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**ROCHESTER INSTITUTE OF TECHNOLOGY**

A Thesis Submitted to the Faculty of  
The College of Imaging Arts and Sciences  
In Candidacy for the Degree of  
MASTER OF FINE ARTS

**THE MODIFIED PARKS PROCEDURE:  
A PATIENT'S GUIDE TO SURGERY AND CARE**

by

Bethany LaYacona Macy

November, 1998

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## ACKNOWLEDGEMENTS

I wish to thank Dr. Stephen Rauh for giving me the chance to fulfill my wish to create a real work experience and produce something that will actually be a useful tool in the progress of the Parks Procedure.

I am grateful to Glen Hintz for his guidance and input, and his understanding of my needs. I admire his ability as an artist and his patience as a teacher. He truly is the backbone and heart of the Medical Illustration program at RIT.

With deepest gratitude and love, I thank my parents, Mario and Marie LaYacona; my husband, John; and my children, Jenny Marie, Annabeth, and John Forrest.

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## INTRODUCTION

Parks Procedure, more commonly known as ileal pouch anal anastomosis (IPAA), is a surgical cure for chronic ulcerative colitis and familial adenomatous polyposis (FAP). Developed over the past 50 years, it is currently the procedure of choice for the surgical cure of these two diseases. Although surgeons have experimented for almost a century with surgical procedures that could restore continence through the anal canal after total removal of the colon and rectum, it wasn't until 1978 that British surgeons, Parks and Nicholls successfully created an ileal pouch with anal anastomosis. The issue of my thesis was to provide a needed piece in the spectrum of this surgical cure.

I initially chose the Parks Procedure for the topic of my thesis. Fortunately, my desire and reality were in tune, and my topic remained constant. Having had the Parks Procedure in 1994, I knew the patient side of the surgery intimately. I was aware that this procedure was still in its early years and there was little information available for patients. I hoped that there would be a genuine need for a medical illustration project on this subject.

It was important for me to find a project that had the components of a professional job that I might encounter out in the "real world." I had returned to school to be trained in a profession. I expected to go out and find a job using the skills and understandings that I had acquired in the program at the Rochester Institute of Technology. My understanding of the thesis project for a Masters degree in Medical Illustration was not purely academic. I intended to create a "job" environment. To create this environment, I would have to find a medical professional with a need to produce a product. I would be the service provider for both the medical professional and product producer. It was this interface that I was seeking, the experience of interpreting the professional need and conveying that to the business world.

I approached Dr. Stephen Rauh of the Rochester Colon-Rectal Surgeons group, Rochester, New York, about a useful and current topic pertaining to the Parks Procedure for my thesis. My project was to create a booklet for his group's prospective patients. To this end, a brief description of the diseases is essential. The chronological developmental history of research and events is also important to understanding the complexity of this procedure. Next, the surgical process is presented. For continuity, I have described the procedure as the RCRS group performs it today. For personal and professional reasons, they refer to the procedure as "The Modified Parks Procedure."

In the first part of this paper, I have included technical and historical information for background and understanding, but it was my mission to meld visual and informative components into a support tool for patients facing this traumatic health juncture in their lives. The second part of this paper contains the methods and details of actually getting the project done. I have described meetings, conversations and concepts. Practical information about methods that worked and didn't work are also included. The end product, the booklet, is in Appendix II. Lastly, I have truly enjoyed working on this project. Having to do a thesis was an intimidating prospect. But the work and scope of this project has been a rewarding and fulfilling experience. Please, enjoy my work and presentation.

**PART I**

**THE TOPIC**

## CHAPTER 2

### THE DISEASES THAT LEAD TO PARKS PROCEDURE

#### *Ulcerative Colitis*

Ulcerative colitis is classified as an inflammatory bowel disease (IBD). The inflammatory bowel diseases, ulcerative colitis and Crohn's disease, cause inflammation and ulceration in the small and large intestines. In ulcerative colitis, the inner mucosal lining of the colon and rectum is affected. While the disease may cause other complications, it does not invade the small intestine or the rest of the digestive tract. Crohn's disease is an inflammation that invades the layers of the intestinal wall of both the large and small bowel, and may also affect other parts of the digestive tract. Since ulcerative colitis and Crohn's disease manifest similar symptoms, an accurate diagnosis is important. Initial medical treatment and drug therapy of these two diseases is similar, but because of the invasive and migratory course of Crohn's disease, the Parks Procedure is not usually an appropriate curative surgical choice.

Although ulcerative colitis has been described in medical archives for over 100 years, the cause is still unknown. Over the years, many experiments and research projects have been conducted to determine an origin of this disease. No definitive answers have been found.

"From the 1930s to the 1950s etiologic speculation include food and pollen allergy, deficiency of an "intestinal protective substance," various aerobic and anaerobic intestinal bacteria, and a psychiatric disorder (e.g., an "ulcerative colitis personality"). (Kirsner 1995, 3)

The current leading theory suggests that some agent, possibly a virus or an atypical bacterium interacts with the body's immune system to trigger an inflammatory reaction in the intestinal wall. Although much scientific evidence shows that people with ulcerative colitis have abnormalities of the immune system, doctors do not know whether these abnormalities are a cause or result of the disease. Doctors believe, however, that there is little proof that ulcerative colitis is caused by

emotional distress or sensitivity to certain foods or food products or is the result of an unhappy childhood.

(National Institute of Diabetes, Digestive and Kidney Disease 1992)

The onset of the disease is characterized by abdominal cramping and bloody diarrhea. The disease usually starts low in the colon, i.e., the rectum and sigmoid colon. The mucosal lining of the colon becomes irritated and inflamed, small lesions form which begin to leak pus and blood. Ulcerative colitis “varies in severity from a chronic and low-grade process requiring little treatment to an acute and fulminating process demanding intensive treatment.” (Dozios and Kelly 1995, 784)

Ulcerative colitis is diagnosed through colonoscopy with biopsies and blood tests. Several effective drug therapies are currently available, and most patients’ disease will go into remission with drug treatment. About three-fourths of patients with mild to moderate disease respond well to drug treatment, i.e., their disease goes into remission and they remain symptom free with continued medical maintenance. Today’s frontline treatment drug is sulfasalazine. Developed in the late forties, sulfasalazine is a chemically bonded combination of salicytic acid (an antiinflammatory drug) and sulfa pyridine (an antibacterial derivative). (Brandt and Steiner-Grossman 1989) Great technological strides in the pharmaceutical industry have yielded many more mesalamine drugs (sulfasalazine derivatives) in different forms, i.e., enemas and suppositories, which can alleviate symptoms by delivering more medicine directly to the affected colon. Still, ulcerative colitis is a recurrent disease, and when flare-ups occur, corticosteroid treatment (oral prednisone or cortisone enema) is also needed. A brief course of prednisone with increased dosage of sulfasalazine usually brings a moderate flare up under control, then follows a period of tapering off prednisone and return to a maintenance level of sulfasalazine.

There are new drugs being used for ulcerative colitis treatment. These are immunosuppressant drugs, originally developed as antirejection medication for organ transplants. They include azathioprine, 6-mercaptopurine, methotrexate, and cyclosporine. There



have been few large studies of these drugs for treatment of ulcerative colitis. Some “uncontrolled reports in ulcerative colitis show that immunosuppressives are effective in about 75% of patients.” (Brandt and Steiner-Grossman 1989) These drugs are being used more today, but the question of their toxicity at the level given to control ulcerative colitis and the risk of them being carcinogenic, is still an ongoing issue.

