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## Ileal Pouch-Anal Anastomosis for Ulcerative Colitis: the University of Puerto Rico Experience

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**Objective.** To review the experience with ileal pouch-anal anastomosis surgery for ulcerative colitis at the University Hospital.

**Background.** As many as 40% of patients with ulcerative colitis (UC) and 75% with Crohn's disease (CD) require some surgery for their disease. The number of patients referred to our clinics for evaluation and management of Inflammatory Bowel Disease (IBD) has risen in the past seven years. A multidisciplinary IBD service has been created at the University Hospital for the care of these patients, leading to a dramatic increase in the number of surgeries performed for IBD. Over the past decade the ileal pouch-anal anastomosis (IPAA) has emerged as the procedure of choice in most patients with ulcerative colitis requiring total colectomy for management of their disease. Even though the procedure is associated with a considerable morbidity rate, it has become very popular since it avoids the

need for a permanent stoma and presumably rids the patient of disease and subsequent cancer risk.

**Results.** Twenty-five patients were identified as having IPAA for ulcerative colitis between 1993-2000. Indications for surgery were intractability and toxic megacolon. Complications were pouchitis in 11/25 (44%), anastomotic stricture in 6/25 (24%), small bowel obstruction in 4/25 (16%), and pouch failure in 2/25 (8%). Other complications included wound abscess in 1/25 (4%), and sexual dysfunction in 1/25 (4%) patients. There was no mortality; the patients' quality of life was rated as greatly improved in 14 of 17 patients interviewed (82.4%) and 16 of 17 said they would recommend the surgery to others (94.1%).

**Conclusions.** The results of IPAA surgery, morbidity, mortality, and patient satisfaction in our series were similar to other centers around the world.  
*Key words:* Inflammatory Bowel Disease, Ulcerative colitis, Ileal pouch-anal anastomosis, IBD surgery

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Crohn's disease (CD) and ulcerative colitis (UC) are chronic relapsing disorders of unknown origin that are collectively known as Inflammatory Bowel Diseases (IBD). CD is a granulomatous disease that may affect any portion of the gastrointestinal tract from the esophagus to the anus. It is characterized by recurrent episodes of diarrhea, crampy abdominal pain, and fever lasting days to weeks. UC is an ulceroinflammatory,

nongranulomatous disease limited to the colon, with a chronic relapsing and remitting course marked by attacks of bloody mucoid diarrhea. Life-threatening complications include severe diarrhea and electrolyte imbalance, massive hemorrhage, toxic megacolon with potential rupture, and perforation with peritonitis. The most feared long-term complication of UC is colon cancer (1,2).

Approximately 75% of Crohn's disease patients and as many as 40% of ulcerative colitis patients will need some surgical procedure during the course of their disease (3). Absolute indications for colectomy in patients with UC include severe hemorrhage, perforation, and documented carcinoma. Surgery is indicated also in patients with fulminant colitis or toxic megacolon that do not improve with medical therapy in 48 to 72 hours, in patients with dysplasia found in surveillance colonoscopy, and in

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patients with refractory disease requiring chronic corticosteroids to control symptoms.

A variety of procedures can be performed for the surgical treatment of UC. Over the past decade the ileal pouch-anal anastomosis (IPAA) has emerged as the procedure of choice in most patients with chronic ulcerative colitis requiring total colectomy for their disease. The popularity of this procedure has grown, mainly because it avoids the need for a permanent stoma and presumably rids the patient of the disease and subsequent cancer risk. The procedure is usually performed in two stages, unless an emergency colectomy is required. In that case, a three-stage procedure is performed. Initially, the entire colon and proximal rectum is excised and the diseased mucosa of the distal rectum and proximal anal canal is removed (mucosectomy). The ileal pouch is constructed and connected to the anal mucosa. A protective ileostomy allows healing of the pouch and anastomosis. After 2 to 3 months, integrity of the pouch, anastomosis, and sphincter mechanism are evaluated and if all is well, the ileostomy is closed. Under emergency circumstances, a total abdominal colectomy, Hartmann pouch and end ileostomy are performed as a first stage. Proximal rectal resection and distal rectal mucosectomy, removal of ileostomy, ileal pouch construction, and protective loop ileostomy are done in the second stage. The loop ileostomy is then closed in the third stage (4).

IPAA has become one of the most widely accepted procedures in the treatment of UC, yet it is associated with a considerable morbidity rate. Nevertheless, functional results are very good and patient satisfaction is very high (5). Large series have been published reporting their experience and patient outcome after surgery (5-12).

The Gastroenterology Division of the University of Puerto Rico School of Medicine has a very active Inflammatory Bowel Disease (IBD) clinic with a census of approximately 200 patients. This clinic offers a multidisciplinary service to IBD patients, and receives referrals from all over the island. More than 80 patients with CD or UC have undergone some surgical treatment at our institution. It is therefore imperative that we examine our experience with IBD surgery and evaluate the results.

