The S Ileal Pouch-Anal Anastomosis

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In order to determine the results with the S ileal pouch-anal anastomosis, 116 consecutive patients who had undergone total abdominal colectomy with resected mucosectomy and endorectal ileal pouch-anal anastomosis were assessed following ileostomy closure. In 11 patients (9.5%) pouch removal and/or conversion to permanent ileostomy was necessary because of Crohn's disease (3), pelvic sepsis (3), pouchitis (2), incontinence (2), or perineal fistula (1). Although no postoperative mortality was experienced, one or more complications was experienced in 87 patients. These consisted mainly of small bowel obstruction in 35%, pouchitis in 22%, anastomotic stricture in 14%, pelvic sepsis in 9.5%, and perianal abscess or fistula in 5%. Laparotomy was required in 29% of patients mostly for resolution of small bowel obstruction. Follow-up in the remaining 105 patients ranged from 5 to 67 months with a mean of 28 months following ileostomy closure. Stool frequency was 6.6 bowel movements per day and 1.4 bowel movements per night. Eighty-nine percent evacuated their pouches spontaneously, and 61% did not require the use of medication for bowel movement regulation. Major daytime incontinence occurred in 4%, while 15% reported nocturnal incontinence. Minor incontinence was experienced by 30% and 48% during daytime and nighttime, respectively. Despite a myriad of complications, 96% of patients unhesitatingly stated that they would undergo the procedure again so that they could avoid a permanent stoma. We conclude that restorative proctocolectomy utilizing the ileal S pouch-anal anastomosis is an acceptable procedure that should be considered as a viable choice in the treatment of chronic ulcerative colitis and familial polyposis requiring surgical intervention.

Currently, the procedure of restorative proctocolectomy with ileal pouch-anal anastomosis is fast replacing total proctocolectomy with ileostomy as the procedure of choice in the operative management of chronic ulcerative colitis and familial polyposis. As with the latter procedure, the risk of carcinoma arising in the diseased bowel is eradicated. Retention of the anal sphincter mechanism which allows preservation of continence, however, eliminates the need for the creation of a permanent ileostomy and its associated psychological and physical problems.

The concept underlying this rather involved procedure is not new. It originated in the 1940's when rectal mucosal stripping with total colectomy and a straight ileal anal anastomosis was performed by Ravitch and Sabiston [1]. Thereafter, several authors [2-5] advocated its use. It was soon realized that the rapid flow of ileal contents into the anal canal was a major contributor to the increased frequency of defecation and perianal excoriation which resulted in a 40% failure rate. Attempts to increase neorectal capacity were initially directed toward relining the denuded rectum with ileal mucosal grafts [6, 7] or by the use of graduated balloon dilatation [8]. When these met with only limited success, attention turned toward creation of some form of ileal pouch [9, 10]. It was not until 1969 when Kock [11] reported his development of a continent ileostomy that it was clearly demonstrated that the terminal ileum could function as a satisfactory reservoir. This information, coupled with the knowledge that anal continence was mediated not by sensory receptors in the rectal mucosa [12, 13] but by those located in the anal sphincter mechanism and perhaps in the anal mucosa itself, paved the way for Parks and Nicholls [14], and Ferrari and Fonkalsrud [15] to combine these concepts resulting in the current procedures. The concomitant use of the triple limb ileal reservoir or S-pouch with rectal mucosal stripping and ileal anal anastomosis following total abdominal colectomy combined with a protective temporary ileostomy completes the procedure as it is presently performed (Fig. 1).

In an effort to update our results, we reviewed our experience with the ileal anal pouch pull-through procedure.

Patient Selection

Presently, chronic ulcerative colitis and familial polyposis constitute the indications for restorative proctocolectomy. Potential candidates include those with medically intractable disease, chronic steroid dependence, failure to thrive, excessive risk of carcinoma, and complications from their nonoperative therapy. Crohn's disease, an incompetent anal sphincter, or strictured anorectum represent definite contraindications. Age over 55, obesity, emotional instability, and carcinoma constitute relative contraindications.

Patients with fulminant colitis or sepsis, toxic megacolon, perforation, or severe malnutrition initially undergo a staged procedure consisting of total abdominal colectomy with ileostomy and Hartmann's pouch or mucous fistula to allow conditions to become more optimum for the restorative procedure. If life-threatening hemorrhage develops and the rectum is actively bleeding, an emergency restorative proctocolectomy is performed with a proximal temporary ileostomy.
Evolution of Ileoanal Pouch Procedure

**Concept I**
Ileoanal Pullthrough

- 1933 Nissen
- 1943 Wangensteen
- 1947 Ravitch & Sabiston*

**Concept II**
Ileal Reservoir

- 1948 Ravitch
- 1955 Valiente & Bacon*
- 1959 Karlan et al.*
- 1964 Soave

**Concept III**
1975 Parks and Nicholls
Ferrari and Fonkalsrud*
Ileoanal Pullthrough with Ileal Reservoir (*S* Pouch)

**FUTURE**

Fig. 1. The ileal pouch-anal pull-through procedure has evolved from the amalgamation of 2 concepts: (1) the ileo-anal pull-through, which incorporated a total colectomy, rectal mucosectomy, and pull-through of the distal ileum with anastomosis to the anus, and (2) an ileal reservoir to increase the capacity of the neorectum and thus diminish frequency of bowel movements. These concepts are not new, but they were not used concomitantly until the late 1970's. The use of a proximal, temporary diverting ileostomy has added to the safety of this combined procedure and increased its acceptance. Reprinted with permission of publisher [16].

Fig. 2. Rectal mucosectomy: endoanal technique. The endoanal technique of rectal mucosectomy is begun by circumferentially infiltrating 1:200,000 epinephrine in normal saline solution into the submucosal plane. Reprinted with permission of publisher [37].

Technique

Our technique has been previously described in detail [16–18]. With the patient in a modified lithotomy position, the procedure is carried out by 2 teams and begins with exploratory laparotomy done by midline incision to exclude the presence of Crohn's disease, cancer, or other unsuspected malady. Subsequently, the sigmoid colon is encircled and tied off with umbilical tape to prevent distal passage of colonic debris. Total abdominal colectomy is then carried out in a routine fashion.