

# Ileal Pouch Anal Anastomosis: The Preferred Method of Reconstruction after Proctocolectomy in Children

Stephanie Jones, D.O.

Surgical Fellow

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# Ulcerative Colitis

- Spectrum of inflammatory bowel disease in children
  - Ulcerative colitis (UC), indeterminate colitis, Crohn's disease
- Incidence of UC 1: 100,000
- 20% of all patients with UC will develop symptoms before age 20 years

# Ulcerative Colitis

- 1 in 100,000 children
- Cyclic- flares and remission
- Medical treatment aminosalicylates and corticosteroids
  - Second line: Immune modulation azathioprine, mercaptopurine, and cyclosporine
  - TNF inhibitors infliximab, adalimumab
- Up to 65% of pt younger 8 y/o with IBD will present with pancolitis

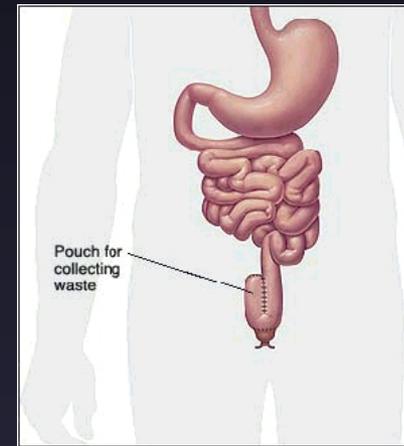
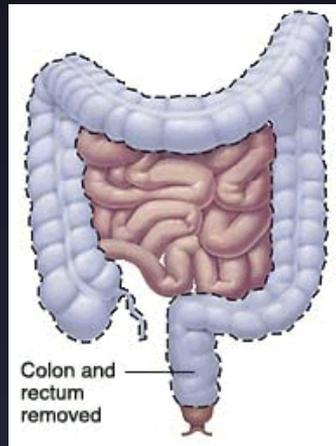
# Indications for Operation

- Children commonly present with acute-onset, unremitting, fulminant colitis
  - Urgent colectomy and ileostomy, pouch reconstruction later
- Goal: to restore a more normal life
  - Quality of life correlates with bowel functional outcomes

# Indications for Operation

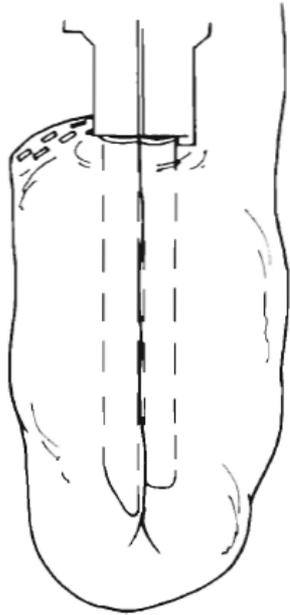
- Refractory disease
  - treatment resistance or the inability to wean from corticosteroids
- Long-term corticosteroid therapy:
  - growth and development, bone mineralization and the risk of fracture
- Other indications: medication toxicity, growth retardation, and carcinoma prophylaxis

