



## Resource savings and outcomes associated with outpatient laparoscopic appendectomy for nonperforated appendicitis<sup>☆,☆☆</sup>



Lori A. Gurien<sup>a,b,\*</sup>, Jeffrey M. Burford<sup>a</sup>, Patrick C. Bonasso<sup>a,b</sup>, Melvin S. Dassinger<sup>a</sup>

<sup>a</sup> Department of Pediatric Surgery, Arkansas Children's Hospital, 1 Children's Way, Slot 837, Little Rock, AR 72202, USA

<sup>b</sup> Department of Pediatric Surgery, Arkansas Children's Hospital Research Institute, 13 Children's Way, Little Rock, AR 72202, USA

### ARTICLE INFO

#### Article history:

Received 31 October 2016

Received in revised form 10 March 2017

Accepted 12 March 2017

#### Key words:

Appendectomy

Appendicitis

Cost

Outpatient

Pediatric

Resources

### ABSTRACT

**Background:** Postoperative admission for acute appendicitis utilizes health care system resources. We evaluated outcomes and hospital charges for children with nonperforated appendicitis who underwent outpatient laparoscopic appendectomy.

**Methods:** A retrospective chart review was performed for patients  $\leq 18$  years old who underwent laparoscopic appendectomy for acute appendicitis in 2015. Patients were categorized into discharge from postanesthesia care unit (PACU) (outpatient), admission for  $<24$ -h, and admission for  $>24$ -h. Continuous variables were compared using analysis of variance and categorical variables were compared using chi-square test, with  $p < 0.05$  considered significant.

**Results:** Of the 171 patients identified, 63 (37%) were discharged from the PACU, 94 (55%) were admitted  $<24$ -h, and 14 (8%) were admitted  $>24$ -h. There were no differences in postoperative emergency department/clinic visits, complications, or readmissions. Hospital charges for admission  $<24$ -h and  $>24$ -h were \$1007 and \$2237 more per patient than the PACU-discharge group, respectively. Outpatient laparoscopic appendectomies became more common over time, occurring in only 20% of patients with acute appendicitis in the first quarter of the year versus 49% of patients in the last quarter.

**Conclusion:** Outpatient laparoscopic appendectomy for nonperforated appendicitis in children is a safe practice that decreases length of stay and hospital charges. Adoption of an outpatient strategy allows for better standardization of care and can lead to savings in health care resources.

**Level of evidence:** III (Treatment: retrospective comparative study).

© 2017 Elsevier Inc. All rights reserved.

Laparoscopic procedures for management of many surgical conditions have become routinely performed as outpatient procedures. However, patients who undergo laparoscopic appendectomy for acute appendicitis are still often observed or admitted to the hospital postoperatively. Appendicitis is the most common acute surgical condition in children; therefore, postoperative admission for this disease process utilizes a large amount of resources of the health care system [1–3].

Discharging patients home on the same day of surgery without admission to the hospital can result in significant cost savings [3–7]. At our hospital, we transitioned our pathway to manage acute appendicitis as an outpatient procedure, discharging patients home directly from the postanesthesia care unit (PACU). The purpose of our study was to

evaluate outcomes and hospital charges for pediatric patients who underwent outpatient laparoscopic appendectomy for nonperforated appendicitis compared to those admitted to the hospital.

### 1. Methods

Beginning in the second half of the 2014 calendar year, same day discharges were implemented for patients with acute appendicitis. Charts of all pediatric patients ( $\leq 18$  years) who underwent appendectomy with one of five pediatric surgeons at a freestanding children's hospital during the 2015 calendar year were reviewed. The pediatric surgeons, all university-employees in a single practice, were the leading drivers in the change toward outpatient appendectomies. Subjects were excluded for a diagnosis other than appendicitis, if the appendix was found to be perforated or gangrenous, or if the procedure was not performed laparoscopically. Subjects were categorized into three groups: discharge from PACU (outpatient), admission for  $<24$  h, and admission for  $>24$  h.

At our hospital, patients admitted to the floor are transferred from the emergency department (ED) to the floor, or go from the ED to the operating room (OR), and are then transferred to the floor at the

**Abbreviations:** ED, emergency department; OR, operating room; PACU, postanesthesia care unit.

<sup>☆</sup> Conflicts of Interest: None.

<sup>☆☆</sup> Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

\* Corresponding author at: Department of Pediatric Surgery, Arkansas Children's Hospital, 1 Children's Way, Slot 837, Little Rock, AR 72202, USA. Tel.: +1 501 364 1446; fax: +1 501 364 5399.

E-mail address: [lgurien@gmail.com](mailto:lgurien@gmail.com) (L.A. Gurien).

conclusion of the procedure. While the protocol at our hospital states that patients diagnosed with appendicitis receive a fluid bolus and intravenous antibiotics immediately in the ED, patients admitted to the hospital receive these interventions either in the ED or after they arrive to the hospital floor. In contrast, patients discharged directly from the PACU receive the fluid bolus and antibiotics in the ED and are brought directly to the OR. After the procedure, these patients are recovered in the PACU and discharged home without being transferred to the hospital floor. Patients who do not meet standard criteria for discharge, such as tolerating oral intake and having adequate pain control, are not discharged home from the PACU and are instead observed overnight in the hospital.