### Purpose

Our goals were:

- To review all cases undergoing IPAA for UC at the University Hospital and describe the demographic characteristics of the population, the indication, type and number of surgeries performed, and the outcome of surgery.
- To assess the patient's quality of life after the surgery

taking into consideration functional outcome as described by continence and average bowel movements per day.

- To compare our results with other published series.

### Methods

The medical records of all patients followed in the IBD clinic of the Gastroenterology Division of the University of Puerto Rico Department of Medicine, as well as those patients who had undergone ileal pouch-anal anastomosis for UC by the Department of Surgery were identified. To be included in this review, at least one stage of the surgery had to be performed by the staff of the Department of Surgery of the University of Puerto Rico School of Medicine. A questionnaire including demographic data, diagnosis, indication for surgery, procedure, and complications was prepared using EPI-INFO Version 6.04 (CDC, Atlanta) with the purpose of creating a database for further statistical evaluation. The records were reviewed and the information acquired was entered using the questionnaire. To assess patients' quality of life and functional outcome, we prepared a separate questionnaire and contacted the patients through telephone or personal interviews.

The protocol was approved by the Institutional Review Board of the Medical Sciences Campus.

### Results

Thirty-four patients have undergone surgery for UC from 1993 to 2000. Of these, twenty-five patients have completed an ileal pouch-anal anastomosis and are included in this review. There were fifteen females and ten males with ages ranging from 16 to 75 years (mean age was 32.2). The mean age in females was 32.4 and in males 32.8. The indications for surgery were intractability in twenty-one patients, toxic megacolon with perforation in two patients, and toxic megacolon without perforation in two patients. Fourteen patients had a two-stage total colectomy and ileoanal anastomosis, while the other eleven patients had their surgery completed in three stages. Four patients had a stapled anastomosis and twenty-one patients had a handsewn anastomosis.

For the assessment of post-surgical complications, we reviewed all medical records of the patients from the time of surgery to the time of the study (Table 1).

Pouchitis was the most common complication, reported in eleven of twenty-five patients (44%). Pouchitis was defined as a clinical syndrome characterized by increased stool frequency often with bloody diarrhea, pelvic

**Table 1. IPAA Complications (University Hospital)**

|                       | n=25 | %  |
|-----------------------|------|----|
| Pouchitis             | 11   | 44 |
| Anastomotic stricture | 6    | 24 |
| Pouch failure         | 2    | 8  |
| Bowel obstruction     | 4    | 16 |
| Abscess and fistula   | 1    | 4  |
| Sexual dysfunction    | 1    | 4  |
| Misdiagnosis          | 1    | 4  |
| No complications      | 6    | 24 |

discomfort, fever, malaise, or other extraintestinal complaints. All the cases of pouchitis were confirmed by endoscopy and all responded to treatment with metronidazole.

Anastomotic stricture developed in six patients (24%). Anastomotic stricture was defined as narrowing of the ileoanal anastomosis severe enough to require repetitive outpatient dilatations or dilatation under anesthesia. Intestinal obstruction was a complication in four of the twenty-five patients (16%). Three of them required surgery to relieve the obstruction while one resolved with conservative treatment.

The incidence of pouch failure in our series was two of twenty-five patients (8%). We defined pouch failure as the need for pouch take-down or for pouch defunctionalization with a diverting ileostomy. Causes of pouch failure include pouch ischemia, non healing after anastomotic dehiscence, poor functional outcome, fistula and abscess that recur, or severe chronic pouchitis. In our series, one case of pouch failure was due to recurring abscess and fistula and the other was due to poor function with impaired emptying of the pouch. Other complications reported were wound abscess in one patient (4%) and sexual dysfunction in one patient (4%). One patient was reclassified as having Crohn's disease after examination of the pathologic specimen. Six of our patients have not had any complication (25%). There have been no mortalities.

Quality of life after surgery and functional outcome were determined using a questionnaire that included patients' satisfaction with surgery, average bowel movements per day, fecal continence, use of anti-diarrheal medications, and whether the patient would recommend the surgery to another UC patient. We were able to contact seventeen of the 25 patients, all of which responded to our survey. Fourteen patients said their quality of life was better after surgery (82.4%), one of them said it remained the same

(5.9%), while two reported a worse outcome (11.8%). Nevertheless, sixteen of the seventeen patients (94.1%) would recommend the surgery to others. Thirteen patients did not suffer from day incontinence (76.5%) while four did (23.5%). Night incontinence occurred in seven of our patients (41.2%) while ten (58.8%) reported none. The average bowel movements during the day for our series was 4.5 and the average bowel movements at night was 1.6. Seven patients reported using anti-diarrheal medications while the other ten did not have to use medications to maintain continence.