# Procedure of Choice

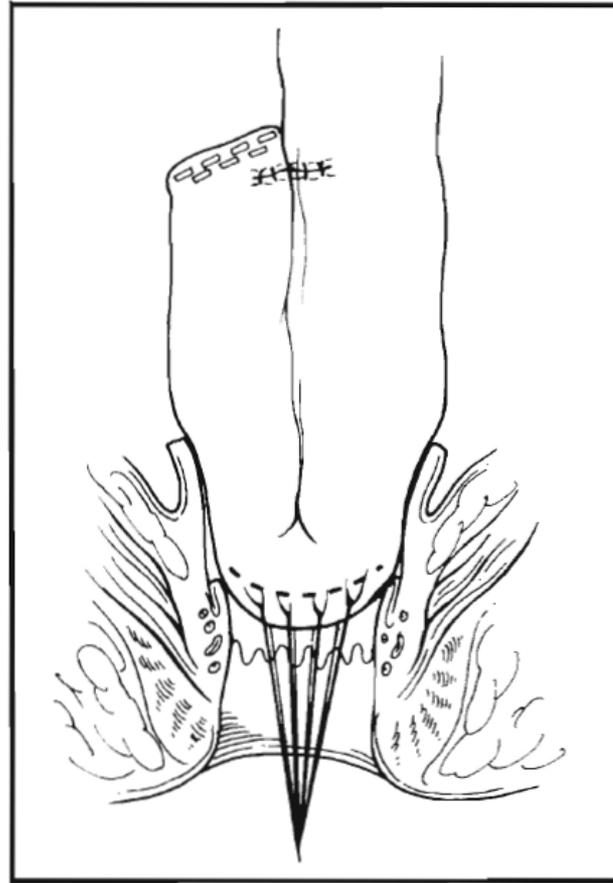


- 1. Laparoscopic-assisted total proctocolectomy
- 2. Ileoanal J-pouch anastomosis
- 3. Diverting loop ileostomy

