Determinants of Pouch-Related Symptoms, a Common Outcome of Patients With Adenomatous Polyposis Undergoing Ileoanal Pouch Surgery

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INTRODUCTION: **Total proctocolectomy with ileal pouch anal anastomosis (IPAA) is performed in patients with adenomatous polyposis syndromes (APSs). Data regarding pouch outcomes in APS are scarce. The purposes of this study were to determine the prevalence of pouch-related symptoms in patients with APS and to identify the contributing factors.**

METHODS: **This is a prospective cohort study. Demographic, surgical, and clinical data were collected. Endoscopy was performed, and biopsies from the terminal ileum, pouch, and cuff were obtained in all patients and reviewed by a dedicated pathologist.**

RESULTS: **Fifty-one patients with APS after IPAA were followed. Twenty patients (39.2%) had pouch-related symptoms. Single-stage IPAA had better outcomes than 2-stage IPAA: fewer daily bowel movements (42.9% vs 13.8% with ≤5 daily bowel movement, $P = 0.02$), more solid consistency (52.4% vs 6.9%, $P < 0.001$), and less abdominal pain (19% vs 48.3%, $P = 0.034$). Younger age at IPAA (<20) was also associated with better outcomes: fewer daily bowel movement (58.3% vs 17.9% with ≤5 daily bowel movement, $P = 0.011$), less watery consistency (8.3% vs 53.8%, $P = 0.005$), and abdominal pain (8.3% vs 43.6%, $P = 0.037$). Eighteen patients (35.3%) had endoscopic signs of inflammation, and 22 patients (43.1%) had histologic signs of pouchitis. However, no correlation was found between symptoms and endoscopic or histologic findings. The median pouchitis disease activity index was low (2, interquartile range 1–4) and did not correlate with clinical symptoms.**

DISCUSSION: **Pouch-related symptoms are common in patients with APS after IPAA. One-stage IPAA and younger age at surgery are associated with better clinical outcomes. However, symptoms do not correlate well with endoscopic or histologic findings or with pouchitis disease activity index and might be attributed to a functional pouch disorder.**

SUPPLEMENTARY MATERIAL accompanies this paper at https://links.lww.com/CTG/A394

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INTRODUCTION

Adenomatous polyposis syndromes (APSs) are a group of genetically inherited diseases that are characterized by multiple colorectal adenomas. Familial adenomatous polyposis (FAP) is an autosomal dominant syndrome caused by mutations in the tumor suppressor gene APC (1) and characterized by multiple colorectal adenomas (2). Nearly 100% of patients will develop colon cancer if left untreated (3). Other rarer syndromes that manifest as multiple colorectal adenomas include MUTYH-associated polyposis and polymerase proofreading-associated polyposis (2). Prophylactic colectomy is usually undertaken to prevent cancer. Surgical options include subtotal colectomy with ileorectal anastomosis or total proctocolectomy with ileal pouch–anal anastomosis (IPAA). IPAA is preferred for patients with severe or profuse adenoma burden, specifically in the rectum (3,4). IPAA is also performed in patients with ulcerative colitis (UC) with refractory disease or those who develop dysplasia or cancer (5).

Pouchitis is the most common long-term complication in IPAA patients and has a significant impact on quality of life (6). Symptoms include increased stool frequency, urgency, rectal bleeding, fever, abdominal cramps, and nocturnal fecal seepage.

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Pouchitis is further characterized by endoscopic signs of inflammation (such as ulceration, edema, granularity etc.) and mucosal infiltration by polymorphonuclear cells on histology. Pathogenesis of pouchitis is unclear. Abnormal immune responses, changes in gut microbiome, and host genetic factors are among the suggested etiologies (7–9). The incidence of pouchitis in patients with UC varies from 15% to 53% in different reports (10). Lower incidence rates are reported in patients with FAP ranging from 11% to 14.3% (11,12). A large meta-analysis comparing 782 patients with FAP with 4,417 patients with UC found pouchitis in 5.5% of FAP cases compared with 30.1% in UC cases (13). However, a more recent study of 113 patients with FAP revealed a 22.1% rate of pouchitis, although with a milder clinical presentation and a later onset compared with UC (14). Known risk factors for developing pouchitis include patients with UC and concurrent primary sclerosing cholangitis (15), smoking (16), use of non-steroidal anti-inflammatory drugs (17), and male sex (18). Data regarding the correlation between clinical symptoms of pouchitis and endoscopic and histologic findings are scarce. A few studies on small cohorts, most being patients with UC, reported that symptoms did not correlate with endoscopic or histologic findings (19,20).

