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Clinical Outcomes After Ileal Pouch-Anal Anastomosis in Pediatric Patients



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ABSTRACT

Background: Ileal pouch-anal anastomosis (IPAA) is the standard surgical reconstruction for patients with familial adenomatous polyposis (FAP) and ulcerative colitis (UC) who undergo total proctocolectomy (TPC). Although patients receive the same reconstruction, their postoperative complications can differ. We hypothesize that indication for TPC and other preoperative clinical factors are associated with differences in postoperative outcomes following IPAA.

Methods: A retrospective cohort of pediatric patients who underwent proctocolectomy with IPAA from 1996 to 2016 was identified. Preoperative, operative, and postoperative clinical variables were collected. Univariate analyses were performed to evaluate for relevant postoperative clinical differences.

Results: Seventy-nine patients, 17 with FAP and 62 with UC, were identified. FAP patients spent a mean of 1125 ± 1011 d between initial diagnosis and first surgery compared to 585 ± 706 d by UC patients ($P = 0.038$). FAP patients took a mean of 57 ± 38 d to complete TPC with IPAA compared to UC patients at 177 ± 121 d ($P < 0.001$). FAP and UC patients did not differ in mean number of bowel movements at their 6-mo postoperative visit (4.7 ± 2.1 versus 5.6 ± 1.9 , respectively [$P = 0.134$]). FAP patients were less likely to experience pouchitis ($P = 0.009$), pouch failure ($P < 0.001$), and psychiatric symptoms ($P = 0.019$) but more likely to experience bowel obstruction ($P = 0.002$).

Conclusions: IPAA is a safe, restorative treatment for FAP and UC patients after TPC. Based on diagnosis and preoperative course, there are differences in morbidity in IPAA patients. Clinical data such as these will allow surgeons to help families anticipate their child's preoperative and postoperative courses and to maximize successful postoperative outcomes.

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Introduction

Total proctocolectomy (TPC) with ileal pouch-anal anastomosis (IPAA) is the standard restorative surgical treatment for patients with familial adenomatous polyposis (FAP) and inflammatory bowel disease, namely ulcerative colitis (UC).¹ Those diagnosed with FAP inevitably progress to colorectal cancer by age 50 y without medical or surgical intervention.^{2,3} TPC with IPAA has been shown to effectively prevent development of colorectal cancer in FAP patients while maintaining fecal continence.³ TPC with IPAA is also used to manage UC.⁴ Of patients ultimately diagnosed with UC, 25% present during childhood or adolescence.⁴ Patients who are diagnosed with FAP and UC during childhood often experience more severe phenotypes and require surgical intervention.^{3,5}

Management of gastrointestinal symptoms can be taxing on pediatric patients and can cause psychosocial difficulties due to frequent absences from school.⁵ While TPC with IPAA can significantly reduce cancer risk in FAP patients and debilitating symptoms in UC patients, postoperative outcomes are not consistent among patient cases. Restorative proctocolectomy with IPAA can be performed in either one, or two, or three stages (colectomy, proctectomy, then ileostomy takedown).³ The number of stages performed is often determined by preoperative factors such as steroid use and nutritional status.

The literature surrounding IPAA varies in its description of postoperative complication rates, and the association between diagnosis and postoperative outcomes are still being established. One retrospective study noted that, when compared to FAP patients, UC patients often experienced more postoperative complications such as pouchitis.⁶ This study, as with others in these patient populations, generally includes small numbers. Therefore, we sought to review all TPC with IPAA patients at Riley Hospital for Children to evaluate salient preoperative factors that might predict postoperative clinical outcome. We hypothesize that indication for TPC with IPAA, among other preoperative clinical factors, are associated with relevant differences in surgical timing and postoperative outcomes.

Methods

Subjects

Patients who underwent TPC with IPAA at Riley Hospital for Children from 1996 to 2016 were identified using a search of the electronic medical record for the following CPT codes: 45,119 proctectomy, combined abdominoperineal pull-through procedure (e.g., coloanal anastomosis), with creation of colonic reservoir (e.g., J-pouch), with diverting enterostomy, when performed, 45,113 proctectomy, partial, with rectal mucosectomy, ileoanal anastomosis, creation of ileal reservoir (S or J), with or without loop ileostomy, 45,397 laparoscopy, surgical; proctectomy, combined abdominoperineal pull-through procedure (e.g., colo-anal anastomosis), with creation of colonic reservoir (e.g., J-pouch), with diverting enterostomy, when performed, 44,158 colectomy, total, abdominal, with proctectomy; with ileoanal anastomosis, creation of ileal reservoir (S or

J), includes loop ileostomy, and rectal mucosectomy, when performed, and 44,211 Laparoscopy, surgical; colectomy, total, abdominal, with proctectomy, with ileoanal anastomosis, creation of ileal reservoir (S or J), with loop ileostomy, includes rectal mucosectomy, when performed. Patients who underwent the above procedures were also identified through manual review of Riley Hospital for Children weekly Morbidity and Mortality records.

Definitions of outcome variables

Pouch leak: evidence of leakage due to anastomotic incompetence either clinically (purulent intra-abdominal fluid found on diagnostic laparoscopy) or by imaging (contrast enema or CT scan demonstrating leak).

Superficial surgical site infection: any postoperative wound that required opening for drainage and/or oral antibiotic treatment for incisional erythema.

Deep abscess: was defined as an intra-abdominal abscess that required operative or percutaneous drainage.

Pouch failure: any pouch requiring operative revision or resection.

Pouchitis: clinical symptoms of pouch inflammation requiring oral antibiotic treatment or evidence of pouch inflammation found on diagnostic endoscopy done in response to symptoms.

Bowel obstruction: clinical symptoms and imaging signs of bowel obstruction requiring enteric decompression and/or operation for bowel obstruction.

Incontinence: soiling due to fecal incontinence uncontrolled by commonly used antidiarrheals such as loperamide or diphenoxylate.

Bloody bowel movement: patient reported blood while wiping after bowel movement.

Postoperative anastomotic stricture at IPAA: patient with clinical symptoms of stricture that required formal dilation in the operating room.

Psychiatric symptoms: depression, anxiety, social aversion, suicidality, and stress noted by surgeons in their postoperative follow-up.

Relevant preoperative, operative, and postoperative clinical variables were collected. Institutional review board approval was obtained, and a waiver of consent was obtained.

Statistical analysis

Continuous variables were described as mean values with standard deviations or median with interquartile ranges. Univariate analyses with chi-square, Fisher's exact test, or Wilcoxon rank sum tests were performed to evaluate for relevant clinical differences in outcome. Statistical significance was set at 0.05. All statistical analyses were carried out with Stata version 14 (College Station, TX).

Results

A total of 80 patients were identified from the search. Seventeen patients were diagnosed with FAP, and 62 were

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