Severe cases or involvement of the whole colon may not respond to drug treatment, respond poorly, or only for a brief period of time. As time and disease go on, mild or moderate colitis can become severe and involve the whole colon. At a critical point in the progression of this disease, there is little healthy colon tissue left and traditional drug treatment becomes ineffective or undesirable. Risk of colon cancer is elevated in these patients.

### Indications for Surgery

There are multiple indications for surgery in patients with ulcerative colitis. Although many patients maintain their symptoms and their disease does not progress to include the whole colon, “up to 40% of patients at referral center series (studies) had pancolitis. . . . At follow up examination five or more years later, 69% of patients now had pancolitis and 64% of this group had undergone colectomy.” (Kirsner and Shorter 1995, 966)

The majority of patients require surgery for relative indications as in 85% of our patients (Michelassi, Finco, Block: Surgical treatment of ulcerative colitis. In preparation.). In these patients more than half had failed medical treatment, including treatment with high-dose corticosteroids. The failure is evident when medical treatment can no longer control the major manifestations of the disease. Patients continue to experience diarrhea (at times bloody), abdominal pain, and occasionally tenesmus. In addition, medical therapy must be considered a failure when the disease progresses or when complications develop while the patient is receiving maximal therapy. Surgery also is considered for those patients who may have been asymptomatic on high-dose corticosteroid therapy but have recurrent symptoms with tapering of the steroid dose or those who develop corticosteroid related complications.

Cancer risk in the presence of a low-grade dysplasia has been calculated at 10%. When high-grade dysplasia is present, this risk is increased to 30 to 40%. If the dysplasia is associated with a mass, the risk of concomitant carcinoma reaches 50 to 80%. . . .

. . . The development of colon cancer is the single most important factor affecting long-term prognosis after the first four years of the disease. The identifiable factors for colon cancer in ulcerative colitis include the duration of the colitis, the extent of colonic involvement, a family history of colonic polyps or cancer, and the presence of colonic dysplasia. (Kirsner and Shorter 1995 )

Total removal of the colon and rectum is considered the cure for ulcerative colitis.

Proctocolectomy removes the diseased tissue and with it the disease, its manifestations and cancer risk. Obviously, the colon and rectum are functional organs in the digestive tract, and waste management is the issue. Up until fifteen years ago, the safest and most effective procedure was proctocolectomy with permanent ileostomy. Research, creativity, and technological advancements have made available new surgical procedures for patients.

### ***Familial Adenomatous Polyposis***

Familial Adenomatous Polyposis is an inherited disorder in which a mutation occurs on the Adenomatous Polyposis Coli (APC) gene causing hundreds of adenomatous polyps in the colon. Adenomas are glandularlike benign tumors by nature, but the adenomatous polyps of this disease become malignant over time. If a patient with FAP does not have a resection of their colon, they will eventually develop colorectal cancer. (Bleday n.d.) With recent advancements in genetic sciences, much is being discovered about the mutations of the APC gene.

The cloning of the APC gene presents powerful diagnostic opportunities, particularly for individuals with a family history of colon cancer. Because of the early stage at which this gene is altered, future screening will provide important information concerning the risk of an individual to develop colon cancer, and if alterations exist, will indicate the need for frequent colonoscopy. This screening will involve simply collection of peripheral blood cells to detect APC mutations in potential members of the FAP families, since the inherited mutation is present in all cells of the body and is currently based on the invitro synthesis of a truncated APC gene product. However, screening for the mutated APC gene will not help identify patients who

are at risk for developing sporadic bowel adenomas. Results of screening FAP family members has an accuracy of approximately 80%. Therefore, endoscopic screening cannot be eliminated completely even with a negative result on genetic analysis. In a review by Petersen and Brensinger (1996), they recommend that sigmoidoscopic screening should be performed in an individual with a positive family history for FAP and with a negative test for the APC gene product at 18, 25 and 35 years of age. (Bleday n.d.)

Three methods of screening for colon polyps are available: flexible sigmoidoscopy, colonoscopy, and barium enema. Early screening is important because often there are no presenting symptoms of polyp growth. If polyps are found, surgery is recommended. Early detection and surgical treatment are the most effective deterrents for colon cancer. (Johns Hopkins Polyposis Clinic and Registry 1994)

There are several surgical treatments available. The proper procedure for each patient is dependent on the age, the physical condition, and the extent of the disease. The surgical procedures for patients with FAP are proctocolectomy with permanent ileostomy, proctocolectomy with continent ileostomy, colectomy with ileorectal anastomosis, and proctocolectomy with ileal pouch anal anastomosis. As with ulcerative colitis, because the curative theory is "no end organ, no end organ disease," procedures which leave part or all of the rectum intact must be monitored for recurrence of disease.

Although total removal of the colon and rectum eliminates the patient's risk of colon cancer, FAP patients can develop fibromas and desmoid tumors outside their colon; therefore, screening and subsequent medical treatment are ongoing processes. There are currently some drug therapies available (nonsteroidal antiinflammatory drugs) that have reduced the size and frequency of the polyps, but once there are polyps or tumors present, the risk of cancer arises. (Bleday n.d.)

## CHAPTER 3

### PARKS PROCEDURE

#### *Introduction*

The search for a more normal reconstruction and evacuation route after proctocolectomy has progressed in several directions throughout most of this century. As with most current state of the art surgeries, the Parks Procedure is the result of years of experimentation and research. Although the concept and vision were manifest many years ago, new surgical tools and techniques, greater understanding of human physiology, and creation of new drugs were needed in order for the concepts and visions to become a viable reality. The giant strides of modern medicine in understanding the human body, coupled with the ability to create and manufacture intricate tools and support mechanisms, has enabled us to enhance and save lives. A relative few years ago, people with many different diseases had few choices and little recourse other than to accept their fate and succumb to an untimely death. Certainly, that is still part of life...to a certain degree, it is the nature of life to be unpredictable and random. However, today through biogenetic and molecular sciences, we have some insights into the structure of life, and can apply our emerging knowledge to improving and even saving lives that before were destined to die, except by divine or miraculous intervention.

One of the strides made in surgery by modern medicine was the development of the ileal pouch with anal anastomosis. This procedure is performed after proctocolectomy, and restores continence and evacuation of waste through the anal canal. Prior to this development, the procedure of choice with the most reliable results for patients suffering from ulcerative colitis or familial adenomatous polyposis was proctocolectomy with permanent ileostomy.

## *Alternative Procedures*

There are several versions of procedures that can be successfully performed on patients in need of a colectomy, i.e., subtotal colectomy, ileorectal anastomosis, and limited colectomy; however, these procedures do not remove the risk of return disease or cancer. There are three procedures available to patients which do effect a "cure" for disease and cancer risk: proctocolectomy with permanent ileostomy, proctocolectomy with continent ileostomy (Kock's pouch), and proctocolectomy with ileal pouch anal anastomosis (Parks Procedure). Several factors determine the patient's choice of procedures: overall state of health, severity of disease, whether the surgery is "elective" or an emergency situation (toxic megacolon, perforation or hemorrhage), continence before surgery, health of the anal sphincter, and age.

Although proctocolectomy with permanent ileostomy is the "tried and true" procedure with a long history of success, the disadvantage is that it results in permanent incontinence, and requires an external ileostomy device. Table 1 is a listing of advantages and disadvantages of the permanent ileostomy.

