STRONG CHILDREN'S RESEARCH CENTER

Summer 2012 Research Scholar

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ABSTRACT

Title**:** **The Effects of Preoperative Imaging on Surgical Outcomes for Pediatric Appendicitis Patients**

Background: Acute appendicitis is the most common pediatric surgical emergency in America. The necessity for making a prompt and accurate diagnosis has driven the increased utilization of computed tomography (CT) and ultrasound (US) imaging. The value of current imaging practices is unclear, however, as there is concern that an overreliance on radiographic imaging may do more harm than good. We hypothesized that a combined US/CT strategy is not inferior in diagnostic performance to a CT-only approach and can reduce radiation exposure.

Objective: We conducted a 5-year retrospective review of pediatric appendectomy patient records from 1/2007 to 12/2011 to compare the outcomes associated with different diagnostic imaging protocols for suspected appendicitis in a pediatric population who have subsequently undergone appendectomy.

Results: A total of 762 patients between ages of 10 y.o. and 18 y.o. from Jan. 1, 2007 to Dec. 31, 2011 have undergone appendectomy at the URMC, and 586 appendectomy patients met our inclusion criteria. Implementation of a staged US/CT imaging protocol resulted in a decrease in the rate of CT utilization as the primary imaging modality for suspected appendicitis from 49.3% to 18.4%. There was a higher rate of negative appendectomy (NA) for girls during the Early period (13.3%) as compared to Late (4.88%; $p=0.0255$). This difference is not observed for boys. There was no difference in NA rates between those who had imaging studies performed and those who did not for boys or girls. The use of CT or US as the primary imaging modality did not lead to a difference in NA rates for either boys or girls.

Conclusion: By evaluating children with suspected appendicitis primarily with US and only using CT scans to follow-up on equivocal US results, it is possible to reduce the amount of radiation children are exposed to while achieving equivalent outcomes.