



# Commentary: Abdominal Ultrasound and Its Diagnostic Accuracy in Diagnosing Acute Appendicitis: A Meta-Analysis

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**Keywords:** appendicitis, meta-analysis, ultrasound, abdomen, diagnosis

## A Commentary on

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**Edited by:**

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**Specialty section:**

This article was submitted to  
Visceral Surgery,  
a section of the journal  
Frontiers in Surgery

**Received:** 04 August 2021

**Accepted:** 24 September 2021

**Published:** 20 October 2021

**Citation:**

Wu J, Zhao A and Jin Y (2021)  
Commentary: Abdominal Ultrasound  
and Its Diagnostic Accuracy in  
Diagnosing Acute Appendicitis: A  
Meta-Analysis. *Front. Surg.* 8:753405.  
doi: 10.3389/fsurg.2021.753405

## Abdominal Ultrasound and Its Diagnostic Accuracy in Diagnosing Acute Appendicitis: A Meta-Analysis

by Fu, J., Zhou, X., Chen, L., and Lu, S. (2021). *Front. Surg.* 8:707160. doi: 10.3389/fsurg.2021.707160

We read with great interest the manuscript of Fu et al. entitled “abdominal ultrasound and its diagnostic accuracy in diagnosing acute appendicitis: a meta-analysis” (1). The authors highlight the significant accuracy of diagnosis of abdominal ultrasound in patients with suspected acute appendicitis. We strongly agree with the authors about the importance of the abdominal ultrasound, but we would like to pay attention to several important missing aspects in the article.

First, in this meta-analysis (1), the author depicted that only studies adopting histopathology reports as the reference standard were included. But the reference standard of the included study was histopathology or 3 months of medical record follow-up if surgery was not performed (2), which was not consistent with what the author depicted. In the study by Tyler et al. (3), patients were classified as having appendicitis based on pathologic diagnosis, if available. If no pathologic diagnosis was available, a final CT read was used to classify the patient. So it might be not appropriate to include the two studies above in this meta-analysis.

Second, in the study by Khan et al. (4), a total of 223 pediatric appendectomies were performed, and the histopathology of eight was normal; 192 of 215 cases of appendicitis confirmed by histopathology were diagnosed by ultrasound, so the sensitivity of abdominal ultrasound in evaluating appendicitis by ultrasound in the study was 89%, which was different from the 86% reported by Fu et al.

Finally, in this meta-analysis, the overall sensitivity, specificity, positive likelihood ratio, and negative likelihood ratio were estimated at 77%, 60%, 2.62, and 0.45, respectively, demonstrating that abdominal ultrasound has a high false-positive rate (40%) and slightly high false-negative rate (23%) and should not be used for exclusion or inclusion of appendicitis, as the false-negative cases may progress to perforated appendicitis and peritonitis and result in a critical condition. But, in conclusion, the author demonstrated that abdominal ultrasound shows significant accuracy of

diagnosis in patients with suspected acute appendicitis and is an effective diagnostic alternative to reduce the rate of unnecessary surgeries in acute appendicitis. We consider that the conclusion might be not appropriate. According to the overall results, patients suspected of appendicitis should be referred to more sensitive and specific diagnostic procedures, such as CT or MRI.

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## AUTHOR CONTRIBUTIONS

JW: concept and designed the study. AZ: drafting of the manuscript. YJ: proofreading, final editing, and guarantor of the manuscript. All authors read and approved the final version of the manuscript.

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