Proctocolectomy with permanent ileostomy is completed in one operation. (It) "consists of three main steps: 1) removal of the abdominal portion of the colon through an abdominal incision, 2) construction of the ileostomy, and 3) removal of the rectum. This involves a separate incision in the anal area." ( Brandt and Steiner-Grossman 1989)

TABLE 1  
PROCTOCOLECTOMY WITH PERMANENT ILEOSTOMY

Advantages	Disadvantages
<p>completed in one operation predictable results no fear of anal incontinence</p>	<p>external waste appliance emptied 4-8 x per day expensive bag may leak or smell may cause skin irritation stoma revision perineal wound problems bowel obstruction impotence ( in males) psychological and social impact</p>

Source: Stephen R. Targen and Fergus Shanahan, editors, *Inflammatory Bowel Disease from Bench to Bedside*. (Baltimore: Williams and Wilkins, 1994), 572-573.

The second procedure, proctocolectomy with continent ileostomy was developed by Dr. Nils Kock of Sweden in 1969. The Kock's pouch is constructed of the terminal ileum "and consisting of an intestinal pouch that serves as a reservoir for stool with an ileal conduit connecting the pouch to a cutaneous stoma." (Targen and Shanahan 1994, 574)

Patients would then empty the pouch by passing a soft rubber tube through the valve via the stoma. The advantage of this operation is that it is curative when it is performed after total proctocolectomy. The procedure offers the patient a potentially new lifestyle by making the ileostomy continent and thereby avoiding an external appliance. (Targen and Shanahan 1994, 574)

However, this procedure has been "plagued with complications. . . including intra-abdominal abscess, peritonitis, suture line leakage, fistulas, small bowel obstruction and stomal necrosis. The incidence of late complications, particularly valve dysfunction requiring revisional operation, was as high as 54%." (Corman 1989, 688)



Despite the drawbacks, it is considered to be one of the breakthrough surgeries that led to the successful development of ileal pouch anal anastomosis. Over the years, the continent ileostomy procedure has improved greatly. This procedure is still a choice for patients who have had a proctocolectomy with Brooke ileostomy and would like to have the advantage of a continent ileostomy, and for patients whose ileoanal pouch has failed.

### *History of the Parks Procedure*

Although the two procedures described above are curative surgeries, and certainly have their place in history and continuing viability, the Parks Procedure is now the “operation of choice” for most patients.

The operation is desirable because it avoids a permanent ileostomy and cures the patient of the disease while preserving anorectal function.

The rationale for the ileal pouch-anal operation is that excision of the cecum, colon, proximal rectum, and distal rectal mucosa removes all of the disease in patients with ulcerative colitis, and yet the ileal pouch-anal anastomosis maintains an adequate fecal reservoir, preserving fecal continence and voluntary transanal defecation, and avoids ileostomy. In addition, because the distal rectal mucosa is removed endorectally, the chance of damage to the innervation of the bladder and genitalia during the operation is minimized. Finally, because a complete proctectomy is not done, no perineal wound results, a wound sometimes difficult to heal. (Dozios and Kelly 1995, 787)

As stated earlier, the Parks Procedure has a long history of research and experimentation. There were many obstacles and failures along the way, but the vision was always kept alive and the hope that someone would figure it out eventually, persisted. During the first half of the century, research and experimentation centered around ileoanal anastomosis. In ileoanal anastomosis, the colon and rectum are resected and the terminal ileum is sutured directly to the preserved anal sphincter. Although some studies were relatively successful, others were not. Multiple complications and the issue of incontinence kept the procedure unacceptable. “Of the 41 patients operated on before 1960, only 22 patients (54%) were continent and 15 (37%) eventually required a permanent abdominal ileostomy.” (O’Morain 1991, 158) As time went on, nutritional and medical support, procedures, and technical tools

improved. So too, the incidence of postoperative complications declined, but stool frequency, urgency, and minor incontinence remained problematic.

Early on, surgeons understood that a constructed reservoir which could function as a “neorectum” was the most promising and probable solution to the issue of incontinence. Ileal pouch research began in the 1950s with an “S” shaped pouch constructed in dogs during colectomy, muscosal proctectomy and ileoanal anastomosis. Although continence was better in the dogs with the ileal pouch than the control group with a straight ileoanal anastomosis, converting the procedure to humans was technically overwhelming and the results were discouraging. (O’Morain 1991, 159)

In Table 2, I have compiled a chronological evolution of the development of the Parks Procedure.



TABLE 2

## CHRONOLOGICAL EVOLUTION OF THE PARKS PROCEDURE

Year	Surgeon	Procedures
1888	Julius Von Hochenegg	Preserved anal sphincter function by using pullthrough method of coloanal anastomosis - anorectal mucosa was stripped through the anus and proximal intestine pulled through the sphincter
1910	Vignolo	Described a sutured anastomosis
1933	Rudolph Nissen	Attributed with the first ileoanal anastomosis - total colectomy with ileoanal anastomosis performed on a 10 yr. old with polyposis
1948	Ravitch and Sabiston	Total proctocolectomy with anorectal mucosectomy and ileoanal anastomosis performed on 2 patients with UC - postoperatively : 2 formed stools during the day, 0 at night
1951	Goligher	Two proctocolectomies with ileoanal anastomosis - found results discouraging and unsatisfactory, but proposed continuing the research
1955	Gaston	Studied colectomy and mucosal proctectomy on stool frequency - concluded that the loss of left colon and rectum as a reservoir device was the primary detriment to incontinence
1955	Valiente and Bacon	Proposed a pantaloons pouch construction - "It is our belief that if an adequate pouch can be obtained and the sphincter mechanism can be preserved intact, it would be possible to retain the ileal contents enough so that only 3 to 4 bowel movements take place every day"
1969	Kock	Developed the continent ileostomy - ileal pouch connected to the abdominal wall for "continent" waste evacuation

(continued)

TABLE 2  
(cont.)

CHRONOLOGICAL EVOLUTION OF THE PARKS PROCEDURE

Year	Surgeon	Procedures
1977	Martin, LeCoultre and Schubert	Proctocolectomy with anorectal mucosectomy to 1 cm above the mucocutaneous junction with the terminal ileum anastomosed to the anal canal - used a temporary loop ileostomy
1978	Parks and Nicholls	First proctocolectomy with stripping anorectal mucosa and a pouch-anal anastomosis - performed on 21 patients (17-UC, 4-FAP) - continence was good, avg. of 4 bowel movements per day - used S-pouch construction
1980	Utsunomiya et al	Used J-pouch construction
1980	Fonkalsrud	Used side-to-side pouch construction
1985	Nicholls and Pezim	Modified J-pouch to create W-pouch for expanded capacity

Sources: Colm O'Morain, MD, MSc, FR, CPI, editor. *Ulcerative Colitis*. (Boca Raton: CRC Press, 1991) 158-160. Marvin Corman. *Colon and Rectal Surgery, 2nd Edition*. (Philadelphia: J.B. Lippincott, Co., 1989) 694-695.

