

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.JournalofSurgicalResearch.com

Society of Asian Academic Surgeons

Is less more? Laparoscopic versus open Ladd's procedure in children with malrotation



Mubina A. Isani, MD,^a Christopher Schlieve, MD,^a Jeremy Jackson, MD,^a
 Melissa Elizee, MD,^a Grace Asuelime, MS,^a David Rosenberg, BS,^a
 and Eugene S. Kim, MD^{a,b,*}

^a Division of Pediatric Surgery, Children's Hospital Los Angeles, Los Angeles, California

^b Department of Surgery, Keck School of Medicine, University of Southern California, Los Angeles, California

ARTICLE INFO

Article history:

Received 30 December 2017

Received in revised form

26 February 2018

Accepted 6 April 2018

Available online 11 May 2018

Keywords:

Malrotation

Ladd's

Laparoscopic

Volvulus

ABSTRACT

Background: With the advent of minimally invasive techniques, laparoscopic Ladd's procedure is increasingly used to treat children with malrotation, yet evidence regarding its safety and efficacy is lacking. We hypothesize that operative and postoperative outcomes with the open technique are superior to the laparoscopic Ladd's procedure.

Methods: We conducted a 5-y retrospective chart review of all patients who underwent Ladd's procedure at our institution from 2010–2015. Exclusion of patients included those with concomitant conditions, such as poor gut perfusion, significant reflux, tracheoesophageal fistula, failure to thrive requiring concomitant gastrostomy, and biliary atresia. Kruskal–Wallis and Mann–Whitney tests were used where appropriate.

Results: Between 2010 and 2015, of 130 patients who underwent Ladd's procedure, 77 met inclusion criteria. Sixty-two patients underwent initial open surgery, 15 patients underwent laparoscopy, seven of which were converted to open. Patients undergoing open surgery were younger compared to the laparoscopic groups. Thirty-three of the 77 malrotation patients (43%) presented with volvulus, 27 underwent open surgery, four had laparoscopic converted to open procedures, and two patients underwent laparoscopic Ladd's without incident. Laparoscopy resulted in increased operative time and clinic visits. Patients undergoing laparoscopic to open surgery had longer operative times, time to resume diet, and length of hospital stay. No difference was noted in complications among the groups.

Conclusions: Although minimally invasive approaches are becoming increasingly used, no evidence supports laparoscopic superiority over open Ladd's procedure. We found that open surgery was associated with shorter operating times and fewer clinic visits. Furthermore, laparotomy remains the favored procedure for patients presenting with volvulus.

© 2018 Elsevier Inc. All rights reserved.

Children's Hospital of Los Angeles, Los Angeles, California.

Presented at Society of Asian Academic Surgeons Conference on September 21, 2017, in Birmingham, AL.

* Corresponding author. Children's Hospital Los Angeles, 4650 Sunset Blvd, MS 100, Los Angeles, CA. Tel.: +1 323 361 8332; fax: +1 323 361 3534.

E-mail address: eugenekim@chla.usc.edu (E.S. Kim).

0022-4804/\$ – see front matter © 2018 Elsevier Inc. All rights reserved.

<https://doi.org/10.1016/j.jss.2018.04.016>

Introduction

Malrotation is a rare congenital intestinal anomaly with an incidence of 0.2%–1% in the pediatric population.¹ It results from errors in fetal intestinal rotation and fixation. Symptomatic patients with malrotation undergo an open Ladd's procedure, described by William E. Ladd in 1936.^{2,3} However, with the advancement of minimally invasive surgical techniques, the laparoscopic approach to the Ladd's procedure is increasingly used.