The aim of this study was to identify the factors influencing the outcomes of IPAA and pouch-related symptoms in a cohort composed purely of patients with APS.

METHODS

Study design

This is a prospective observational, longitudinal cohort study performed at the Hereditary Cancer Clinic in a tertiary medical center in Israel between the years 2015–2019. Patients with APS followed at our clinic with a history of IPAA were recruited to the study. The study was approved by the Tel-Aviv Medical Center review board. All persons gave their informed consent before inclusion in the study.

Clinical data collection

Demographic, surgical, and clinical data were collected, including the number of daily bowel movements (DBMs), stool consistency (solid, soft, and watery), rectal bleeding, abdominal pain, fecal incontinence, or nocturnal fecal seepage. We considered patients to have pouch-related symptoms if they had either 10 or more DBM, fecal incontinence, or rectal bleeding. Ten or more DBM was defined as abnormal because the normal DBM at the first decade after IPAA ranged between 6 and 7 in several studies (21–23). Abdominal pain as an isolated symptom was not considered pouch-related because of its lack of specificity. Surgery study period was defined as the time (in years) from surgery until the clinical and endoscopic evaluation was performed in our study. Stool samples were examined for culture, parasites, and Clostridium difficile toxin when patients presented with a new onset of symptoms. Patients were followed every 6–12 months, and symptoms were recorded at every visit.

Endoscopy and histology

As part of the surveillance plan in all patients with polyposis, lower endoscopies were performed once a year, within 3 months from their clinic visit. Enemas were used for intestinal preparation. The endoscopic and histologic features of the pouch, cuff, and terminal ileum were recorded during each endoscopy. In all patients, random biopsies were taken from a normal-appearing pouch, cuff, and ileum and from the areas of inflammation, if present. Biopsies were reviewed for the signs of inflammation by a dedicated gastrointestinal pathologist, who also stratified severity of histologic pouchitis according to the pouchitis disease activity index (PDAI) (10).

Clinical, endoscopic, and histologic findings were used to calculate the PDAI (see supplementary 1, Supplementary Digital Content 1, http://links.lww.com/CTG/A394), and patients with a score of 7 or more were considered to have pouchitis (10).

Statistical analysis

Continuous variables are presented as median and interquartile range (IQR) and categorical variables as proportions. A univariate analysis was used to assess association between the various clinical, endoscopic, and histologic data. Association was evaluated using the χ^2 test or the Fisher exact test for categorical variables. Spearman rho was used to evaluate the correlation between continuous variables. Logistic regression was used to evaluate association after controlling for potential confounders. Changes between serial endoscopies in the same patient were assessed using repeated measures analysis of variance with Greenhouse-Geisser correction for continuous variables and the McNemar test for categorical variables. $P < 0.05$ was considered statistically significant for all analyses. SPSS software was used for all analyses (IBM version 25, 2017).

RESULTS

Fifty-one patients with APS who underwent IPAA between the years 1987 and 2019 participated in the study. All patients underwent creation of a J-pouch in an open surgical approach and stapled anastomosis. Ninety-three endoscopies were performed on these patients during the study period. No significant variation was observed in consecutive procedures performed on the same patient; therefore, we included the single worst-appearing endoscopy per patient.

Baseline characteristics of the study population are presented in Table 1. Clinically, 13 patients (25.4%) had solid stools, whereas 36 (70.5%) and 22 patients (43.1%) reported soft and/or watery stools, respectively (some patients reported more than one type of consistency, mainly soft-watery stools). Eighteen patients (35.2%) reported abdominal pain. Twenty-six patients (50.9%) suffered from nocturnal fecal seepage, and 4 patients (7.8%) from incontinence. Four patients (7.8%) reported occasional bloody stools. Twelve patients (23.5%) had ≥10 DBM; the median DBM was 8 (5–10 IQR). Twenty patients (39.2%) had pouch-related symptoms.

Ethnicity, sex, and postoperative complications did not correlate with endoscopic or histologic outcomes nor did it correlate with patient symptoms. Notably, however, patient symptoms correlated with the type of surgical procedure, age at surgery and age at study, and with the surgery study period. These results are summarized in Table 2.