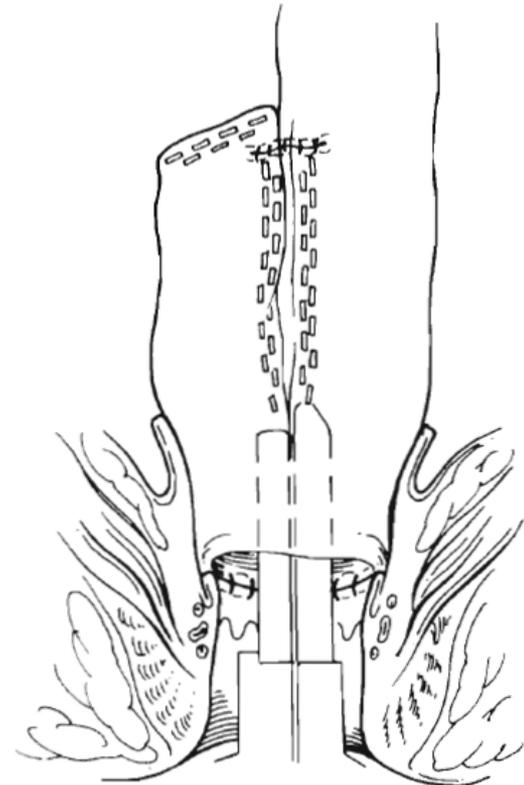
# Construction of the Pouch



**A**



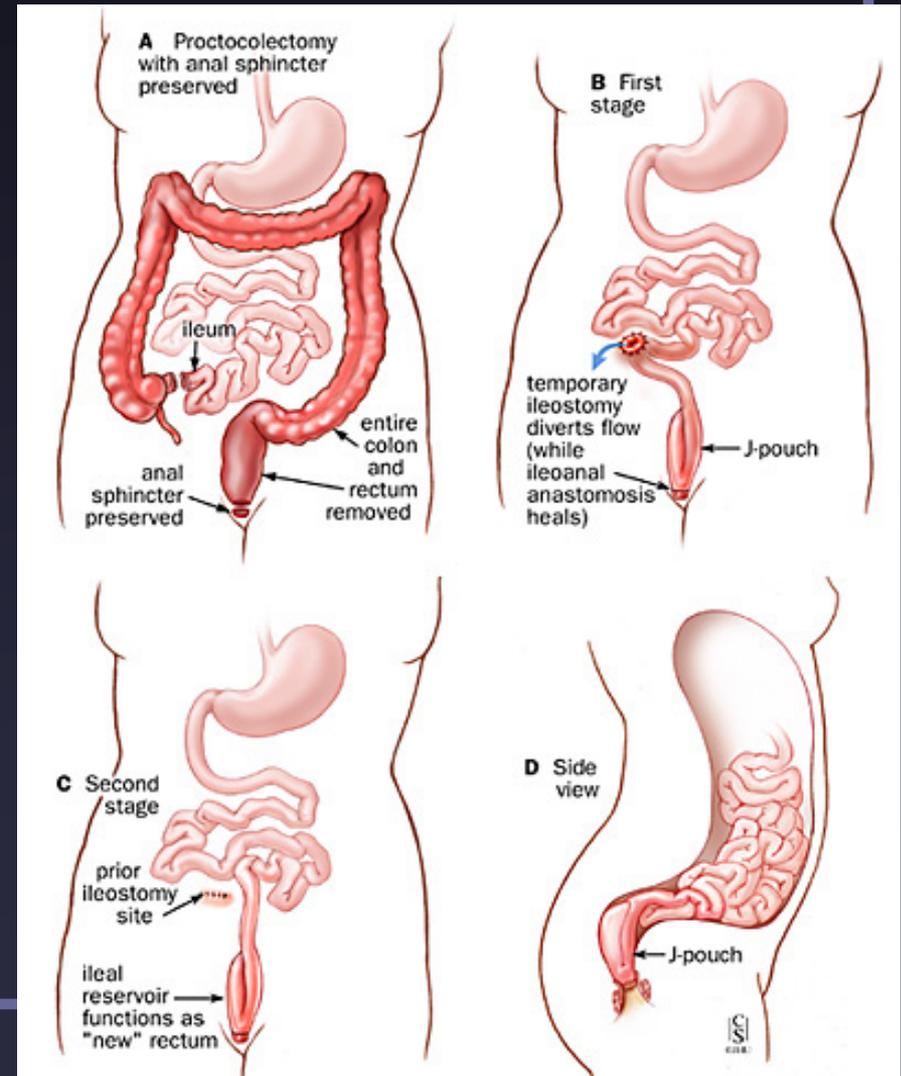
**B**



**C**

# Staged Reconstruction

- Useful if inflammation obscures planes in rectum
  - Preservation of transitional epithelium
- Allows wean off steroids/medication
- Protects pouch
  - Concern for leak

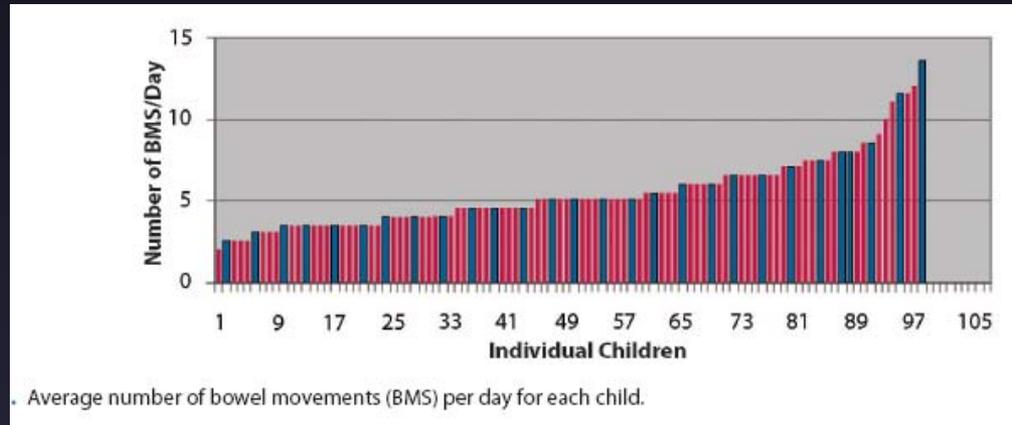


# Restorative Proctocolectomy and Ileal Pouch-Anal Anastomosis in Children

Craig W. Lillehei, M.D.<sup>1</sup> • Alan Leichtner, M.D.<sup>2</sup> • Athos Bousvaros, M.D., M.P.H.<sup>2</sup>  
Robert C. Shamberger, M.D.<sup>1</sup>

- **METHODS:** retrospective review- 20 years
  - 100 consecutively referred children (<18 years old)
  - Reconstruction with a J-pouch of ileum, preservation of the transitional anorectal epithelium
  - Same two-surgeon team
  - Temporary diverting ileostomy
- **Outcome measures:** daytime and nocturnal fecal continence, bowel movements per day, and complications including pouchitis, ileoanal stricture, or postoperative small-bowel obstruction