### *The Operations*

The description that follows is a brief synopsis of the major steps involved in performing a Parks Procedure. It is usually done in two stages. During the first surgical stage the colectomy, rectal mucosectomy, pouch construction, pouch-anal anastomosis, and temporary loop ileostomy is performed. This surgery takes about 6 hours to complete. The second stage consists of the ileostomy takedown and takes about 3 hours to complete. There are variations in technique, pouch shape, and construction, depending on the surgeon (or surgical team) and the patient's needs. Basically, the following description has been compiled from reading surgical texts and patient information booklets, my experience as a patient, observation in the operating room with Dr. Rauh and Dr. Dmochowski, and

followup discussions with Dr. Rauh.

After initial anesthesia, the patient is positioned supine with feet in stirrups. This surgery is performed by two surgeons, the primary surgeon performs the abdominal procedures, the secondary surgeon performs the perineal procedures. The primary surgeon makes a midline abdominal incision from below the sternum, around the left side of the umbilicus to just above the pubic bone. The abdomen is thoroughly explored by touch and sight for abnormalities, placement and condition of organs, and concurrence of diagnosis. The right colon is first mobilized and transected at the end of the ileum. After tying and dividing the blood vessels, the right colon is resected. This procedure is repeated for the transverse colon and then the left colon. The rectum is then mobilized to the pelvic floor at the level of the levator ani muscle. At this point the rectal mucosectomy is performed extraanally by the secondary surgeon. The anus is effaced and dilated with retractors. The rectal mucosa is dissected with cautery, starting at the dentate line moving proximally 3-4 cm. The rectum can then be removed intraanally by the primary surgeon.

Next, the pouch is constructed. Mobilization of "the small intestinal mesentery from the retro peritoneum (allows) the distal ileum to reach the level of the dentate line. Dividing the visceral peritoneum along the right side of the superior mesenteric artery allows the mesentery to stretch and increase its length." (Dozios and Kelly 1995) Thirty to thirty-five cm. of the terminal ileum is used to configure the J-pouch. The end of the ileum is stapled shut. The ileum is folded back on itself (approx. 15 cm. long from the end to the fold). A small opening is cauterized at the apex of the fold. The pouch is formed by a stapler inserted through the opening. The stapler delivers a double row of staples along the fold line and cuts the intestinal wall between it at the same time, creating an intestinal pouch or reservoir. The apex of the pouch is then pulled through the anal canal by the secondary surgeon and sutured to the dentate line.



The loop ileostomy is established in the right abdominal wall. The purpose of the temporary ileostomy is to divert fecal content to an exterior appliance bag, allowing the pouch and anal anastomosis to heal. A drainage catheter is positioned in the presacral space behind the pouch and brought out through a stab wound in the lower left abdomen. The abdomen is then closed and stapled. Hospitalization after stage one of the Parks Procedure averages 8 days. Patients are released after they are eating, the ileostomy is functioning, and they are comfortable with their ileostomy care and apparatus.

The second surgery is usually performed about 12 weeks later. Prior to the second surgery date, patients are examined by the surgeon. An x-ray pouch study is done to ensure the pouch has healed and there are no leaks. This surgery consists of the ileostomy take-down. The stoma is detached from the abdominal wall. The intestine is sutured back together. After replacing the intestine, the abdomen is closed. Hospitalization after this procedure averages 5 days. Patients are released after they are eating and eliminating well.

### ***Hospitalization and Recovery***

In a project whose audience is a group of patients who will be putting their lives in the hands of others, it is not enough to illustrate and describe the physical aspects of a procedure. Trying to reassure and prepare a patient for the road ahead is an admirable but difficult endeavor. No amount of description can prepare someone for the reality of awakening from major abdominal surgery.

Because after surgery the intestines are temporarily “paralyzed,” patients are hydrated, nourished, and medicated intravenously. A nasogastric tube is in place to siphon out secretions and air from the stomach, and to help lessen nausea and abdominal distention. A urinary catheter is also in place. Oxygen is administered through a tube attached at the base of the nostrils. To help circulation and minimize the formation of blood clots, air bags that inflate and deflate are placed on the lower legs. Pain medication (usually morphine) is

administered through the IV by an “on demand” metered and timed machine which the patient controls by pushing a button.

As the intestines begin to “wake up” and function again, the nasogastric tube is removed and food is begun to be introduced. The ileostomy should be functioning also. This can be a discouraging and overwhelming time for the patient. It is particularly important for the hospital care team to be well trained. The post surgical nursing team takes complete care of the patient. All bodily functions are monitored constantly for the first few days after surgery. Part of the hospital care team is the enterostomal therapist (ET), who is specially trained in the care and training of stomal maintenance. The ET takes care of the waste appliance and the stoma in the first few days of recovery. When the patient begins to feel better and able to move around more easily, she teaches him how to care for the ileostomy. As the patient gains strength and mobility, the urinary catheter and other postsurgical support apparatus are removed. Pain medication is tapered off and switched to an oral form. When drainage decreases, the surgical drain is removed. The staples are removed just before release from the hospital.

Before release, the ET nurse arranges a time for home visits to help the patient change the ileostomy appliance. During the recovery period (4-6 weeks), the patient is restricted in lifting, driving, and strenuous activities. Travel out of town is prohibited for the time period between surgeries. Return to work is restricted for four to six weeks or longer depending on the patient’s health and strength. Diet, too, is temporarily restrictive. More frequent, small, low residue meals aid the function of the ileostomy. Patients must chew all food very thoroughly. Since the colon has been removed, there is no longer an effective method for the body to extract and recycle water and electrolytes from the solid waste. Extra intake of water, fluids, and salt helps keep the patient’s system hydrated and functioning well. Extra rest is important during recovery.

At about 12 weeks after surgery, the patient will have an x-ray to confirm that the

pouch has healed and has no blockages or leaks. With a positive confirmation of the health of the pouch, the second surgery is performed.

Usually, there is only an IV in place after the ileostomy takedown. Food is restricted the first few days. As the lower bowel wakes up, gas and secretions should begin to be eliminated through the anus. Clear liquids are introduced first, providing they “stay down” and elimination continues, foods are slowly introduced. As before, bodily functions are monitored, pain is managed (usually orally), and the patient is released when food is well tolerated from end to end.

### *Life After Surgery*

As healing occurs and life returns to normal activities, the Parks Procedure patient usually has anywhere from 4 to 12 loose or liquid bowel movements during the day, and 1 to 3 during the night. This frequency lessens over time. Most studies report that the average bowel movement per day after one year is 4 to 6. Some anal leakage during the day and night is likely to be a fact of life for awhile. As mentioned previously, the colon’s main function is to extract and recycle fluid from the body’s solid waste. The small intestine is not designed to extract a lot of fluid, therefore the waste that goes into the ileal pouch remains liquid. Over time, the pouch adapts to its new role as “rectum” and stool becomes a little more solid, but essentially, bowel movements are mushy or liquid. The use of Metamucil can help solidify stool. To reduce motility, Lomotil or Imodium can be taken.

Pouchitis is a concern. Pouchitis is an inflammation of the pouch, and symptoms are similar to the symptoms of ulcerative colitis. Characterized by pain, fever, more frequent bowel movements, and sometimes mucous and blood; it is generally treated successfully with an antibiotic course of Flagyl and/or Cipro.

The other concern is small bowel obstruction. This complication can be caused by several things: too much roughage in the diet, constriction in the intestine where the

ileostomy was or at the pouch-anal anastomosis, and adhesions and scar tissue growth from surgery. Bowel obstruction (early and late) occurs in about 22% of patients. This occurrence is similar to statistics of bowel obstruction after the other colectomy procedures. (Dozios and Kelly 1995)

Because this is a relatively new procedure, long term data and statistics are still being collected and evaluated. Based on the low complication rate and quality of life achieved by patients, the Parks Procedure is a safe and effective cure for ulcerative colitis and familial adenomatous polyposis.

