



# Laparoscopic proctocolectomy with ileal j-pouch anal anastomosis in children

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## ABSTRACT

**Background/Aims:** We aimed to evaluate postoperative fecal incontinence scales of children who underwent laparoscopic proctocolectomy and ileal J-pouch anastomosis for familial adenomatous polyposis (FAP) and inflammatory bowel disease (IBD).

**Materials and Methods:** Fecal incontinence scores were collected at 3 months post-surgery. A retrospective chart review was also performed to obtain the demographic data and operative technical details.

**Results:** The postoperative Wexner Fecal Incontinence Score was 0 in 9 of 11 patients and satisfactory in the remaining two. None of the children had a major complication.

**Conclusion:** Even though the presented study does not have any comparable data, it seems that laparoscopic total proctocolectomy with ileal J-pouch anal anastomosis (TP IPAA) might be the best choice of surgery because it provides good continence with low complication rates.

**Keywords:** Children, familial adenomatous polyposis, fecal incontinence, proctocolectomy, ulcerative colitis

## INTRODUCTION

Total proctocolectomy with or without ileal J-pouch anal anastomosis is the preferred surgical procedure in children who are in need for removal of the colon (1). These pathological entities consist of familial adenomatous polyposis (FAP), inflammatory bowel disease (IBD), and especially ulcerative colitis (UC) (2). The first two of these pathologies usually manifest in late childhood and early adolescence (3). Total proctocolectomy must be performed in order to prevent malignant transformation, which could lead to significant incontinence problems (4). Incontinence is the leading cause of negative impact on quality of life in this group of children.

There are a limited number of studies on minimally invasive approaches and their results for the management of FAP and IBD in children (5,6). Technical details of this laparoscopic operation are provided along with demographics, and the results of the procedure, especially in terms of fecal continence, are presented here.

## MATERIALS AND METHODS

Patients who underwent colonoscopy and histopathological examination with FAP or UC diagnosis and underwent total proctocolectomy with ileal J-pouch anal anastomosis (TP IPAA) were included in the study.

This study was performed in adherence to the Declaration of Helsinki. Written informed consent was obtained from legal guardians of each child. A retrospective chart review was performed on children diagnosed with FAP or UC and who underwent laparoscopic TP IPAA between 2007 and 2015. Postoperative fecal incontinence scores were calculated with the Wexner/Cleveland Clinic Fecal Incontinence Symptom Severity Scoring System at every postoperative visit, and the results at 3 months after ileostomy closure are presented here. The incontinence score ranges from 0 to 20 (0-Complete continence, 20-Complete incontinence) (7) (Table 1).

This study was presented at the 6<sup>th</sup> Annual Congress European Society of Paediatric Endoscopic Surgeons, 28-30 September 2016, Madrid, Spain.

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The surgical procedure is basically as follows. Five trochars are placed into all four quadrants and the umbilicus after the pneumoperitoneum is obtained. The dissection begins with the mobilization of the rectosigmoid colon and continues with the descending, transverse, and ascending colon and the caecum using the LigaSure® vessel-sealing instrument. Once the colon is mobilized, the trocar entry site in the right lower quadrant is enlarged to 2-2.5 cm, and the mobilized caecum is taken out and separated from the ileum. A J pouch is created from the distal 8 cm of the ileum with a linear stapler device extraabdominally and is placed into the abdomen. The whole colon is pulled through the anus and ileoanal anastomosis, and an 8 cm J pouch is created after transanal mucosectomy. Mucosectomy and the creation of the J pouch are important parts of this procedure. The length of the J pouch is important because of its relation with pouchitis and its ability to maintain continence, and mucosectomy is required to avoid recurrence.

An intestinal loop, nearly 30 cm proximal from the caecum, is pulled up through the right lower quadrant trocar entry for loop ileostomy. Ileostomy closure time is between approximately 4 and 8 weeks.

Demographic data, operation time, length of hospital stay, and complications were recorded (Table 2).