# Results after J Pouch



- 35/75 children with UC (47%) had at least one episode of pouchitis
- SBO- 20% required reoperation
- Another postop complication was IPAA stricture requiring operative dilatation and/or anoplasty (N= 18)
- No pelvic abscesses, need to redo IPAA

# Outcomes in pediatric patients undergoing straight vs J pouch ileoanal anastomosis: a multicenter analysis<sup>☆</sup>

Rupa Seetharamaiah<sup>a</sup>, Brady T. West<sup>b</sup>, Sarah J. Ignash<sup>a</sup>, Mikko P. Pakarinen<sup>c</sup>, Antti Koivusalo<sup>c</sup>, Risto J. Rintala<sup>c</sup>, Donald C. Liu<sup>d</sup>, Ariel U. Spencer<sup>d</sup>, Kathleen Skipton<sup>d</sup>, James D. Geiger<sup>a</sup>, Ronald B. Hirschl<sup>a</sup>, Arnold G. Coran<sup>a</sup>, Daniel H. Teitelbaum<sup>a,\*</sup>

- Retrospective analysis of 250 children after proctocolectomy with either SIAA or JPAA
- First 3 years after pull-through
- A functional stooling score developed

**Table 1** Clinical evaluation of continence at 24 months (modified Holschneider) [9]

Parameter	Scoring
Frequency of defecation	
Normal (1-2/d)	2
Often (3-5/d)	1
≥6/d	0
Stool consistency	
Normal	2
Loose	1
Liquid	0
Daytime soiling	
No	2
Soiling by stress/diarrhea	1
Permanent soiling	0
Nighttime soiling	
No	2
Often (every 2-3 d)	1
Very often (everyday)	0
Urgency period	
Normal (min)	2
Short (s)	1
Absent	0
Need of therapy for stool control	
No	2
Occasionally	1
Continuously	0

# Outcomes

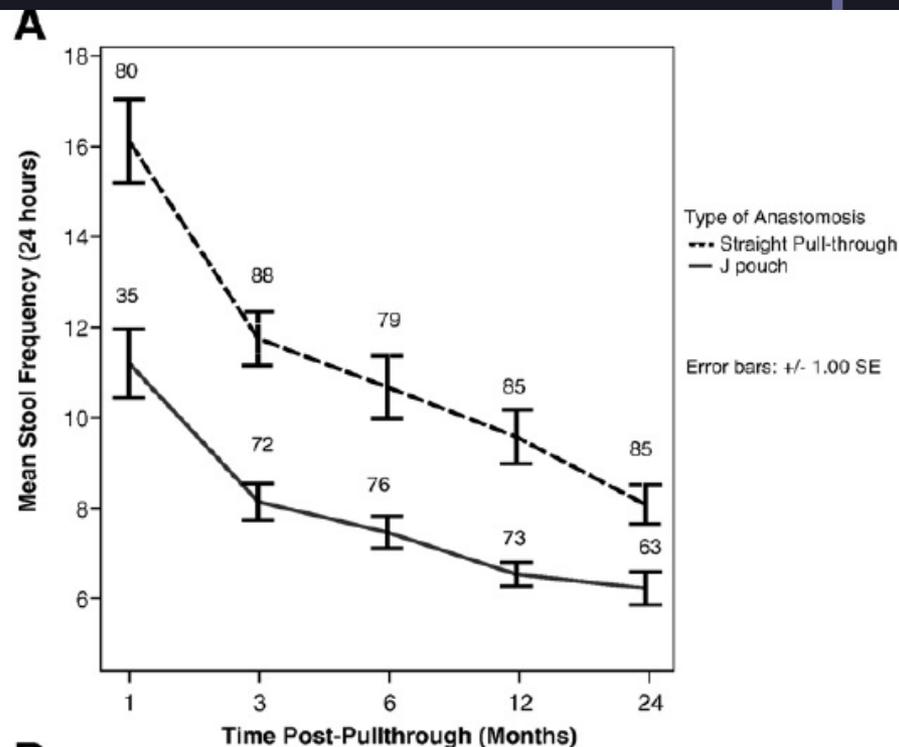
- Daytime and nighttime stooling frequencies were significantly higher for SIAA patients at 1 to 24 months after pull-through
- Symptomatic pouchitis higher in JPAA
  - Frequency of pouchitis declined with time
  - Most easily managed with antibiotics
- There was no significant difference in surgical complications
- Incontinence rates were higher in SIAA group
  - 10% vs 2% JPAA (P=0.025) daytime
  - 29% vs 20% JPAA (P=0.075) nighttime