In a study comparing performance of seven different daily activities among patients with Brooke ileostomy and patients with an ileal pouch, patients with an ileal pouch outperformed Brooke ileostomy patients in every activity, including sexual, sport, social, recreational, family relationships, work around the house and travel. These results largely agree with those of others who studied the functional outcome of the operation and clearly indicate that patients not only regain their health, but also are satisfied with the operation. (Dozios and Kelly 1995)

What happens as the Parks patient ages? Does continence change? Do other complications occur? Does the pouch "wear out"? These are questions only time can answer. So far, the results are encouraging. More surgeons are being trained to do this procedure, more surgeons are performing the Parks Procedure at more facilities, and more people are choosing to have a Parks Procedure over the alternative procedures available.

**PART II**  
**THE PROJECT**



## CHAPTER 4

### DEFINING THE NEEDS OF THE PROJECT

#### *Meetings with the Doctor*

Dr. Stephen Rauh of the Rochester Colon-Rectal Surgeons group, Rochester, New York, was a perfect candidate to fulfill the first component of my thesis objective. Being a former patient of his, I knew his involvement in Parks Procedures went further than the surgery itself. He was genuinely interested in supplying his “Parks patients” with as much information and support as was available. His surgical and hospital staff teams were compassionate, well trained and thorough in their duties. He also sponsored a Parks support group and kept an active list of patients who would talk candidly to prospective patients. I hoped that he would be responsive to my need to create a project for my thesis.

My first meeting with Dr. Rauh went well. In fact, it was serendipitous. Not only was he responsive to my need for help with my thesis, he was in the process of writing a handbook for his group’s Parks patients. He had the general text layout in mind and was well into writing. He had not yet thought about visual design, layout or illustrations. We discussed what he was writing and why. From the group’s years of training and surgical experience, the doctors had evolved a procedure they called the “Modified Parks Procedure.” His intention was to produce a patient guide for this surgery in frank, open language. There are few patient handbooks written about this procedure, the ones that are available do not address his patients’ needs or the specifics of the surgery that he and his group perform. Once we had agreed that this would be a mutually beneficial project, the next two components of my objective were identified.

My second component was to provide the service to my customer, Dr. Rauh, that would satisfy his needs. To do this successfully, I had to be able to listen, digest, and understand his criteria. We had two brief discussion meetings. He stressed his desire to produce

a user friendly book that provided straightforward information. One of his objections to similar booklets was their overuse of medical terms. He envisioned a book that answered questions and explained details in a manner that helped patients feel relaxed and supported.

#### First Meeting Decisions:

- (1) Dr. Rauh would be responsible for the text.
- (2) I would be responsible for the the layout, design, and the illustrations.
- (3) We would concentrate on completion of the book, and I would have a presentation finished for the thesis show.
- (4) He would provide technical support, written and visual aids, access to his surgery room for observation, and candid critiques of the illustrations.
- (5) I would be responsible for communication with the printer and getting the book print ready.

In this meeting the last component of my thesis project was defined and set into motion. In short, he offered me all the components I needed to fulfill my thesis objective.

My task for our second meeting was to understand his criteria. I provided an outline of pertinent decisions and brought my portfolio. There were seven major points to discuss: title, printing, layout and design, contents, cover, and time frame (see Appendix I). We left the title open until the project was farther along. The group had an established relationship with Mahar Printing, so they would be the print facility. Rochester Colon-Rectal Surgeons performs about 20 Parks surgeries a year, so the quantity of books to be printed would be small (100 ). I would contact Al Mahar (Mahar Printing) to learn their requirements and set the printing piece in motion.

We briefly went over what illustrations he felt were necessary:

Frontal view: normal digestive tract,  
post surgical digestive tract,  
permanent ileostomy anatomy,  
orientation with surgical incision and stoma site.

Sagittal view: stoma construction  
pouch construction  
pouch placement  
pouch-anal anastomosis

When he looked through my portfolio, he was drawn to the watercolor work. As we looked through his surgery text, I pointed out the carbon dust illustrations. Although they were finely done, I realized that as a doctor, he had seen lots of carbon dust depictions and considered them too academic for our project application. We also looked through two sample booklets. Both had simple pen and ink illustrations. One was poorly executed and unacceptable. The other, although nicely drawn, was stark and dry--again, too academic. At some point in our conversation, he stated that he wanted the cover to be "different." I realize now how valuable this discourse had been for us. It tuned our visual perceptions and enabled me to understand his expectations for the booklet.

At this point I had not read any of the text. Reading the text would help me understand the tone of the book, and help my design and illustration efforts. He was reluctant to give me partially finished, unedited text. We agreed that he would have the text finished over the Christmas holiday and send me a copy the first week of January, at which time we would set another meeting.

By late January I still did not have any text. I had finished the cover art and done a few anatomical drawings for preparation, but was lost without the text. I knew that he had the general text layout in mind but I needed a table of contents and whatever text he had finished so that I could produce some layout ideas and page designs. I convinced him to give me what he had finished, which he did.

Before my second meeting with Dr. Rauh, I discussed the use of color with Glen Hintz. We had discussed color illustrations vs. black and white, and the feasibility of using color in the pages, i.e., color text or color blocks with text. His advice was to try spot color on the pages and keep the illustrations black and white. Considering the product and the size of the proposed run, he thought that four color printing would be cost prohibitive.

To help make my design decisions, I looked at lots of catalogs and many computer software handbooks. I liked the shape and feel of the books that were 5.5" x 8.5" vertical.



Since this size is standard 8.5" x 11" paper folded in half, it was also practical. Next, I looked at page layouts and designs. Manuals with side page bleeds were effective for finding things in a hurry. Color or bold headings within chapters were informative and eye-catching. A splash of color on a page made it much more interesting and sophisticated. I had done a watercolor montage of images for the cover. It would set the tone for the interior of the book.

By our next meeting, I had finished the research for the illustrations, viewed a videotape of the pouch construction repeatedly, and attended the Parks Support Group meeting. I had prepared two layout designs in Quark, finished the cover design artwork, and completed the first pen and ink illustrations for the book. Dr. Rauh had not yet seen any of my ideas or work.

I presented Dr. Rauh with two chapter page layouts and a table of contents page. The first design had only one color. The second design had six different colors, one for each chapter, arranged in a more or less "rainbow" order. The table of contents page set the look of the interior. My intention was to keep the text and artwork black and white, simple and well crafted, and add color to the perimeter of the pages. The combination of the color and detail of the cover, and the color blocks inside would provide good support to the contrast of pen and ink.

He immediately liked the multicolor layout. The colors were soft and pleasing, and evoked a "happy" feeling. He made anatomical corrections on the illustrations and did not object to the choice of pen and ink. The cover art was a conceptual stretch to relate it to Parks Procedure surgery but it was "different" (and Glen liked it). The doctor's immediate response was silence. He was unprepared for the concept of the painting. After looking at it, he was genuinely excited. At this point, the visual and conceptual course was set and design decisions were easy and obvious. After this meeting, all our visual decisions were concurrent. We agreed on every decision of design, color and layout.