A routine follow-up procedure with a monthly interval in first 6 months and then every 3 months in the second 6-month period was performed. If bowel functions were considered as good or excellent, the follow-up period was extended to 6-month intervals, otherwise a routine 3-month period was maintained.

**RESULTS**

The laparoscopic TP IPAA procedure was performed on 11 children with diagnosis of UC (n=6) or FAP (n=5). There were five girls and six boys. The median age at operation time was 11 years (4-16 years). The median weight was 30 kg (15 kg-58 kg), and the median body mass index (BMI) was 17 (range 13-22). The median operating time was 180 minutes (range 120-240 minutes). The median hospital stay was 4 days (range 2-11 days). Two children had small bowel obstruction in the follow-up, which resolved with conservative treatment.

Among these 11 children, two of them had previously had total proctocolectomy and ileoanal anastomosis without J pouch. However, due to serious postoperative dermatitis and fecal incontinence, an additional operation was performed and a J pouch was created.

**Table 1.** Wexner/Cleveland Clinic Fecal Incontinence Symptom Severity Scoring System

Type of Incontinence	Never	Rarely (<1/month)	Sometimes (<1/week)	Usually (<1/day)	Always (>1/day)
Solid	0	1	2	3	4
Liquid	0	1	2	3	4
Gas	0	1	2	3	4
Requires pad	0	1	2	3	4
Lifestyle alteration	0	1	2	3	4

20 points: complete incontinence  
0 points: perfect continence

**Table 2.** Patient data

Diagnosis	Age (year)	Sex	Body Weight (kilogram)	Surgery	Operation time	Complication	Hospitalization	Fecal Incontinence Score (3 <sup>rd</sup> month/last outpatient visit)	Medication
FAP	11	F	29	TP IPAA	240 min	Dermatitis	11 days	0/0	None
UC	7	F	27	TP IPAA	240 min	-	4 days	0/0	None
UC	9	M	29	TP IPAA	200 min	-	5 days	6/6	Diet and medication suggested but not fulfilled by parents
UC	4	M	15	TP IPAA	180 min	Ileus, dermatitis	7 days	1/1	None
FAP	16	M	58	TP IPAA	120 min	-	3 days	0/0	None
UC	14	F	41	TP IPAA	180 min	-	4 days	0/0	None
FAP	14	M	33	TP IPAA	160 min	Ileus	2 days	0/0	None
UC	12	F	34	TP IPAA	180 min	-	4 days	0/0	None
UC	11	M	40	TP IPAA	170 min	-	7 days	0/0	None
FAP	11	F	28	TP IPAA	180 min	-	3 days	0/0	None
FAP	10	M	30	TP IPAA	150 min	-	6 days	0/0	None

FAP: familial adenomatous polyposis; UC: ulcerative colitis; IPAA: Total Proctocolectomy Ileal Pouch Anal Anastomosis

The postoperative Wexner Fecal Incontinence Score was 0 (perfect continence) in nine children. One of them complained about incontinence only when he had diarrhea (Wexner Score: 1). One of the children who was inadapted with anti-diarrheal treatment and diet suggestions after surgery had a score of 6. Nine of these eleven children (82%) considered their condition good, and all of them considered it better than the preoperative period. Three of the children were using anti-diarrheal drugs to maintain continence. Perineal excoriation occurred in two children in the early postoperative period due to incontinence. This condition regressed with medical care while the incontinence recovered. No patients suffered from pouchitis in the present study. The median follow-up period was 5 years (range 1-10 years).

## DISCUSSION

Incontinence scores and surgical outcomes of laparoscopic TP IPAA were satisfactory for both children and the surgeon. J pouch ileoanal anastomosis in children who underwent total proctocolectomy seems to have good results on fecal incontinence and pouchitis rates without any major complications.

Straight ileoanal anastomosis (SIAA) and TP IPAA are the preferred surgical procedures in children who are in need for removal of the colon (4). Both laparoscopic and open approaches can be used for these procedures. Laparoscopic surgery indeed has advantages of shorter oral feeding starting time, shorter hospital stay, fewer wound infections, less postoperative pain, better cosmetic results, and lower rates of small bowel obstruction (1,5,8-11).

