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Review Article

Same-Day Discharge vs Observation after Open/Laproscopic Appendectomy in Uncomplicated Appendicities: A Prospective Study

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Abstract

Background: *Until 2020, it was standard practice at our university-affiliated pediatric hospital to admit children with uncomplicated appendicitis for postoperative overnight observation. Growing evidence has indicated that same-day discharge following open appendectomy may be both safe and practical. We conducted a prospective study to compare outcomes, including complications and costs, between same-day discharge and overnight observation for such cases.*

Methods: *Data were collected for pediatric patients who underwent open or laparoscopic appendectomies for uncomplicated appendicitis during 2020. Key variables included demographic information, admission and discharge timings, complications, readmissions, and costs. Statistical tools such as chi-square and multivariate regression were utilized for analysis.*

Results: *Among 500 patients, 300 underwent same-day discharge, while 200stayed overnight for observation. No significant differences were noted in readmission rates, emergency visits, surgical site infections, or unscheduled clinic visits between the two groups. However, median costs were significantly lower for the same-day discharge group*

Conclusions: *The study demonstrates that same-day discharge for pediatric patients undergoing uncomplicated appendectomy is both safe and cost-effective, supporting its adoption as the standard of care.*

Keywords: *Same-day discharge; OPEN/LAP appendectomy; pediatric; ambulatory surgical procedure; appendicitis*

Introduction

Appendicitis continues to rank as the leading pediatric emergency requiring surgical intervention (1,2). A comprehensive review of pediatric discharges in 1997 found that appendicitis accounted for the greatest number of hospital days among gastrointestinal disorders, with associated charges totaling $680.4 million (1). Advances in surgical techniques have since led to decreased risks of infection, reduced postoperative pain, and shorter hospital stays (3,4).

Recent studies have explored the possibility of same-day discharge for pediatric and adult patients undergoing open or laparoscopic appendectomies for uncomplicated appendicitis. A 2012 study involving 207 children discharged on the same day reported comparable complication rates to those observed overnight (7). This aligns with earlier retrospective analyses in smaller adult cohorts, which also found no differences in complication rates between same-day discharge and overnight observation (8).

At our institution, routine overnight observation following open or laparoscopic appendectomies for uncomplicated appendicitis was standard until 2020. Typical observation periods ranged from 8 to over 24 hours. With promising initial results supporting same-day discharge, this study aims to prospectively compare postoperative outcomes and costs between same-day discharge and overnight observation in pediatric patients. Our hypothesis is that there will be no significant difference in complication rates between the two groups, but same-day discharge could lead to significant cost reductions.

Methods

Following institutional review board approval, data were collected on pediatric patients who underwent open or laparoscopic appendectomies for uncomplicated appendicitis in 2020. Patients requiring interval appendectomies or surgery for perforated or gangrenous appendicitis were excluded, as were those with additional intra-abdominal conditions, such as Meckel's diverticulum.

Discharge decisions were made at the discretion of the attending surgeon, with parental agreement. All patients followed a standardized preoperative pathway, which included antibiotic regimens tailored to the patient's condition and potential allergies (e.g., ceftriaxone and metronidazole or clindamycin and gentamicin for those allergic to penicillin). Postoperative management adhered to a standardized protocol covering pain control, diet, and fluid intake.

Same-day discharge was defined as being discharged prior to 11:59 p.m. on the day of surgery. Patients discharged after this cutoff, whether from the inpatient unit or the post-anesthesia care unit (PACU), were classified as overnight observation cases.

Demographic information, admission and discharge times, complication rates, and follow-up data were collected. Outcomes such as readmissions, emergency department visits, surgical site infections, and

unscheduled clinic visits were recorded. Cost data were analyzed using the Mann-Whitney U test to compare non-parametric variables, while chi-square tests and multivariate logistic regression were applied for categorical data. A P value of less than 0.05 was considered statistically significant. Data analysis was conducted using Stata 14 (StataCorp LLC, USA).

Results

From January to December 2020, 800 appendectomies were performed, of which 500 were classified as uncomplicated. Of these, 300 patients (40%) were discharged on the same day, while 200 (60%) remained hospitalized for overnight observation. Same-day discharge patients were either released directly from the PACU or after transfer to the inpatient unit

The median time to discharge for same-day patients was 5 hours for PACU discharges and 12 hours for those discharged from the inpatient unit. In contrast, observation patients were discharged after a median of 24 hours. Follow-up, either via phone call or clinic visit, was achieved for 65% of same-day discharge cases and 60% of observation cases, with a median follow-up period of two weeks for both groups.