## Discussion

The incidence of pouchitis following IPAA in published series has varied widely, from 5% by Cohen et al. at the Toronto General and Mt. Sinai Hospital, to 48% by Meagher et al at the Mayo Clinic (6,7). In our series we reported an incidence of pouchitis of 44%. All the patients suffering from pouchitis responded to antibiotic therapy and it was not a cause of subsequent pouch failure.

Anastomotic stricture was a problem in six of our patients (24%). This incidence compares favorably with other smaller series which reported an incidence of 17% (8). Small bowel obstruction is one of the most common complications reported in the literature, ranging from 12 to 24%. We reported an incidence rate of 16%, comparing favorably with other smaller and larger series, including the Mayo study that reported an incidence of 15%.

Pouch failure was a major complication in two of our patients. Once again, this incidence is similar to the other studies. Other complications also reported in the literature include sexual dysfunction, abscess and fistula, and wound infection. In all categories we compared favorably with the other series. We had no mortality in our group, which is the trend in all of the major series.

Patient satisfaction with the surgery has been excellent. Almost every patient interviewed reported having a better quality of life after the surgery. Köhler et al reported in his series an average of 6 bowel movements per 24 hrs(13). This functional outcome is similar to the findings in our series.

Ninety-two percent of the patients followed by us have a functioning ileal pouch-anal anastomosis. The results of surgery, morbidity, mortality, and patient satisfaction are similar to other reported series (Table 2). Our study confirms that the IPAA is a viable and appropriate surgical procedure in the treatment of UC and documents that the outcome of this surgery for UC at the University of Puerto Rico School of Medicine is similar to other centers around the world.

**Table 2.** Comparison of IPAA complications

| Series<br>(Reference) | Complications   |               |                       |                   |
|-----------------------|-----------------|---------------|-----------------------|-------------------|
|                       | No. of Patients | Pouchitis (%) | Bowel obstruction (%) | Pouch Failure (%) |
| Meagher (7)           | 1310            | 48            | 15                    | 10                |
| McMullen (11)         | 38              | 24            | 24                    | 5                 |
| Cohen (6)             | 82              | 5             | 19                    | 1                 |
| Pescatori (10)        | 84              | 17            | 12                    | 5                 |
| Marcello (12)         | 460             | 18            | 24                    | 4                 |
| de Silva (8)          | 23              | 26            | 22                    | 17                |
| Fazio (5)             | 1005            | 23            | 25                    | 4                 |
| UPR                   | 25              | 44            | 16                    | 8                 |

## Resumen

Hasta un 40% de los pacientes con colitis ulcerosa y 75% con enfermedad de Crohn requieren algún tipo de procedimiento quirúrgico por su enfermedad. El número de pacientes referidos a nuestras clínicas para evaluación y manejo de enfermedad inflamatoria del intestino (EII) ha aumentado en los pasado siete años. La creación de un servicio multidisciplinario de EII en el Hospital Universitario de la Escuela de Medicina de la Universidad de Puerto Rico para el cuidado de estos pacientes ha resultado en un aumento dramático en el número de cirugías para EII. La construcción de un reservorio ileal con anastomosis anal (IPAA en inglés) ha emergido en la pasada década como el procedimiento de elección en la mayoría de los pacientes de colitis ulcerosa que requieren colectomía total para el manejo de su enfermedad. A pesar de que el procedimiento está asociado a una morbilidad considerable, se ha popularizado porque evita la necesidad de un estoma permanente y libra al paciente de la condición y su riesgo asociado de cancer. El propósito de este estudio fue revisar la experiencia con la cirugía de IPAA para colitis ulcerosa en nuestro Hospital Universitario. Veinticinco pacientes que fueron sometidos a la cirugía IPAA entre 1993-2000 fueron identificados. Las indicaciones para cirugía fueron intractabilidad (21) y megacolon tóxico (4). Las complicaciones fueron inflamación del reservorio ("pouchitis") en 11/25 (44%), estrechez de las anastomosis en 6/25 (24%), obstrucción del intestino delgado en 4/25 (16%), y disfunción del

reservorio en 2/25 (8%). Otras complicaciones fueron absceso de la herida en 1/25 (4%) y disfunción sexual en 1/25 (4%) pacientes. No hubo mortalidad. La calidad de vida de los pacientes fue calificada como significativamente mejor en 14 de 17 pacientes entrevistados (82.4%) y 16 de 17 pacientes recomendarían la cirugía a otros (94.1%). Los resultados de la cirugía IPAA, su morbilidad, mortalidad y satisfacción de pacientes en nuestro estudio son similares a otros centros del mundo.

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