### *Contact with the Printer*

Next came a meeting with Al Mahar of Mahar Printing. I showed him the layout, the cover art, and told him about my thesis. This job would be run on a new high end digital color printer. It would allow us a short run with the color we wanted at a reasonable price. We also discussed color and the problems that would be encountered trying to match the colors I showed him from my printer at home. At this meeting he introduced me to my contact at Mahar, Patrick Collins, who would answer my questions and help me prepare the book layout for print. Al assured me that no matter how much planning and layout work I did, without the text I would not be making a book. There would also be no cost estimate until the book was laid out entirely with text. I relayed this message to Dr. Rauh, and picked up the finished text the following Tuesday. By this time, it was well into March.

Al also introduced me to Qualtech, a reprographics facility that would scan the cover art for printing and create stats of the illustrations for the thesis show. I went straight from Mahar's office to Qualtech to have the cover art scanned.

## CHAPTER 5

### PROVIDING THE SERVICE

#### *The Cover*

My intention for the cover was the same as Dr. Rauh's from the outset: something different. I have a vision of life that everything is connected and everything has the same life force, i.e., light within, and therefore transformations and connections exist between (seemingly) very different objects or beings. It was with this thought in mind that I created the cover painting. The initial visual inspiration came from looking at the colon, intestines and the intestinal cascade from a variety of sources: medical illustrations-- from Clemente to little line drawings in the dictionary, pictures from cadaver books, sketches from my notebook, even the slide of my own colon taken after my first surgery. The intestinal cascade is truly an intricate and beautiful design, and a pattern seen in many different life forms. I drew the colon at the cecum where it attaches to the ileum with the cascade spreading out to the right. I fit a bird's wing into the blood vessel pattern. The snake was a natural shape occurrence encircling the right side of the picture. The shell provided contrast and stability. There had to be plant life, and it grew out of the juncture of the colon and the cascade. I chose watercolor because it would naturally lend itself to the melding and meshing of forms that I wanted to accomplish. This was the centerpiece of my thesis show and the cover of a small book, it needed to be large enough to see and small enough to reduce well. It took almost three weeks of work to finish. It is a vertical format, centered on a 22"x 30" sheet of Strathmore, double-sided, single weight, coldpress illustration board.

Qualtech scanned the painting to fit in an 8.5" x 11" vertical format. It cost \$75 (paid for by the printing company, later added to the cost to the Dr.) It was a three day service. The Zip disk I gave them was defective so I took in another disk and they reloaded it successfully. Qualtech keeps files in their system for two weeks. It's important to check your facility's policies when having services done, and make back ups. Zip disks have defects!



## *The Layout*

The layout software I have is Quark 3.31. I had had some experience in using Quark from a project that we did in the medical illustration graphics class during the winter quarter of 1996. However, I learned there was much more to doing a print ready book layout than setting margins and importing pictures.

I attempted to set up master pages first for the chapter heading pages. I thought I needed to make a separate master for each chapter. This was wrong. I ended up with pages that looked similar, but were “just a little bit different”...not good! From trial and error, and Patrick Collins’s patient coaching, I figured out how to use the bars at the bottom of the screen and the **Modify** under the **Item** menu. I never did create an effective master page---as I was too far down the road and out of time to go back and redo all my pages. In the end, I manually fixed each page to the same dimensions and object increments. It worked, but wasn’t efficient.

Two things I recommend: (1) Set up master pages perfectly, using as few as possible. If colors vary from page to page but the dimensions and layout stay the same, change the color on the specific pages in the **Modify** part of the **Item** menu. That way, all your boxes and type, etc., stay constant. (2) Be careful not to drag your master page onto any given page in **Document Layout** (under the **Utilities** menu) more than once. If you do, you’ll end up with several master layouts underneath the one you are working on.

The first two chapters were the longest and contained all the illustrations. This part of the designing was time consuming, but a part that I enjoy. Descriptions were brief and I was able to place each illustration with its corresponding text. I kept the illustrations as large as the format would allow. I set up the format as double page spreads so I could see how the page would appear in the book. I printed out sample pages on my printer at home (Hewlett Packard Deskjet 660). To get the double page spread on a single sheet of 8.5” x 11” paper, I chose **Horizontal Orientation** in **Page Setup** of the **File** menu, then checked the

**Spreads** box in the **Print** menu. For editing purposes, I printed the pages with the **Spreads** box **OFF** and the **Registration ON**. This prints out single pages with the registration center/crop marks at the borders. For placement purposes only, I scanned my illustrations at RIT. Patrick had told me to scan them bitmapped at 600 dpi. The problem with the school's facility was availability. There are four scanners scattered around the art building computer labs, all had different software, and were usually busy. I liked using the Silverscan machine in Barschel, but I was forever waiting in line.

For his printing purposes, Patrick had also told me to save the illustrations in Photoshop as an **EPS** file. However, I saved the illustrations as **TIFF** files because they printed much clearer on my deskjet printer. This is not a really important point, but it helped to have good print quality when I showed Dr. Rauh page layouts for approval. So, I ended up with two illustration files, one saved in **EPS** for Mahar Printing and one saved as **TIFF** files for sample printing on my printer at home.

Dr. Rauh had chosen the typeface, Benguiat. Twelve point was too large. Dr. Rauh suggested 11 pt., and that worked fine. For the chapter page headings and the table of contents, I played around with variations in size and style still using only Benguiat font. I presented both Glen Hintz and Dr. Rauh with the variations. Glen's general comment was the headings were a little too large---I sized them down. Dr. Rauh liked the bold print. The rest of the chapters were basically a task of typing.



## *The Illustrations*

What was to be illustrated had been discussed in the second meeting with Dr. Rauh. I drew them on paper first, then inked them on drafting film with a Windsor Newton Series 7A, No. 00 brush. I worked rather large which is comfortable for me and provided large enough art work to have stats made with a slight reduction and still look good in a 16" x 20" format. I had a slew of 16" x 20" gray metal section frames from a previous show and wanted to use them. My son was the model for the first four illustrations which were comparisons of the intestinal tract before and after surgery. The illustrations in *Grant's Atlas of Anatomy* helped me place organs. Both Glen and Dr. Rauh helped fine tune this placement.

Figuring out how to render the small intestine was a dilemma. I first used "eyelash" technique to define the shape of the intestine. It was very stiff looking and Rauh didn't like it very much. What helped the most at this point was observing the surgery. Once I saw live small intestine, I understood how delicate, translucent, and deflated looking it was. I then stippled it. Glen warned me that this method is not well embraced in the higher circles of pen and ink. However, Dr. Rauh liked it very much and thought it was more descriptive of the texture of the ileum than the eyelashing technique I had shown him previously. I honored my client's opinion and chose to stipple the small intestine in all of the illustrations. Both Dr. Rauh and Glen had corrections in the artwork, which I did. There was one point of contention between the doctor and the teacher: the length of the abdomen between the sternum and the pelvic bone on Figure 4. I ended up compromising the length, but after all was said and done, the nipples ended up being too high on the chest plane. With so many things going on at once and time too short, it became difficult to remember to notice all the details.

What took the longest was the final clean up for making the stats and scanning. This was a painstaking process, seemed to take forever, but was very necessary. By this time in the project, I was quickly running out of time and patience. It would be good to try to do all the picky stuff early on, so as not to make careless mistakes and drive yourself nuts.

