

# Does outcome after restorative proctocolectomy and ileal pouch-anal anastomosis differ between children and adults?



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## Background

Restorative proctocolectomy (RPC) with ileal pouch-anal anastomosis (IPAA) is the surgical treatment of choice for:

- Therapy refractory ulcerative colitis<sup>1</sup>
- Colonic Crohn's disease / inflammatory bowel disease (IBD)-unclassified without evidence of anorectal or ileal disease<sup>1</sup>
- Familial adenomatous polyposis (FAP)<sup>2</sup>

The main controversy is timing of RPC with IPAA: during childhood or delaying the procedure into adulthood.

## Aim

To compare adverse events and pouch function in pediatric and adult patients who underwent IPAA surgery.

## Methods

Retrospective cohort study, pediatric (< 18 years at pouch surgery) and adult (≥ 18 years at pouch surgery) patients with a diagnosis of IBD or FAP who underwent IPAA surgery (2000–2015).

### Adverse events

anastomotic leakage, fistula related to the surgery, anastomotic stricture, (chronic) pouchitis, Crohn's of the pouch and pouch failure.

### Functional outcome

Telephone interview using the pouch function score<sup>3</sup>

### Statistical analysis

Uni- and multi-variable logistic regression: variables with p < 0.10 in univariable analysis, were included in multivariable analysis, additionally corrected for year of enrolment during study period.

## Pouch function score

	Pediatric (n = 29)	Adult (n = 253)	P
<b>24-h stool frequency (n,%)</b>			<b>0.008</b>
• 0-5	13 (45%)	66 (26%)	
• 6-8	11 (38%)	100 (40%)	
• 9-10	5 (17%)	45 (18%)	
• >10	0 (0%)	42 (17%)	
<b>≥2 nocturnal stools (n,%)</b>	9 (31%)	118 (47%)	0.119
<b>Major incontinence</b>			0.530
• Never (n,%)	21 (72%)	204 (81%)	
• Rarely / sometimes (n,%)	7 (24%)	39 (15%)	
• Mostly / always (n, %)	1 (4%)	10 (4%)	
<b>Antidiarrheals (n,%)</b>	9 (31)	140 (55)	<b>0.018</b>
<b>Antibiotics (n,%)</b>	7 (24)	17 (7)	<b>0.006</b>
<b>Total score (median, IQR)</b>	5.0 (2.5 – 10)	6.0 (3.5 – 10.0)	0.194 <sup>c</sup>

## Patient characteristics (n = 445)

	Pediatric (n = 41)	Adult (n = 404)	P
<b>Male (n, %)</b>	23 (56)	219 (54)	0.870
<b>Age at surgery (median, IQR)</b>	<b>15 (13–17)</b>	<b>39 (30–47)</b>	<b>&lt;0.001</b>
<b>Diagnosis</b>			0.231
• Ulcerative colitis	22 (54%)	259 (64%)	
• IBD-unclassified	3 (7%)	44 (11%)	
• Crohn's disease	2 (5%)	13 (3%)	
• FAP	14 (34%)	88 (22%)	
<b>Completion proctectomy (n,%)</b>	25 (61%)	201 (50%)	0.192
<b>Primary defunctioning ileostoma (n, %)</b>	<b>4 (10%)</b>	<b>109 (27%)</b>	<b>0.014</b>
<b>Laparoscopic colectomy (n,%)</b>	<b>38 (93%)</b>	<b>223 (55%)</b>	<b>&lt;0.001</b>
<b>Hand sewn anastomosis (n,%)</b>	4 (10%)	18 (5%)	0.142
<b>Follow up (mo., median, IQR)</b>	21 (6–50)	22 (8–64)	0.328
<b>Enrolment (years, median, IQR)</b>	10 (5–13)	8 (4–12)	0.077

## Adverse events: prevalence & risk

	Prevalence		Multi-variable regression	
	Pediatric (n = 46)	Adult (n = 426)	OR (95% CI)	P
<b>Anastomotic leak</b>	14%	16%	0.88 (0.35–2.22)	0.759
			Correction: type pouch, year enrolment	
<b>Pouch stricture<sup>a</sup></b>	<b>10%</b>	<b>3%</b>	<b>4.22 (1.13–15.77)</b>	<b>0.032</b>
			Correction: completion proctocolectomy, primary defunctioning ileostomy, hand sewn anastomosis	
<b>Fistulas</b>	2%	6%	0.63 (0.08–5.21)	0.667
			Correction: IBD (yes/no), ASA score 3, primary defunctioning ileostomy, hand sewn anastomosis, laparoscopic procedure	
<b>Chronic pouchitis</b>	5%	8%	0.58 (0.13–2.56)	0.500
			Correction: preoperative steroids	
<b>Crohn's of pouch<sup>b</sup></b>	15%	6%	3.07 (0.87–10.82)	0.115
			Correction: Crohn's disease/IBD-U(yes/no)	
<b>Pouch failure</b>	10%	6%	2.24 (0.59–8.59)	0.241
			Correction: ASA score 3, preoperative steroids, laparoscopic procedure	

<sup>a</sup> additional correction for type of diagnosis: IBD vs. FAP

<sup>b</sup> in IBD patients only (n = 339)

## Conclusion

- Pouch failure rates and pouch function were comparable for pediatric and adult patients.
- There may be an association between pediatric age and development of anastomotic strictures.
- There is no need for a more cautious attitude in the application of RPC and IPAA in pediatric patients based on concerns of poor outcome on the longer term.

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Abbreviations: FAP = familial adenomatous polyposis, IBD = inflammatory bowel disease, IPAA = ileal pouch-anal anastomosis, UC = ulcerative colitis, RPC = restorative proctocolectomy

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