

Clinical Practice Committee Statement

Utility of Ultrasound in the Initial Evaluation of Adult Patients with Suspected Appendicitis (9/7/2013)

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Clinical Policy Statement

Utilization of ultrasound (US) as the initial imaging screening tool for appendicitis in adults can reduce the need for computer tomography (CT) and exposure to ionizing radiation.

Summary

Acute appendicitis continues to be the most frequent cause of acute abdominal emergency in the United States. However, the diagnosis of appendicitis is challenging. As a result, it is common to obtain preoperative imaging to confirm the diagnosis. Current literature indicates that abdominal computed tomography (CT) is superior to ultrasound (US) for diagnosing acute appendicitis.¹ Despite its reported superiority, abdominal CT exposes a predominantly young population with this disease to ionizing radiation. Additional complications and undesirable consequences of abdominal CT include allergic reactions, acute kidney injury from intravenous contrast, delays due to the administration of oral contrast, and higher costs. In contrast to abdominal CT, US provides imaging that is free of radiation exposure, eliminates the need for intravenous or oral contrast, and allows results to be obtained expeditiously. Importantly, the diagnostic capability of US is operator-dependent; thus, results can be affected by the location of the appendix, overlying bowel and the presence of peritoneal signs.² Patients with a high BMI are thought to be poor candidates for ultrasound.¹³ It is difficult to validate this assumption as those patients with high BMI are routinely excluded from these studies. While US is the standard initial imaging modality of choice for pediatric patients with suspected appendicitis¹, the utility of US in the adult patient with suspected appendicitis is less clear.

Historically, the sensitivity of US for appendicitis ranged from 68% to 83%.^{1,2,5,7} Recent literature indicates the specificity of graded compression US in adults ranges from 86 to 97%.^{2,3} The sensitivity and specificity of US further improves when a thickened appendix with local transducer tenderness and peri-appendiceal fat infiltration are found on US.⁶ These positive findings indicate that the patient will likely have appendicitis with a positive predictive value of 88% to 95%.^{2,3,4,5} Also to note, patients with non-visualization of the appendix have a low incidence of appendicitis (5.3%).¹² US is also the imaging modality of choice in evaluating pregnant patients with suspected appendicitis in the first trimester. However, it is not very useful in second and third trimesters due to difficulty in identifying the appendix.^{1,14}

Utilizing US as the first imaging modality for the diagnosis of appendicitis can significantly reduce the number of CT scans performed.^{8,9,10,11,12} Patients with a non-visualized appendix on US may benefit from observation. CT scans should be obtained when clinically indicated in order to minimize unnecessary patient exposure to ionizing radiation.

