

RISK STRATIFICATION IN PEDIATRIC PERFORATED APPENDICITIS: PROSPECTIVE CORRELATION WITH OUTCOMES AND RESOURCE UTILIZATION

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Purpose: Despite a wide spectrum of severity, perforated appendicitis in children is typically considered a single entity for purposes of outcomes reporting and care reimbursement. We performed a prospective cohort study to validate a risk stratification system that correlates with outcomes and resource utilization.

Methods: A prospective study was conducted of all children less than 18 years of age, operated for perforated appendicitis between May 2015 and December 2016 at a tertiary freestanding university children's hospital. At surgery, patients were classified into one of four categories: I. early or contained perforation, II. Contained abscess with no diffuse peritonitis, III. Diffuse peritonitis with no dominant abscess, IV. Diffuse peritonitis with one or more dominant abscesses. All patients were treated on a clinical pathway with strict criteria for antibiotic utilization, discharge, use of total parenteral nutrition (TPN), post-operative imaging, and post-operative interventions. A number of outcomes and resource utilization measures were analyzed using Fischer's exact test, Kruskal-Wallis test, and logistic regression. A p value < 0.05 was deemed significant.

Results: During the study period, 122 patients completed treatment, and 100% had documented follow-up at a median of 25 days after operation. Laparoscopic appendectomy was completed in 96% of patients. The results are shown in the table. Hospital stay, duration of antibiotics, TPN utilization, and the incidence of post-operative imaging increased progressively with increasing appendicitis severity. Post-operative abscess occurred almost exclusively in the most severe category.

Conclusion: Outcomes and resource utilization strongly correlate with increasing severity of perforated appendicitis. Post-operative abscesses, additional imaging, and invasive procedures occur disproportionately in patients who present with diffuse peritonitis and abscess formation. This stratification allows risk-adjusted outcome reporting and care reimbursement.

OUTCOME	Category of Perforated Appendicitis				P
	I N= 25	II N=46	III N= 13	IV N= 38	
Total Length of Hospital Stay [including readmission]; median days (IQR)	4 (3,6)	5 (4,6)	6 (5,8)	7 (5,12)	0.001
Wound Infection; n (%)	1	3 (7)	0	2(5)	1
Post-Operative Abscess; n (%)	0	1 (2)	0	11 (29)	< 0.001
Readmission; n (%)	0	2 (4)	0	2 (5)	0.796
RESOURCE UTILIZATION					
Duration of Post-operative Antibiotics; median days (IQR)	3 (2,4)	4 (3,6)	5 (5,6)	6 (4,8)	0.001