

The role of imaging in acute appendicitis and the need for histopathologic validation

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With increasing availability of diagnostic imaging, the workup and treatment of appendicitis is shifting from a settled disease process to one of controversy. As appendicitis is the most common surgical disease, its workup must be efficient, cost effective, and accurate. The presentation of fever, leukocytosis and right lower quadrant pain is a common presentation for a patient taken to the operating room for appendectomy. However, we know from decades of research, using clinical examination alone, the negative appendectomy rate can be as high as 20% which has historically been the acceptable negative appendectomy rate (1). Is this still acceptable?

The authors of “Histopathological correlations of appendectomy: a clinical audit of a single center” presents a 1-year series that highlights an 11% negative appendectomy rate despite the selective use of ultrasound and computed tomography (CT). In their review, it appears that CT imaging, when performed, was very accurate and that ultrasound was seldom a definitive modality. While some have advocated its use—especially in the pediatric setting—it is our experience that even in trained operator’s hands, ultrasound can confound the clinical picture (2). In this review, ultrasound was inconclusive in 44% of cases and provided an accurate diagnosis in only 28% of patients.

The accuracy of CT imaging in this series is not isolated. One meta-analysis showed that even when non-contrast CT imaging was used, there was still a 93% sensitivity and a 96% specificity for diagnosing acute appendicitis (3). As such, many studies have demonstrated a negative appendectomy rate of less than 2% in patients who have undergone CT imaging (4). It is our practice that all patients undergo CT imaging when appendicitis is suspected with rare exception. This includes all female patients—who,

as illustrated in this paper, are at an increased risk for undergoing a negative appendectomy. CT imaging allows for exclusion of intra-abdominal gynecologic pathology, confirmation of appendicitis, and surgical planning such as localization, orientation, exclusion of masses, and exclusion of abscesses.

Another strategy that has undergone significant study is nonsurgical management of acute appendicitis. In the last few years, some studies have demonstrated that an initial trial of IV antibiotics and bowel rest—even prior to appendectomy—may decrease rates of perforation and allow for a quicker recovery time (5). Additionally, some European trials have shown promise of appendicitis being treated solely with antibiotics (6). Though there are many problems with these trials, including significant crossover and appendicitis recurrence, this does underscore that in cases where the diagnosis of appendicitis is in question, an initial observation of antibiotics and bowel rest may be reasonable to avoid a negative appendectomy.

In their discussion the authors address the significant cost burden associated with negative appendectomy. While CT imaging is costly, surgery and subsequent hospitalization are more expensive to the healthcare system. If the negative appendectomy rate can be reduced significantly, there would be a decrease in morbidity by avoiding unnecessary surgery and quite possibly a cost savings. Aside from the cost savings, some recent data has shown that those who undergo appendectomy may be predisposed to intestinal pathology later in life such as fulminate *Clostridium difficile* (7). These issues certainly demonstrate the value of continued histopathologic examination to confirm the diagnosis of appendicitis. Nevertheless, we still do not know what is the best short and long-term solution to this age-old problem.

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Footnote

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