## CHAPTER 6

### PREPARING THE SHOW

I decided to hang the original watercolor painting for the cover as the centerpiece of my display. Glen suggested that I have stats made of the illustrations at around 80-90% reduction. We decided that I would hang all the illustrations and a few double page spreads from the book. For the stats, I went to Qualtech. They made them centered on 16" x 20" stat paper, mounted on foamcore. The cost was \$240. I put the mounted stats in the frames without matts. From the booklet, I chose to hang the contents page, one chapter double page, and three double page spreads with illustrations. I printed these pages at my favorite print facility that I had been using since starting school, Franklin Printing (Pittsford Plaza on Monroe Ave). This is a nice, small, helpful facility, I highly recommend them. To frame these pages, I mounted each double page with spraymount onto a light gray mattboard and floated it with a 0.25" border in a white matt (16" x 20"). I also planned to display a "mock" book.

#### *The Mock Booklet*

This was the last show dilemma, how to display the book as a finished product when it was really on disk only? Patrick tried to help by printing a black and white version, but that wasn't what I wanted. The impact was lost without the color. In desperation, I went to my friend at Franklin Printing. There were a myriad of problems, no time being the least of them. First, I had to try to calibrate the color to at least get close to the colors we wanted for the contents page. Getting this page right was the key to the rest of the color. We had chosen colors that were pale almost pastel, and I had no idea that pastel colors were a horror story for printers. I was also under the impression that the Pantone Matching System (PMS) was something that actually worked from paper to computer to digital printer. Silly me.

I understood that what I saw on the screen (light) was arbitrary to what would come out on the paper from the printer (ink or toner). But I thought that the information from the computer would be some sort of standardized thing that would match the PMS sample strips I had.

Needless to say, it took several hours to get the color look I was after. The colors on the table of contents in the chapter number blocks are 100% density of colors that I modified in the Quark color menu. The title blocks (and corresponding blocks at the top of each page) are various percentage screens of the corresponding 100% blocks.

Next, I had to go through the pages and rearrange them in printable order. They needed to come out as double page spreads on both sides of the paper. The process is called "pagination." If there is an easy way to do this in Quark, I never figured it out. To accomplish pagination, I opened a new file and named it "repaged book." I chose **Select All** from the **Edit** menu for each page then copied and pasted it into the new file in the order it needed to be printed in. To keep from losing my place and confusing myself, I made a chart of the order and adjacent pages.

TABLE 3

## PAGINATION FORMAT SAMPLE

PAPER	PAGE LAYOUT	SIDE
first sheet	blank ..... title	side 1
	blank ..... 37	side 2
second sheet	36 ..... acknowl.	side 1
	blank ..... 35	side 2
third sheet	34 ..... contents	side 1
	8 ..... 33	side 2
fourth sheet	32 ..... 9	side 1
	10 ..... 31	side 2

Pages are laid out in multiples of 4. We had to hand feed the pages back through the Cannon copier to print the back side of each page. This was time consuming, and I literally tied up the printer for the whole day. Luckily, it was a Saturday and there weren't very many people trying to get stuff printed. It cost me \$82. to print this one book. Was it worth it? Probably not, but I thought it was important. The one thing I did accomplish in this endeavor was to set the colors for the printing of the book. I have used this book as the color sample for the "real" printing. I am not compelled to make the printer match it, just come close.



## CHAPTER 7

### PRINTING THE BOOKLET

After the show, I edited the book for placement and made sure all the pages and their parts were exactly the same. This procedure took a lot of time. It seemed that my lack of understanding of the Master Page function in Quark kept me from setting Master Pages up properly in the first place. I reconciled all the pages manually in the bottom menu bar. I then sent the completed text to Dr. Rauh to edit. I sent him two copies, one printed with each page on a sheet of paper with registration marks and one printed on both sides, 5.5" x 8" vertical, folded and stapled in book format. He returned the booklet to me with "post its" and penciled corrections. I had to move two pages (actually switch), which was done with copy and paste tools. One illustration needed a minor change, which was done in Photoshop, then reimported into the picture box in the Quark layout. The rest of the corrections were text edits. I returned the corrected text to him for final revisions and approval.

To help the printer get the color correct on the cover, I had a color matched dye-sub made of the artwork from the disk. This was a two day service at a small photo lab. I took the artwork in with the disk so they would have a visual reference. The first prints did not match. They reprinted them and the second prints were very good. I had two prints made, one for me and one for the printer. They cost \$10 each.

At this writing, the book (on disk) has just gone to the printer. It has taken longer to go to print than anyone anticipated. Schedules have been complicated by my moving from Rochester to Minneapolis, Minnesota, and by Dr. Rauh's schedule. Everything has taken longer than expected, including writing this paper.

## CONCLUSION

Initially, I wanted to do this project because it would give me the opportunity to help prepare prospective patients for this difficult health choice. A doctor can sit across the desk from a patient and explain that this is as major as surgery gets. He can say that the wonders of modern medicine have created this great opportunity for an almost normal life again. He can try to answer as many questions as can be thought to ask. But nothing he can say can really prepare a person for the physical reality of such a procedure as this one. I hoped that by creating a booklet for patients, it would help them to understand and prepare themselves for what was to come.

I remember the difficult days of immediate recovery after surgery. I realize now how important the compassionate, capable and well trained staff is to the recovery and success of this operation. It truly is a coordinated team effort. I also realize that there may be no way of describing what it is like to go through a medical procedure such as this one. In the end, I understand that a booklet like this is a small piece in the picture of the surgery. My hope is that it be a support and reflection of the care, concern and competence that patients will receive from the surgical team of Rochester Colon-Rectal Surgeons.

This project has been a valuable experience for me. I have learned much in the interplay of medical illustrator to doctor/client. It is important to go to meetings prepared to answer questions and have dialog on their level, i.e., understanding medical terms and conditions. My encounter with Dr. Rauh was successful. I only hope that future ventures be half as smooth and agreeable.

Overall, I found working with people in the business/professional realm productive and invigorating -- challenging in a good way. The working professionals I encountered were courteous, knowledgeable and helpful. Unfortunately, I found the opposite true in

dealing with RIT's facilities. Most of my efforts at school were fraught with red tape, unscheduled and unpredictable time restrictions, indeterminate line waiting for equipment, and equipment that malfunctioned. All in all, it was not very user-friendly.

I am happy that I was able to do a project that required me to go outside the university setting. I've learned some valuable lessons, made some valuable contacts, and hope to continue on my chosen course.



## **APPENDIX I**

### **WRITTEN COMMUNICATIONS AND MEETING OUTLINE**

December 9, 1997

Dear Dr. Rauh,

I have written an outline. I realize that it looks rather long and time consuming, but I assure you, it won't be. I just needed to write down what I think will need to be discussed and decided on so I can just go do the work. There are a few things I will go over in this letter to help set the format of our meetings and figure out when we can have a meeting.

First, I need you to sign the thesis proposal. I'll come by your office and pick it up after you sign it.

Then, we need to have a meeting. I will come to this meeting with the following things:

- Samples of my work. I want you to see artwork that I have done so that you can see 1) type of work I do, and 2) what different media look like and how they fit the needs of the project. Then we can discuss what you have in mind.
- Information on printing the book. Once you decide how you want to print the booklet, we'll know better what you'll want to go into it. I go to a printer here in town that seems inexpensive and helpful, I will discuss printing options with him. Probably, cost and number of books (or total number of pages) will be the main deciding factors.