Patients who underwent a 1-step IPAA procedure had a favorable clinical outcome compared with a 2-step procedure. Overall, 3/21 patients (14.3%) who underwent a 1-step procedure had pouch-related symptoms compared with 17/29 patients (58.6%) who underwent a 2-step procedure ($P = 0.002$). Single-step patients had less DBM, more solid consistency, and less abdominal pain and nocturnal seepage (Table 2).

The year of performing surgery associated with some of the clinical outcomes. Twelve patients underwent surgery before the

Table 1. Baseline characteristics of the study population

Female sex, n (%)	28 (54.9)
Ashkenazi ethnicity, n (%)	26 (50.9)
Genetic diagnosis, n (%)	
FAP	42 (82.3)
Attenuated FAP	3 (5.8)
Polymerase proofreading polyposis	3 (5.8)
MUTYH	3 (5.8)
Year of surgery, median (range)	2003 (1987–2019)
Post-operative complications (%)	11 (21.5)
Small bowel obstruction	6 (11.7)
Leakage	4 (7.8)
Fistula	2 (3.9)
Wound infection	1 (1.9)
Bowel ischemia	1 (1.9)
IPAA number of steps, n (%)	
One	21 (41.1)
Two	29 (56.8)
Age at surgery, median (IQR)	29.5 (21.1–38.9)
Surgery study period, yr (IQR)	13.5 (8.3–17.4)
Patients on therapy (%)	31 (60.7)
Diet	28 (55)
Probiotics	20 (39.2)
Loperamide	12 (23.5)
Bismuth	5 (9.8)
Mebeverine	3 (5.8)
Cannabis	2 (3.9)
Desmoid, n (%)	23 (45.1)

FAP, familial adenomatous polyposis; IPAA, ileal pouch anal anastomosis; IQR, interquartile range.

year 2000, 10 of whom (83.3%) suffered from both nocturnal fecal seepage and watery stools compared with 16/39 (41.0%) and 12/39 (30.8%) who underwent surgery after 2000 ($P = 0.01$ and 0.001, respectively). This may be explained by the evolution of surgical practice because only 3/12 patients (25%) underwent a 1-step procedure before 2000.

Young age at surgery associated with favorable outcomes. Overall, 1/12 (8.3%) patients younger than 20 years at surgery had pouch-related symptoms compared with 19/39 patients (48.7%) older than 20 years at surgery ($P = 0.017$). More patients who were operated on at a younger age reported <5 DBM (58.3% vs 17.9%, $P = 0.011$). Moreover, a positive correlation between the age at surgery and the number of DBM was noted (Figure 1a, r = 0.4, $P = 0.003$). Patients who were operated on at a younger age had less abdominal pain and nocturnal fecal seepage compared with those who wrer operated on at an older age (Table 2). We investigated whether there were other differences between the age groups that might explain this result. There were no differences in the rates of postoperative complications or of desmoid tumors between younger (<20) and older (>20) ages at surgery: 3/12 (25%) compared with 8/39 (20.5%) of patients suffered complications ($P = 0.7$) and 6/12 (50%) compared with 17/39 (43.6%) developed desmoid tumors ($P = 0.69$), respectively.

Younger age at study enrollment also associated with better outcomes. Overall, 4/25 patients younger than 40 years (16%) suffered from pouch-related symptoms compared with 16/26 (61.5%) of patients older than 40 years ($P = 0.001$). Younger patients suffered less than older patients from abdominal pain (20% vs 50%, $P = 0.025$), nocturnal fecal seepage (28% vs 73.1%, $P = 0.001$), and watery stools (16% vs 69.2%, $P = 0.009$), and 4 reported higher rates of <5 DBM (44% vs 11.5%, $P < 0.001$). Once again, a positive correlation was found between age at study enrollment and number of DBM (Figure 1b, r = 0.5, $P < 0.001$).