# Complications and Stool Frequency

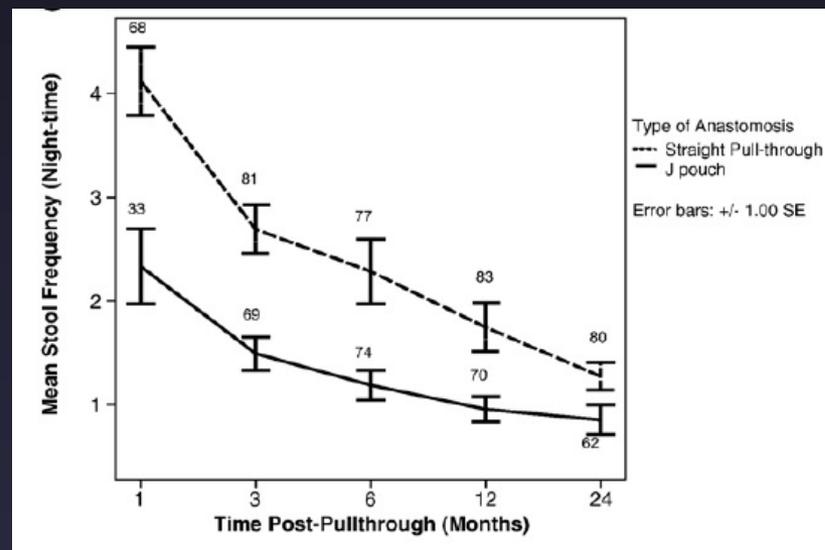
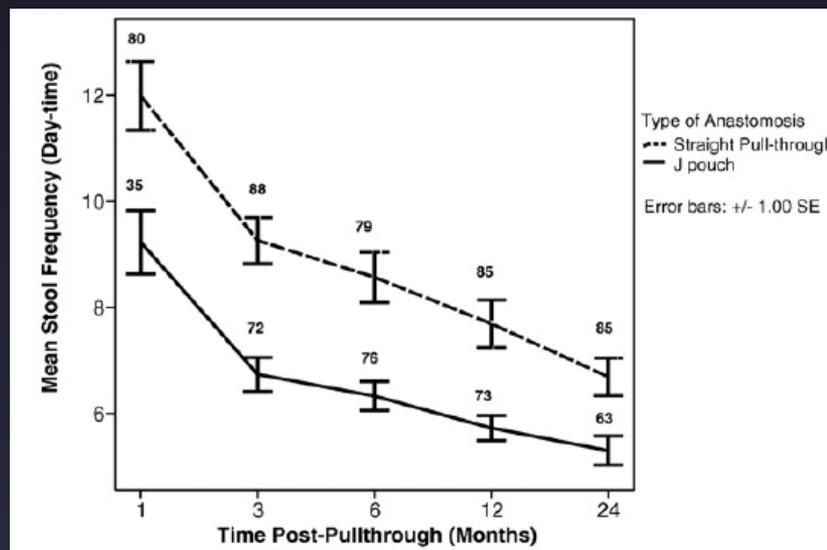
**Table 3** Complications

