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**1/25/10**

P: In patients requiring abdominal CT for non-traumatic abdominal pain

I: Is withholding the use of oral contrast

C: Compared to routine use of oral contrast

O: Associated with a decrease in diagnostic accuracy?

<b>Article</b>	<b>Study Group</b>	<b>Patient Population</b>	<b>Key Results</b>	<b>Conclusions</b>	<b>Limitations</b>
A systematic review of whether oral contrast is necessary for the computed tomography diagnosis of appendicitis in adults. Anderson et al. 2005. The American Journal of Surgery	Review of 23 prospective (19) and retrospective (4) studies assessing CT scan for the diagnosis of appendicitis	3,474 patients undergoing CT scanning for suspected appendicitis	Oral contrast no oral contrast, sensitivity 92% vs 95%, specificity 94% vs 97%, PPV 89% vs 97%, NPV 96% vs 96%	The broader use of CT without oral contrast may be a useful approach in suspected appendicitis	-Studies all vary in design, inclusion and exclusion criteria, CT scanning technique, radiologic criteria, and scan fields. -Unenhanced CT had superior diagnostic accuracy compared with oral contrast.

<p>Rapid CT diagnosis of acute appendicitis with IV contrast material. Mun et al. 2005. Emergency Radiology</p>	<p>Retrospective review of patient studies presenting to the emergency room over an 8 month period for abdominal pain</p>	<p>173 patients 17 or older with IV contrast enhanced CT with the word appendicitis in either the clinical indication or radiologic impression</p>	<p>59 CT diagnoses of acute appendicitis were made, 56 of which were histologically verified. 114 CT diagnoses were negative for appendicitis. Corresponding to a sensitivity of 100%, specificity of 97%, PPV of 95%, and NPV of 100%</p>	<p>Using IV contrast alone is highly sensitive and specific in confirming and excluding acute appendicitis.</p>	<p>-35 eligible patients were lost to follow up and could have conceivably presented elsewhere with appendicitis. -Initial study retrieval excluded all cases where appendicitis was not specifically used, possibly eliminating atypical presentations.</p>
<p>Prospective comparison of helical CT of the abdomen and pelvis without and with oral contrast in assessing acute abdominal pain in adult Emergency Department patients. Lee et al. 2006. Emergency Radiology</p>	<p>Prospective study of patients presenting to the Emergency Room over a 13 month period undergoing a CT abdomen/pelvis.</p>	<p>118 patients presenting with acute abdominal pain already undergoing a CT abdomen/pelvis, of which 100 completed the protocol.</p>	<p>For 21 patients (79%) there was clinically significant disagreement between CECT and NECT interpretations. After unblinded consensus review, 18 of the 21 were primarily related to interobserver variability.</p>	<p>NECT can be as accurate as CECT in the diagnosis of many etiologies of abdominal pain, and post hoc analysis suggests that discrepancies are largely due to interobserver variation rather than technique of bowel opacification.</p>	<p>-No true final diagnosis was made in many of the cases that did not go for surgery or definitive follow up. -The amount of clinical information may have differed and influenced interpretations. -Logistical factors limited sampling to 2 cases per daytime weekday shift.</p>

<p>CT scan for suspected acute abdominal process: Impact of combinations of IV, oral, and rectal contrast. Hill et al. 2010. World Journal of Surgery</p>	<p>Retrospective review of all hospital inpatients who underwent urgent or emergent abdominal/pelvic CT with any combination of contrast, IV, oral, rectal, or unenhanced for a suspected acute abdominal process</p>	<p>661 patients over a 3 month period at 1 hospital</p>	<p>IV contrast only (54.2%) sensitivity of 92.5%. IV and oral (22.2%) sensitivity of 94.6%. Unenhanced CT (16.2%) sensitivity of 92.5%. Oral contrast only (7%) sensitivity of 93.5%.</p>	<p>No significant difference, CT contrast administration in critically ill hospitalized patients is not necessary to accurately diagnose an acute abdominal process.</p>	<p>-Included inpatients only. -Excluded those suspicious for appendicitis or diverticulitis. -Cannot make conclusions regarding clinical decisions influencing the use of the various contrast agents.</p>
<p>Diagnostic Accuracy of Noncontrast Computed Tomography for Appendicitis in Adults: A Systematic Review. Hilbczuk et al. 2010. Annals of Emergency Medicine</p>	<p>Systematic review including 7 studies, that assessed the diagnostic accuracy of noncontrast CT for acute appendicitis in adults</p>	<p>1,060 patients who underwent a noncontrast enhanced CT for suspected appendicitis</p>	<p>Pooled data showed a sensitivity of 92.7% and specificity of 96.1%</p>	<p>The diagnostic accuracy of noncontrast CT for the diagnosis of acute appendicitis in the adult population is adequate for clinical decision making in the ED setting.</p>	<p>- a number of studies were omitted because they were unable to confirm length of follow up which may have sig changed sen/spec if included - no comparison with contrast scans</p>

**Clinical Bottom Line:** Withholding the use of oral contrast in the evaluation of non-traumatic acute abdominal pain in the Emergency Department setting does not significantly reduce diagnostic accuracy. However, increased experience and

cooperation with each institution's Radiology Department will play a critical role in the implementation of such a protocol.

**Effect of oral contrast for abdominal computed tomography on emergency department length of stay. Schuur et al. 2009. Emergency Radiology.**

Retrospective cohort of adult patients visiting an academic ED over 13 wk period. 20,464 visits, of which 1,806 underwent an CTAP. Half way through the study period a protocol change was implemented, in which routine use of OC was eliminated for patients undergoing CTAP. Among all ED visits there was no change in LOS. Among ED visits where a CTAP was performed, LOS decreased by 30 minutes (324 to 297). This only included a 30% (42.5% to 12.2%) absolute reduction in OC usage, since many of the CTAPs at that institution were for trauma and were already done without OC.

**Patient encounter time intervals in the evaluation of emergency department patients requiring abdominopelvic CT: oral contrast versus no contrast. Huynh et al. 2004. Emergency Radiology.**

Retrospective evaluation of all adult patients who had a CTAP for abdominal pain during a 30 day period at a high volume regional medical center. Excluded trauma, pediatrics, and pregnant. 43 underwent NECT for abdominal pain other than R/O renal colic and 81 underwent CECT (oral only). Ordering CT to scan 104 to 172 min, arrival to disposition 358 to 599min.