Shorter surgery study period related positively with some outcomes. Patients with a surgery study period of ≤15 years had less watery stools (31.3%) and nocturnal fecal seepage (37.5%) compared with those who underwent surgery more than 15 years before the study (63.2% and 73.7%, $P = 0.026$ and 0.012, respectively). Patients with shorter surgery study periods also

Table 2. Rates of various clinical symptoms according to surgical procedure, age at surgery, surgery study period, and PDAI

	Surgical procedure			Age at surgery			Surgery Study Period			PDAI		
	One step (n = 21)	Two step (n = 29)	*P* value	≤ 20 yr (n = 12)	>20 yr (n = 39)	*P* value	≤ 15 yr (n = 32)	> 15 yr (n = 19)	*P* value	< 7 (n = 44)	≥ 7 (n = 7)	*P* value
Pouch-related symptoms (%)	3 (14.3)	17 (58.6)	0.002	1 (8.3)	19 (48.7)	0.017	10 (31.3)	10 (52.6)	0.13	15 (34.1)	5 (71.4)	0.09
<5 DBM (%)	9 (42.9)	4 (13.8)	0.02	7 (58.3)	7 (17.9)	0.011	11 (34.4)	3 (15.8)	0.15	12 (27.3)	2 (28.6)	1
Solid stool (%)	11 (52.4)	2 (6.9)	<0.001	4 (33.3)	9 (23.1)	0.47	9 (28.1)	4 (21.1)	0.74	10 (22.7)	3 (42.9)	0.35
Soft stool (%)	11 (52.4)	24 (82.8)	0.02	7 (58.3)	29 (74.4)	0.3	25 (78.1)	11 (57.9)	0.12	32 (72.7)	4 (57.1)	0.4
Watery stool (%)	6 (28.6)	16 (55.2)	0.06	1 (8.3)	21 (53.8)	0.005	10 (31.3)	12 (63.2)	0.026	19 (43.2)	3 (42.9)	1
Bloody stool (%)	1 (4.8)	3 (10.7)	0.62	0	4 (10.5)	0.56	2 (6.25)	2 (10.5)	0.43	2 (4.5)	2 (33.3)	0.06
Abdominal pain (%)	4 (19)	14 (48.3)	0.034	1 (8.3)	17 (43.6)	0.037	10 (31.3)	8 (42.1)	0.43	15 (34.1)	3 (42.9)	0.68
Nocturnal fecal seepage (%)	7 (33.3)	19 (65.5)	0.025	3 (25)	23 (59)	0.04	12 (37.5)	14 (73.7)	0.012	20 (45.5)	6 (85.7)	0.1

DBM, daily bowel movement; PDAI, pouchitis disease activity index.

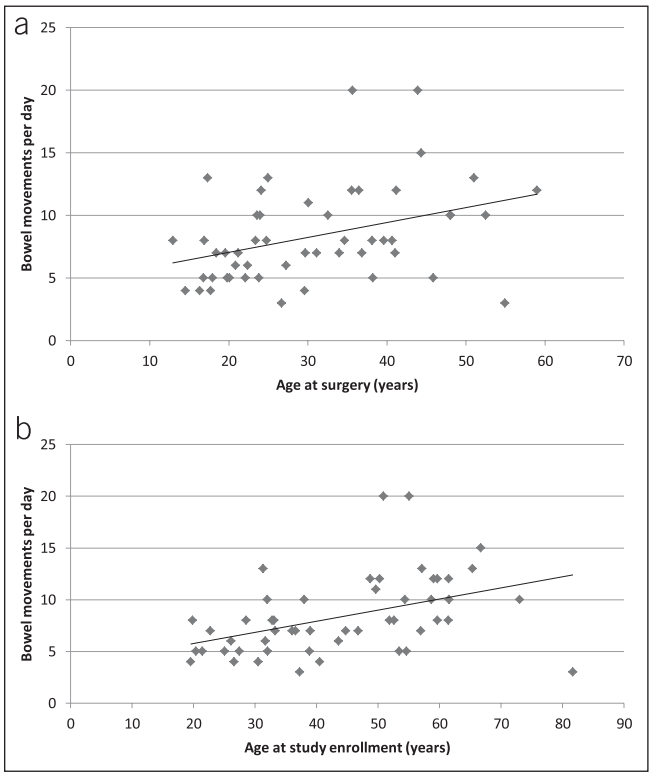

Figure 1. Correlation between age at surgery (**a**) and age at study enrollment (**b**) with number of daily bowel movements.

showed a trend toward less overall pouch-related symptoms, more solid stools, and less abdominal pain, but this did not reach statistical significance (Table 2).