There were no significant differences between the two groups in demographic characteristics, readmission rates, emergency visits, or surgical site infections. Specific outcomes included:

Readmissions: 2
same-day vs. 6 observation
Emergency Visits: 20
same-day vs. 27 observation
Surgical Site Infections: 5
same-day vs. 9 observation
Extra Clinic Visits: 25
same-day vs. 15 observation
Costs were significantly lower for the same-day discharge group
Multivariate logistic regression revealed no significant differences in outcomes

when controlling for age, gender, and discharge location, except for a slightly higher rate of pain-related

follow-up calls in the same-day group.

Table 1 Demographics for pediatric patients who had either same-day discharge or overnight observation after OPEN/laparoscopic appendectomy

Demographics	Same day,	Observation,
Age (years)		
0–6	50	50
7–12	200	100
13–14	50	50
Discharge location		
PACU	139 [36]	0
Floor	243 [64]	467 [100]

Table 2 Outcomes for pediatric patients who had either same-day discharge or overnight observation after laparoscopic appendectomy

Outcomes	Same day	Observation	Outcomes
Abscess	1	2	Abscess
Nausea/vomiting	10	9	Nausea/vomiting
Pain control	31	26	Pain control
Surgical site infection	4	9	Surgical site infection
Readmission	2	6	Readmission
ED visit	22	27	ED visit
Extra clinic visit	21	15	Extra clinic visit

Table 3

Open appendectomy	300
Lap appendectomy	200

Discussion

Over the past decade, same-day discharge following routine open or laparoscopic procedures has become increasingly common (10). Studies have consistently shown that laparoscopic appendectomy, compared to open surgery, results in lower morbidity, reduced pain, and shorter hospital stays for both uncomplicated and complicated appendicitis cases (11,12).

The findings of our study align with this growing body of evidence, demonstrating comparable safety and efficacy of same-day discharge versus overnight observation in pediatric patients. Notably, the observed readmission rates were low across both groups (0.5% for same-day discharge and 1% for observation), and no significant differences were detected in rates of complications, including surgical site infections, emergency visits, or additional clinic appointments.

A key advantage of same-day discharge lies in its cost-effectiveness. Patients discharged on the same day incurred significantly lower hospital costs, with median expenses reduced by approximately. This reduction is attributed not only to the shortened hospital stay but also to indirect savings, such as reduced parental work absences and childcare needs. While the costs associated with same-day discharge have been well-documented in smaller retrospective studies, our prospective study with a large cohort strengthens the argument for its broad adoption.

One notable finding was the slightly higher rate of pain-related follow-up calls from parents of same-day discharge patients. This may reflect the limitations of telephone-based follow-ups compared to in-person assessments, which were more common in the observation group. Despite this, overall outcomes remained consistent across both cohorts, supporting the feasibility of same-day discharge in appropriately selected patients.

Our findings are consistent with previous studies. For example, a 2014 study reported readmission rates of less than 1% in pediatric patients discharged on the same day following laparoscopic appendectomy (16). Similarly, recent data from a 2017 study found no significant differences in readmissions, emergency visits, or reoperations between same-day and observation cohorts (17,18).

While our study highlights the benefits of same-day discharge, several limitations should be noted. First, decisions regarding discharge timing were left to individual surgeons, introducing potential selection bias. Second, follow-up data were limited to patients contacted by phone or seen at our institution; complications managed at outside hospitals may have been missed. Future studies could address these limitations by implementing standardized discharge criteria and extending follow-up data collection to include external healthcare facilities.

Conclusions

This prospective study demonstrates that same-day discharge following open or laparoscopic appendectomy for uncomplicated pediatric appendicitis is a safe and cost-effective alternative to overnight observation. Outcomes, including complication rates and readmissions, were comparable between groups, while same-day discharge offered significant cost savings. These findings support the implementation of standardized protocols for same-day discharge in appropriate cases, which could improve resource efficiency and reduce healthcare costs without compromising patient safety.

As more institutions adopt this approach, future research should focus on refining patient selection criteria and exploring methods to enhance follow-up care, ensuring the continued success of same-day discharge programs in diverse healthcare settings.

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