The on-call surgeon has access to a dedicated operating room for add-on cases with procedures beginning at 7:30 AM. As the call room is for general surgery cases only, the general surgery team decides the order of cases. The surgeon on-call when the consult is seen is the one who will operate on those patients either the same day or the following day; therefore, surgeons are not scheduled for elective cases or clinic on their postcall days. The availability of an operating room for add-on cases minimizes the number of nonurgent cases performed at night, including appendectomies.

Information on demographics, time of admission from ED, operative findings, hospital course, postoperative visits, readmissions, complications, and hospital charges was collected. Length of stay was calculated based on time of admission from ED to hospital or OR, and time of discharge from hospital. Continuous variables were compared using analysis of variance or Student's t test, and categorical variables were compared using chi-square test. *P*-values <0.05 were considered significant.

**2. Results**

Of the 294 children who underwent appendectomy, 171 patients were identified as having acute appendicitis (Fig. 1), with 63 (37%)

discharged from the PACU, 94 (55%) admitted <24 h, and 14 (8%) admitted >24 h. There were no differences in age or gender of patients who underwent outpatient procedures compared to those admitted to the hospital (Table 1).

Postoperative visits to the emergency department or clinic were similar between the two groups (Table 2). Only one complication was identified, which was a superficial wound infection seen in a patient discharged from the PACU. No patients were readmitted from the PACU-discharge group, while a single readmission occurred in the observation <24 h group for dehydration. Reasons patients stayed >24 h were for surgeon preference (*N* = 6), medical reasons (comorbidities, nausea, vomiting, pain) (*N* = 4), and social reasons (*N* = 4). Hospital charges for observation and admission were \$1007 and \$2237 more per patient than the PACU-discharge group, respectively.

Patients were more likely to undergo an outpatient procedure if the surgery team was consulted during the day between the hours of 6 AM and 6 PM, and were more likely to be observed/admitted to the hospital if the surgery team saw them in the ED at night between 6 PM and 6 AM (Fig. 2). Outpatient procedures became more common over time. In the first quarter of 2015, only 20% of patients with acute appendicitis were discharged home from the PACU (Fig. 3). By the last quarter of the year, 49% of children underwent outpatient laparoscopic appendectomies. We reviewed the data from the 2016 calendar year and found that of the 166 children who underwent laparoscopic appendectomy for acute appendicitis in 2016, 69 (42%) were discharged from the PACU.

**3. Discussion**

Laparoscopic appendectomy for acute appendicitis is a safe procedure with a low complication rate. Only 1 complication and 1 readmission were seen in our cohort of 171 patients managed surgically for acute appendicitis. Still, there is hesitancy among some surgeons to perform this procedure on an outpatient basis. While appendicitis is an acute surgical condition, it is no longer considered an emergency, with

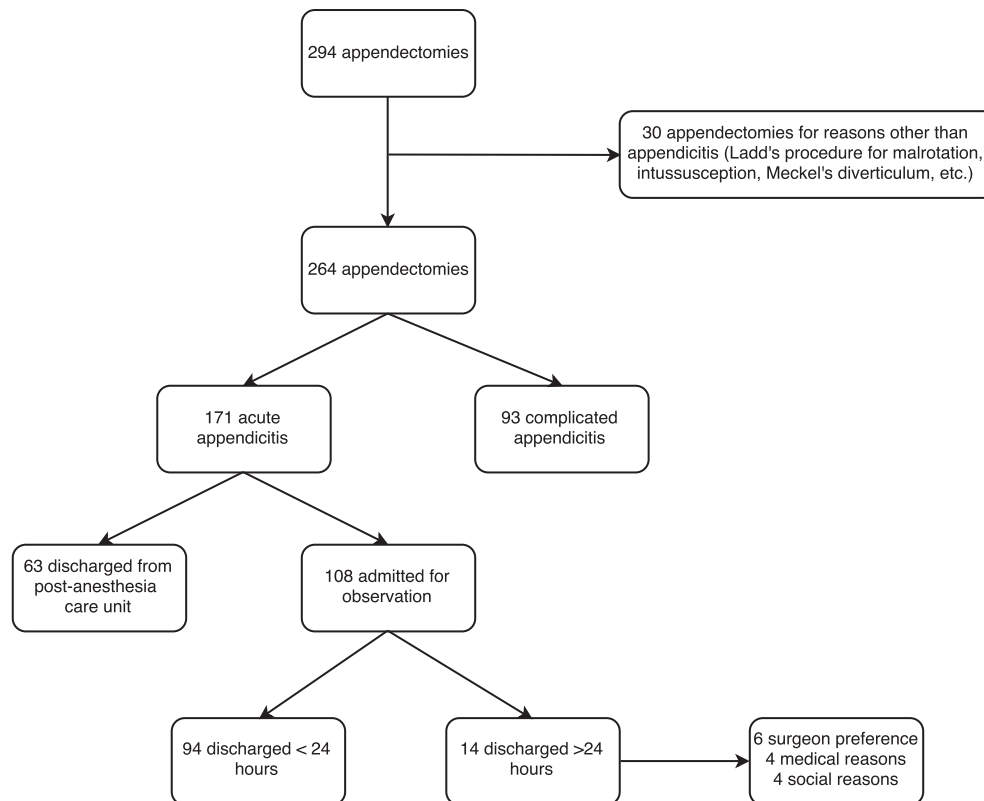


Fig. 1. Flow diagram of pediatric patients who underwent appendectomy during the study period.

Download English Version:

<https://daneshyari.com/en/article/8810677>

Download Persian Version:

<https://daneshyari.com/article/8810677>

[Daneshyari.com](https://daneshyari.com)