intraabdominal abscess formation may be higher. A laparoscopic approach may also be useful when the exact diagnosis is uncertain, yet direct visualization and exploration of the abdomen are needed. A laparoscopic approach may also facilitate exposure in those who are very obese. A thorough examination of the abdomen is indicated if the appendix appears normal at operation, which can be expected to occur in up to 15–20% of cases.

Absent complications, most patients can be discharged within 24–40 h of operation. The most common postoperative complications are fever and leukocytosis. Continuation of these findings beyond 5 days should raise concern for the presence of an intraabdominal abscess. The mortality rate for uncomplicated, nonperforated appendicitis is 0.1–0.5%, which approximates the overall risk of general anesthesia. The mortality rate for perforated appendicitis or other complicated disease is much higher, ranging from 3% overall to a high as 15% in the elderly.