The potential benefits of laparoscopic surgery include better cosmesis secondary to smaller incisions, increased visualization, decreased risk of infection, and reduced length of stay. Potential disadvantages include difficulty with mobilization of the small bowel and decreased postoperative adhesion formation that theoretically put the patient at a greater risk of postoperative volvulus^{4–6} (Kinlin, 2017, The surgical management of malrotation: A Canadian Association of Pediatric Surgeons survey; Huntington, 2017, Comparing laparoscopic versus open Ladd's procedure in pediatric patients; Ferrero, 2017, Intestinal Malrotation and Volvulus in Neonates: Laparoscopy Versus Open Laparotomy; Ferrero, 2017, Intestinal Malrotation and Volvulus in Neonates: Laparoscopy Versus Open Laparotomy). Pediatric surgeons are polarized regarding laparoscopic versus open surgical approach to manage malrotation. Although some surgeons are using the laparoscopic approach more frequently, evidence regarding the safety and efficacy of this procedure is lacking.^{4,5,7–10}

We conducted a retrospective review of patients at our freestanding children's hospital to compare postoperative outcomes in patients undergoing laparoscopic versus open Ladd's procedure. We hypothesized that patients undergoing laparoscopic Ladd's procedure for malrotation have longer operative times, time to diet, length of stay, and greater incidence of postoperative volvulus.

Methods

After approval by the Institutional Review Board (#CHLA-15-00531), we conducted a 5-y retrospective chart review of patients (0–18 y) who underwent Ladd's procedures at Children's Hospital Los Angeles. Our primary goal was to investigate the differences in outcome between patients who undergo laparoscopic versus open Ladd's procedure. The primary outcomes we measured included operative time, time to resume diet, length of hospital stay, clinic visits, Emergency Department visits, readmission rates, and reoperation rates.

Patient selection and definitions

We conducted a 5-year retrospective chart review of all patients 0–18 years of age who underwent Ladd's procedure (defined per Current Procedural Terminology code 44055 and International Classification of Diseases-9 and International Classification of Diseases-10 codes 751.4 and Q43.3, respectively) at our institution from 2010–2015. Exclusion of patients included those with concomitant conditions, such as cyanotic

heart disease leading to poor gut perfusion, patients with failure to thrive requiring g-tube at the time of operation, significant reflux, tracheoesophageal fistula, and biliary atresia. Patients were defined as either undergoing laparoscopic Ladd's procedure, open Ladd's procedure, or laparoscopic converted to open (lap-open) Ladd's procedure.

Open versus laparoscopic techniques

Patients undergoing the open procedure underwent a traditional Ladd's procedure involving inspection and detorsion of the intestine, widening of the base of the mesentery, adhesiolysis of Ladd's peritoneal bands, and an appendectomy. Patients with malrotation who underwent laparoscopic management per surgeon's preference were included in this study. One patient was removed from the study who also underwent laparoscopic gastrostomy tube placement at the time of the Ladd's procedure. Patients who were converted from laparoscopic to open operation are included in this study.

Statistical analysis

Descriptive statistics were used to summarize and describe the distribution of continuous variables (expressed as mean \pm standard deviation) and categorical variables (expressed as percentages). Data outliers were eliminated by ROUT method with a Q-value of 1%. Due to the non-normal distribution of data, Kruskal–Wallis one-way analysis of variance on ranks was used for determining differences in outcomes between open, laparoscopic, and lap-open procedures. Follow-up pairwise Mann–Whitney tests were performed where appropriate to determine the significance of between-groups differences. Mann–Whitney tests were additionally performed to determine differences between volvulus and no volvulus groups with respect to the outcome variables. All statistical tests were performed with a *P*-value < 0.05 considered to be significant.

Results

From 2010–2015, 130 patients underwent Ladd's procedure for malrotation at our institution. Of these, 53 patients with confounding conditions, such as cyanotic heart disease resulting in poor gut perfusion, nonrotation, significant gastroesophageal reflux disease, esophageal atresia with tracheoesophageal fistula, biliary atresia, and patients requiring additional procedures at the time of operation (e.g., central line placement, gastrostomy placement), were excluded. The remaining 77 patients were divided into open ($n = 62$), laparoscopic ($n = 8$), and laparoscopic to open ($n = 7$) cohorts. Eighty-seven percent of patients in our study were diagnosed with malrotation using an upper gastrointestinal series. Forty-four percent of patients undergoing open surgery presented with volvulus (Fig. 1).

Patients in the laparoscopic Ladd's group were slightly older than the patients undergoing open operation. No difference was found in presenting heart rate between the groups. However, we discovered that patients undergoing

Download English Version:

<https://daneshyari.com/en/article/8835448>

Download Persian Version:

<https://daneshyari.com/article/8835448>

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