Endoscopic findings

Thirty-three patients (64.7%) had a normal endoscopy, whereas 18 (35.3%) had visible signs of inflammation including erosions (10 patients), granularity (2 patients), erythema (4 patients), or ulcers (5 patients). Only 4 patients had signs of cuff inflammation (7.8%). Endoscopic findings associated with histology—14 of 18 patients (77.7%) with visible signs of pouchitis on endoscopy had inflammation on biopsy compared with 6/33 (18.2%) patients with macroscopically normal endoscopy ($P < 0.001$). Moreover, a significant correlation was noted between the endoscopic and histologic subscores of the PDAI (Figure 2, r = 0.62, $P < 0.001$). We found no association between endoscopic findings and various clinical symptoms (Figure 3), and no correlation was found between the clinical and endoscopic subscores of the PDAI (r = 0.23, $P = 0.1$).

Histologic findings

Five of 47 patients (9.8%) had signs of ileal inflammation, whereas 42 (82.3%) had normal ileum histology. Ileal biopsies were not obtained in 4 patients. Ten of 43 patients (19.6%) had signs of cuff inflammation, whereas 31 (60.7%) had normal cuff histology. Cuff biopsies were not obtained in 8 patients. Twenty-two patients (43.1%) had signs of pouch inflammation, whereas 29 (56.8%) had normal pouch biopsies. Of 22 patients with histologic pouchitis, 13 (59.1%) were defined by an expert gastrointestinal pathologist as level 1, 5 (22.7%) as level 2, and 4 (18.1%) as level 3 pouchitis. We found no association between histologic findings and various clinical symptoms (Figure 3), and no correlation was found between the clinical and histologic subscores of the PDAI (r = 0.19, $P = 0.17$). Moreover, we found no significant differences in clinical outcomes between different pouchitis levels.

We calculated the PDAI for all patients by combining clinical, endoscopic, and histologic findings. The median PDAI was 2 (IQR 1–4). Seven patients (13.7%) had a score of 7 or more. Older age at surgery associated with a higher PDAI—4/7 patients (57.1%) with PDAI ≥7 were older than 40 years at surgery compared with 8/44 (18.2%) of patients with PDAI <7 ($P = 0.04$). Age at study enrollment showed a trend toward higher PDAI (28.6% of patients older than 65 years had PDAI ≥ 7 compared with 4.5% of younger patients, $P = 0.08$). Surgery study period did not correlate significantly with PDAI. PDAI did not correlate with the number of surgical steps (14.3% of 1-step IPAA and 13.8% of 2-step had PDAI ≥ 7, $P = 1$). PDAI was associated with endoscopic and histologic findings because none of the patients with PDAI ≥ 7 had a normal pouch endoscopy or histology compared with 65.9% of patients with lower PDAI ($P = 0.001$ for both endoscopy and histology). PDAI did not correlate significantly with any of the clinical symptoms nor did it correlate with overall pouch-related symptoms (Table 2).

Multivariate analysis

We evaluated the effects of adjusting for age at surgery or at study enrollment, surgery study period, 1- or 2- step surgery, and endoscopic or histologic signs of inflammation on overall pouch-related symptoms and on 5 individual symptoms—stool consistency, DBM, nocturnal fecal seepage, incontinence, and abdominal pain—by multivariate analysis. Here, again, inflammation on endoscopy or histology did not relate with symptoms. Single-step IPAA associated with less overall pouch-related symptoms (odds ratio [OR] 0.11; 95% CI 0.02–0.6, $P = 0.01$) and more solid stools (OR 20.01; 95% confidence interval [CI] 2.9–135.5, $P = 0.002$). Age at surgery related with overall pouch-related symptoms (OR 1.09; 95% CI 1.01–1.17, $P = 0.011$) but not with individual clinical symptoms, as did age at study enrollment (OR 1.09, 95% CI 1.01–1.17, $P = 0.013$). Surgery study period did not correlate neither with overall symptoms nor with individual symptoms.

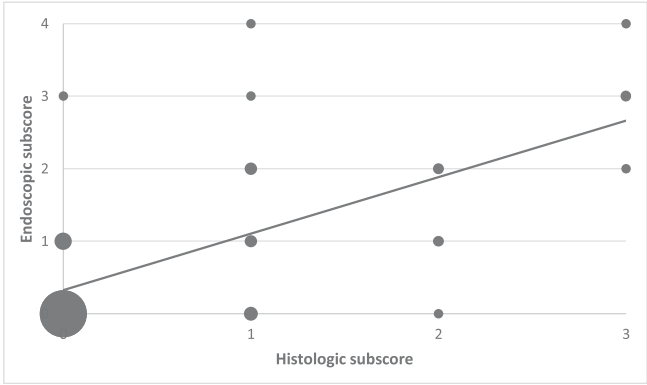

Figure 2. Correlation between endoscopic and histologic subscores of the pouchitis disease activity index. r = 0.62, $P < 0.001$.