	SIAA (n = 112)	JPAA (n = 91)	<i>P</i>
Wound infection	9%	5%	.272
Anastomotic leak	3%	5%	.470
Intraabdominal abscess	6%	2%	.142
Anastomotic stenosis	5%	14%	.050 <sup>a</sup>
Intestinal obstruction	23%	28%	.511
Incisional hernia	1%	1%	-
Fistula	13%	5%	.050 <sup>a</sup>
Pouchitis <sup>a</sup> (during first 3 y of f/u)	24%	49%	.006 <sup>a</sup>

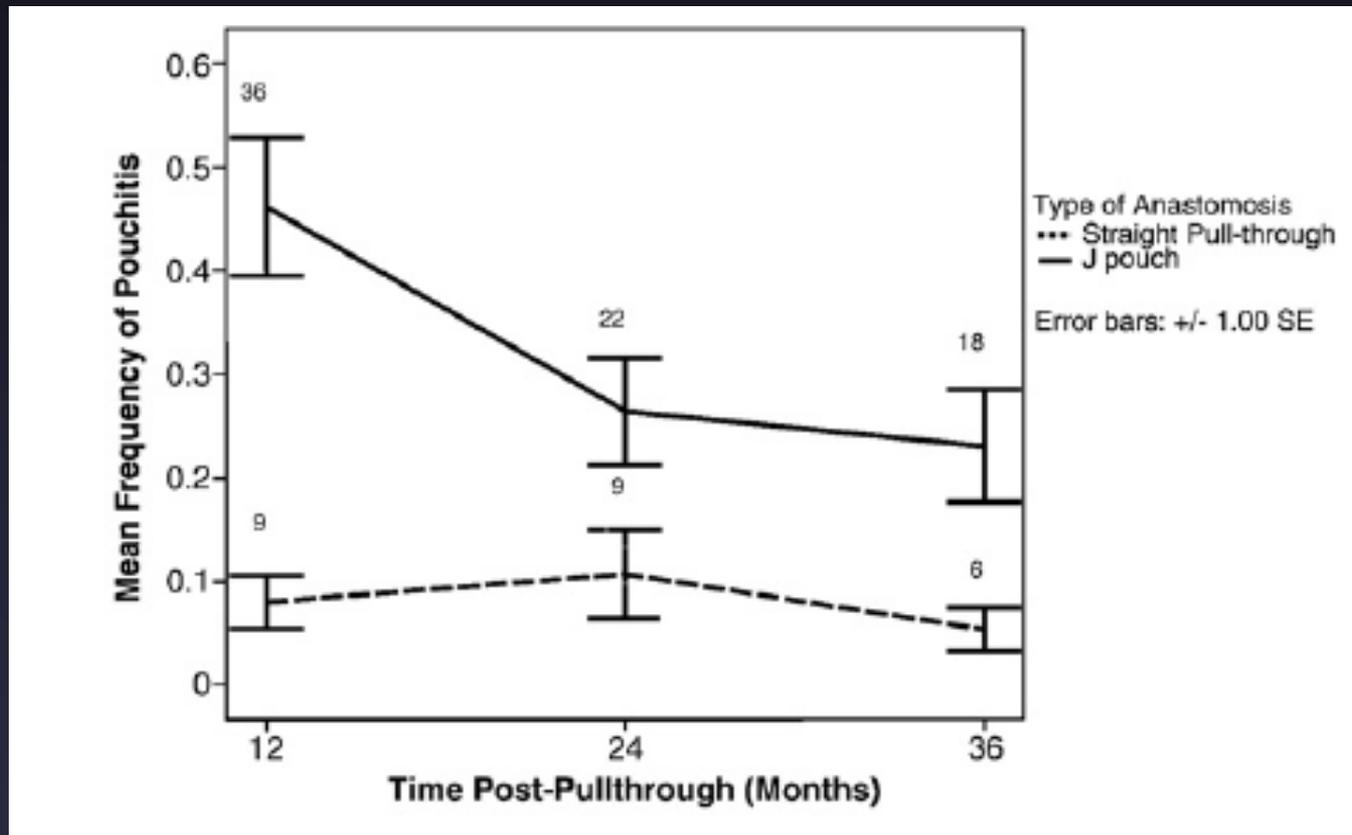
<sup>a</sup> Or enteritis for the JPAA group.