The enteritis rate is higher in the SIAA group than the pouchitis rate in the TP IPAA group in the literature (12). There is no pouch created in the SIAA group. Therefore, preanastomotic inflammation in the SIAA group is called "enteritis," and this is accepted as an equivalent of "pouchitis" in TP IPAA group.

The incidence of pouchitis after laparoscopic surgery is reported to be 0-50% (7,9,13,14). Children who have had an ileal pouch created through the laparoscopic approach have significantly fewer occurrences of pouchitis (13). Even though in the literature pouches longer than 5 cm have a higher risk of pouchitis, an 8 cm pouch with a loop ileostomy is a safe method with reduced risk of pouchitis (15). A shorter pouch causes incontinence, and a longer pouch causes an increase in pouchitis rates. Thus it is important to decide on the ideal length of the pouch. In our experience, 8 cm is good to avoid pouchitis while maintaining a good continence score. There was no sign of pouchitis in any of the patients in the present study despite the high rates often seen in the literature (16,17). It is thought that this lack of pouchitis might be the result of our routinely performed temporary loop ileostomy. Diverting ileostomy has the advantages of faster recovery of the anal sphincter muscle, reduced stress on anastomosis, and reduced pouch failure as discussed in the literature (15).

One of the biggest advantages to creating an ileal pouch is to have reduced stool frequency because fecal continence is one of the most important components of maintaining a normal life (9). The pouch, which has stool-reserving capability, functions like the rectum, and the stool becomes more concentrated.

Fecal incontinence scores of patients who are operated on because of UC or FAP vary in the literature depending on the type of surgical procedure and range from perfect continence to complete incontinence (18,19).

Although bowel movements increase after laparoscopic IPAA surgery, incontinence scores seem to be satisfactory. In addition, accumulated surgical experience is associated with better continence scores (4). The only complication in the postoperative period in this study was severe perineal excoriation in two children in the early postoperative period due to fecal incontinence, which resolved with time and medical care.

In a study of adults, most of the patients had a Wexner Score of 0, indicating no problems with continence after their pouch surgery, and 94% of the patients reported that they would choose the surgery over medical treatment because IPAA is a successful and well-tolerated procedure (20).

Among the children on whom laparoscopic IPAA was performed, 82% had a Wexner Score of 0 (perfect continence) in the evaluation at 3 months after surgery and in their last outpatient clinic visits. The creation of an ileal J pouch reduces the incontinence risk because of its reservoir capacity and the less traumatic nature of laparoscopy in the dissection of the pelvic muscles. In two children on whom we had performed SIAA, serious perianal dermatitis occurred because of fecal incontinence. These children underwent subsequent IPAA, and the fecal incontinence and dermatitis problems were resolved.

The main purpose of total colectomy in patients with UC or FAP is to improve all of the symptoms and to prevent malignant transformation. Mucosectomy is a must in these groups of patients. Leaving a diseased segment in UC is not acceptable due to the high risk of recurrent symptoms and possible malignant transformation. Yearly colonoscopic examinations and polyp excisions, which are difficult for the patient and the family, are avoided with routinely performed mucosectomy.

Because these diseases are diagnosed mostly in childhood, cosmetic results and functional outcomes dramatically affect the child physically and physiologically. Thus the continence and cosmetic results must be satisfactory for better quality of life.

Although our sample size was small, the good cosmetic results and nearly perfect continence results suggest that TP IPAA might be a good choice for these children.

Even though the presented study does not have any comparable data, it seems that laparoscopic TP IPAA might be the choice of surgery because it provides good continence with low complication rates.

**Ethics Committee Approval:** Authors declared that the research was conducted according to the principles of the World Medical Association Declaration of Helsinki "Ethical Principles for Medical Research Involving Human Subjects", (amended in October 2013).

**Informed Consent:** Written informed consent was obtained from parents of the patients who participated in this study.

**Peer-review:** Externally peer-reviewed.

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