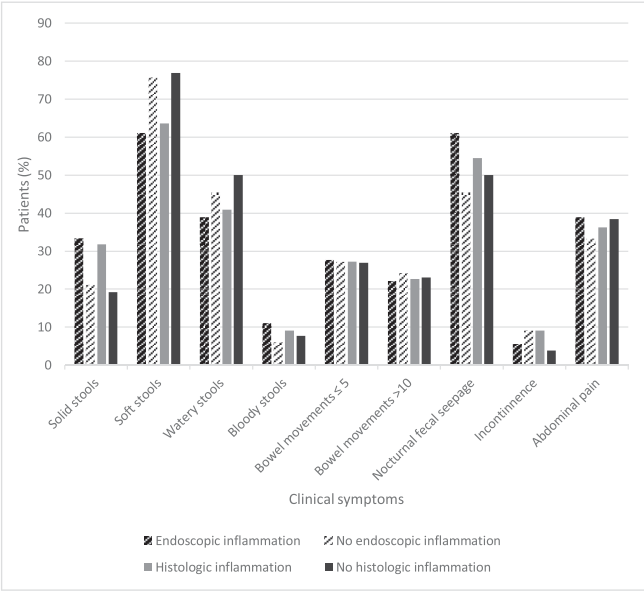

Figure 3. Prevalence of symptoms among patients with and without endoscopic or histologic signs of inflammation.

DISCUSSION

This study assessed clinical, endoscopic, and histologic findings in patients with APS after IPAA and investigated potential determinants of the clinical outcome.

Pouch-related symptoms were quite common among our study group, present in 39.2% of our cohort. Moreover, endoscopic and histologic inflammatory findings associated with pouchitis were surprisingly high: endoscopic signs in 35.3% and histological findings in 43.1% of pouch biopsies. This is in contrast to previous studies that reported much lower rates of pouchitis and pouch-related symptoms (11–13). A meta-analysis of studies published between 1986 and 2003 compared the outcomes of patients with UC and patients with FAP undergoing IPAA. Nineteen studies comprising 782 patients with FAP were included, and the pouchitis rate—defined either endoscopically, histologically, or clinically—was only 5.5% (13). More recent studies suggest a higher prevalence of pouchitis among patients with FAP reaching 19.3%–22.1% based on a combination of pouch-related symptoms and endoscopy (6,14). The higher rate of positive findings seen in our study might be explained by the more long-standing disease of our cohort—a median surgery study period of 13.5 years, as compared to most of the other studies that followed patients for only a few years (13). This might suggest that pouch-related symptoms in patients with APS take longer to manifest themselves compared with patients with UC perhaps because of an underlying inflammatory process in the latter group that affects the pouch, causing earlier symptoms.

Our results demonstrate no association between clinical symptoms associated with pouchitis and neither endoscopic nor histologic findings. Furthermore, we found no association between symptoms and PDAI, which was negative in most symptomatic patients. Here, again, the absence of an underlying inflammatory etiology may explain why patients with APS usually exhibit a less relapsing and more stable disease course, as opposed to patients with UC who frequently suffer from multiple episodes of pouchitis (24,25), rendering PDAI less suitable as an assessment tool. Interestingly, previous studies performed primarily on patients with IBD (exclusively (20) or with only 12% patients with FAP (19)) reported similar results. Ben-Bassat et al. (19) showed that although clinical components of different pouchitis scoring systems (PDAI and Pouchitis activity score) relate with their total score, they did not relate well with their respective endoscopic or histologic components. Shen et al. (20) also demonstrated that of the 61 symptomatic IPAA patients, 42% had neither pouchitis nor cuffitis according to the PDAI. These patients were considered to have an irritable bowel-like condition dubbed "irritable pouch syndrome". Our data are the first to confirm the validity of these results in a cohort comprised entirely of patients with APS.