# Stool Frequency after Surgery



# Frequency of Pouchitis after Surgery



# Functional Outcomes after Surgery

**Table 4** Functional outcomes

	SIAA	JPAA	<i>P</i> <sup>a</sup>
Stool frequency at 24 mo	8.4 ± 3.9/d	6.2 ± 2.8/d	.003
Pouchitis/enteritis			
12 mo	8%	39%	<.001
24 mo	8%	24%	.013
36 mo	5.3%	20%	.005
Medications for stool control at 24 mo	83%	61%	.001
Stooling scores at 24 mo <sup>b</sup>			
Good	57%	62%	.161
Fair	43%	28%	.161
Incontinence rate at 24 mo			
Daytime incontinence	10%	2%	.025
Nighttime incontinence	29%	20%	.074

Stooling score: Normal 12, good 9-11, fair 5-8, poor 0-4

# Pouch-anal anastomosis vs straight ileoanal anastomosis in pediatric patients: a meta-analysis

Henry S. Tilney<sup>a</sup>, Vasilis Constantinides<sup>a</sup>, Adonis S. Ioannides<sup>b</sup>,  
Paris P. Tekkis<sup>a,\*</sup>, Ara W. Darzi<sup>a</sup>, Munther J. Haddad<sup>b</sup>

- Methods: Studies comparing outcomes from ileal pouch-anal anastomosis (IPAA) and straight ileoanal anastomosis (SIAA) were identified by searching Medline, Ovid, and Embase.
  - data extracted for meta-analysis
- All were retrospective reviews
- Primary outcome- pouch failure- likely in SIAA

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- Results: 13 studies identified by literature search, 5 satisfied the inclusion criteria
  - Total of 306 patients, 86 of whom (28.1%) underwent SIAA, and the remainder, IPAA
  - Pouch failure, abdominal salvage procedures more common in SIAA group
  - Short-term adverse events were similar between the 2 groups
    - exception of perianal sepsis, higher in SIAA
  - Bowel frequency was lower in the IPAA patients

# Results

**Table 3** Results of meta-analysis comparing straight vs pouch reconstruction for children and young adults undergoing proctocolectomy

Outcome of interest	No. of studies	No. of patients	OR/WMDa	95% CI	<i>P</i>	HG $\chi^2$	HG <i>P</i>
<b>Short-term adverse outcomes</b>							
Perianal sepsis	3	284	2.36	1.01-5.53	<b>.05</b>	0.34	.84
Enterovaginal fistula	4	306	2.52	0.75-8.52	.14	0.85	.84
Anastomotic leak	3	240	1.22	0.37-4.08	.75	0.41	.82
Small bowel obstruction	4	306	1.01	0.51-2.38	.80	0.25	.97
<b>Long-term adverse outcomes</b>							
Failure	4	306	3.21	1.24-8.34	<b>.02</b>	1.25	.74
Abdominal salvage	3	284	9.50	3.14-28.77	<b>&lt;.0001</b>	1.84	.40
Anastomotic stricture	4	233	0.38	0.07-1.90	.24	6.40	.09
Inflammation of neorectum/Pouch	4	306	0.52	0.08-3.36	.49	6.83	.08
<b>Functional outcomes</b>							
Bowel Frequency per 24 h	2	35	2.63	1.34-3.92	<b>&lt;.001</b>	0.02	.88
Defecation at night	1	22	87.40	3.72-2051.06	<b>.005</b>	–	–
Seepage at night	1	13	0.22	0.02-2.45	.22	–	–

# Conclusion

- Pediatric ulcerative colitis is effectively treated with surgery
- Complications can occur
  - Infection, pouchitis, stricture
  - Easier to manage with pouch
- Quality of life and good outcomes are best maintained with the ileal pouch anal anastomosis