Our data suggest that patients undergoing a 1-step IPAA procedure have a favorable clinical outcome on both univariate and multivariate analyses with less overall and individual pouch-related symptoms compared with patients who underwent a 2-step procedure. However, this parameter did not correlate with endoscopic or histologic findings. Remzi et al. (26) found no differences between 1,725 patients who underwent a 2-step procedure and 277 who underwent 1-step IPAA in pouch failure and quality-of-life measurements, although no clinical data regarding pouchitis were collected. Heuschen et al. (27) demonstrated no significant differences (15.8% vs 22.8%) in pouchitis between 57 1-step and 114 2-step IPAA patients in a matched-pair analysis. A meta-analysis of 17 independent studies comparing 1- and 2-step IPAA procedures demonstrated a trend toward less frequent defecation for the 1-step procedure, but no difference in soiling, incontinence, or use of antidiarrheal medication was noted. Moreover, this meta-analysis found no difference in the number of patients who developed pouchitis (28). These 3 studies have either included purely patients with UC (27) or had only a small group of patients with APS in their cohort (26,28). This may explain the difference seen in our study because many patients with UC undergo IPAA because of an uncontrolled inflammatory process that necessitates a 2-step procedure to allow the resolution of inflammation before attempting anastomosis. This is contrary to patients with APS who suffer no inflammation and may complete IPAA safely in a single step.

Younger patients at surgery or at study enrollment seem to have better clinical outcomes with less overall and individual pouch-related symptoms. Once again, age did not correlate with endoscopic or histologic features of pouchitis. Existing data regarding correlation between age and pouchitis are conflicting. Earlier studies found no correlation (10,29). Ferrante et al. (30) identified younger age at surgery to be associated with chronic pouchitis among 172 patients with UC, whereas older age at colectomy was identified as a protective factor for pouchitis among pediatric-onset patients with UC in 2 studies (31,32). By contrast, a large study of 1,505 patients with IBD followed over 30 years after IPAA demonstrated an increase over time of stool frequency, rates of incontinence, and numbers of patients having liquid stools. This study also demonstrated that patients who were younger than 20 years at surgery had a significantly decreased mean nocturnal stool frequency (1.7 vs 2.1, $P = 0.001$) and use of pads (35.6% vs 45.9%, $P = 0.022$) (33). Our data are in concordance with the latter study; univariate and multivariate analyses identified younger age at both time of study enrollment and time of surgery as a protective factor. At least regarding age at study enrollment, these findings might reflect the normal increase in prevalence of pelvic floor disorders seen in the aging general population (34).

In conclusion, our study demonstrates a high rate of pouch-related symptoms in patients with APS after IPAA. No association was found between symptoms, endoscopic, or histologic features or PDAI. Therefore, pouch-related symptoms may serve as a more useful parameter for the assessment of IPAA outcome in patients with polyposis than PDAI, and the use of PDAI in patients without UC should be questioned. Better outcomes were observed after a 1-step surgical procedure and in younger patients. Our data suggest that a significant proportion of symptom burden in patients with APS after IPAA might be attributed to a functional pouch disorder rather than an inflammatory pathogenesis. Therapeutic strategies directed at functional disorders may be beneficial to these patients.

CONFLICTS OF INTEREST

Guarantor of the article: Ophir Gilad, MD.
Specific author contributions: Ophir Gilad, MD and N. Gluck, MD, PhD, contributed equally to this work. O.G.—data collection and interpretation and drafting of the manuscript. N.G.—planning of the study, data interpretation, and drafting of the manuscript. E.B.—review of pathology specimens. R.K.—drafting of the manuscript. G.R.—drafting of the manuscript. H.S.—planning of the study, data interpretation, clinical follow-up of patients, and drafting of the manuscript.
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Potential competing interests: None to report.

Study Highlights

WHAT IS KNOWN

- ✓ Colectomy is performed to prevent cancer in patients with APSs. Pouchitis is the most common long-term complication of the procedure.
- ✓ Although the prevalence of pouchitis in UC reaches up to 53%, lower rates have been reported in patients with APS.
- ✓ Pouch-related symptoms do not correlate with endoscopic or histologic findings in patients with UC. Data regarding results in patients with APS are scarce.

WHAT IS NEW HERE

- ✓ Pouch-related symptoms and endoscopic and histologic signs of pouchitis were much more prevalent than previously reported.
- ✓ Better outcomes were observed after a 1-stage surgical procedure and in younger patients.
- ✓ There was no correlation between clinical and endoscopic or histologic findings, similar to patients with UC. Symptom burden might be attributed to functional pouch disorders.

TRANSLATIONAL IMPACT

- ✓ A single-step, timely surgical procedure should be preferred when feasible to obtain better clinical pouch outcomes.
- ✓ Therapeutic strategies directed at functional disorders may be beneficial in this patient population.

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