We will also need to discuss where you want drawings or illustrations, i.e., what text you want on the page with the artwork or at least what area or chapter. It would be good if I had a general idea of how many drawings or visuals you want. I will do some preliminary sketches for these, too. (after the initial meeting)

Basically, I will do everything you need me to do to get the booklet finished. If you don't want me to do the page layout and design or help with the printing piece, that's fine, too. If you just want the artwork, that's what I'll do.

Currently, I have my thesis show scheduled for the opening on May 1, 1998. That's the last show date I could get. The book doesn't actually have to be totally finished by May 1. I don't recall discussing when you wanted to have it finished. Maybe you wanted it sooner? Whether the book is finished or not, I will need to have all the artwork (including design layouts) finished, framed and ready to hang in the show. A prototype book for the show would be great, but not required.

Also, if I could read what you've written, that would help me with my drawings and designs. I've done a little research on the history of this surgery, and found it quite interesting. It's both newer and older than I thought. I didn't realize it's development was so long in "perfecting."

I think it will take two planning meetings to get things decided. The first one will be discussions about what you want and what's available. In the second meeting, I will have rough drafts of layouts and sketches for you to look at. After you decide the printing route, we will know how long the printer needs. Then, I think we can set deadlines for you to look at work in progress and then finished work. Once I know the basics that I have described above, I can get to work. If there's stuff I've forgotten, let me know. Are there concerns or decisions that I've missed? It would be very good to talk to you on the phone. Please, give me a call at your earliest convenience.

Here are the times I am home:	Monday:	7:30 am - 5:30; after 8:30 pm
	Tuesday:	all day (no classes)
	Wednesday:	7:30 am - 1:30; after 5:30 pm
	Thursday:	7:30 am - 1:30; after 5 pm
	Friday:	7:30 am - 3 pm; after 5:30 pm
	Saturday & Sunday	any time

Usually, I am home, but if I'm not, please, leave a time and number so I can call you.

Thank you for letting me do this project with you. I am excited about it and grateful.

Most Sincerely,

beth Macy  
383-1579

P.S. It would be really good for me if this first meeting could be real soon... before December 16th. I will skip class if any of the above times are not convenient for you.

Thanks again!  
blm

from: beth Macy / 383 - 1579

to: Dr. Rauh

date: December 9, 1997

## OUTLINE FOR THESIS/BOOKLET PROJECT

### I. Title

#### A. Title of booklet vs. title of thesis project.

1. Should they be the same?
2. What do you (DR.) want to title the booklet?
3. Your opinion on what the thesis title should be.

### II. Printing

#### A. Printing options.

1. Black & White or Color?
2. How many copies are to be made?
3. Methods of getting printing done and their respective costs.
4. Print facility to be used.

#### B. Paper options.

1. Use cover stock for the cover?
2. Use matt or shiny stock for pages?
3. Look at samples and cost.

### III. Layout and Design

#### A. How you would like the finished product to look and feel?

1. Page layout design.
  - a. general page layout
  - b. page layout with art or charts
2. Typeface.
  - a. samples of typefaces available
3. Size of book.
4. Table of Contents page layout.
5. Chapter page design.
6. Introduction page design.
7. Credits page.
  - a. layout
  - b. text
  - c. photo

#### IV. Contents

##### A. Text.

1. Number of chapters.
2. Chapter headings.
3. Text for each chapter.
4. Text for Introduction and Credits.

##### B. Illustrations for each chapter.

1. What would you like to have your patients see?
  - a. illustrations.
    - 1) what and where?
    - 2) what media?
  - b. charts, graphs and/or tables.
    - 1) what and where?
    - 2) computer generated.
2. Which pages will have illustrations or charts on them?

##### C. Introduction, Credits, Table of Contents.

#### V. Cover

##### A. Ideas for cover design.

1. Graphics only?
2. Text only?
3. Illustration?
  - a. anatomical
  - b. surgical
  - c. montage of images

#### VI. Time frame

##### A. Set up a time frame to have things done.

##### B. How many meetings will it take to get things set?

C. I will bring you samples, sketches, etc., for you to go over in whatever manner is most convenient to you.

##### D. Printing schedule and dates.

E. Show installation date: April 24-26, 1998.

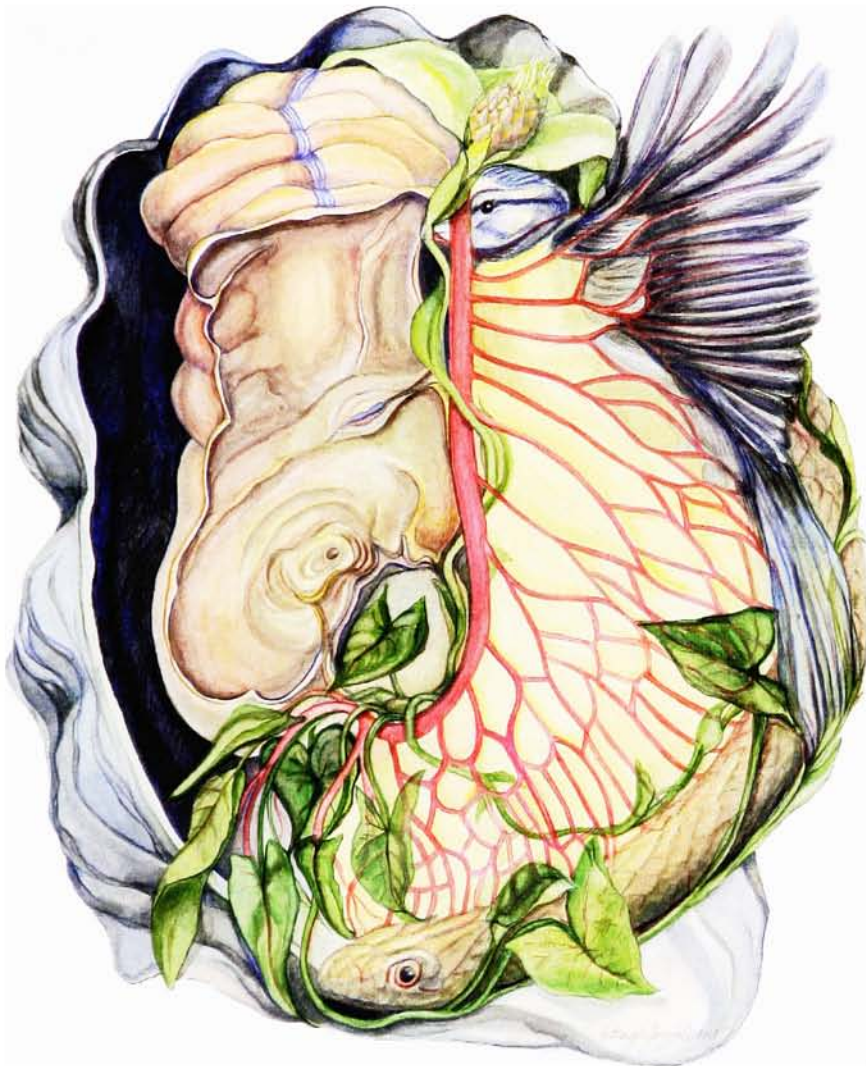
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## **APPENDIX II**

### **THE MODIFIED PARKS PROCEDURE: A PATIENT'S GUIDE TO SURGERY AND CARE**



***The Modified Parks Procedure:***  
*A Patient's Guide to Surgery and Care*



Stephen M. Rauh, MD

Illustrated by  
Bethany LaYacona Macy

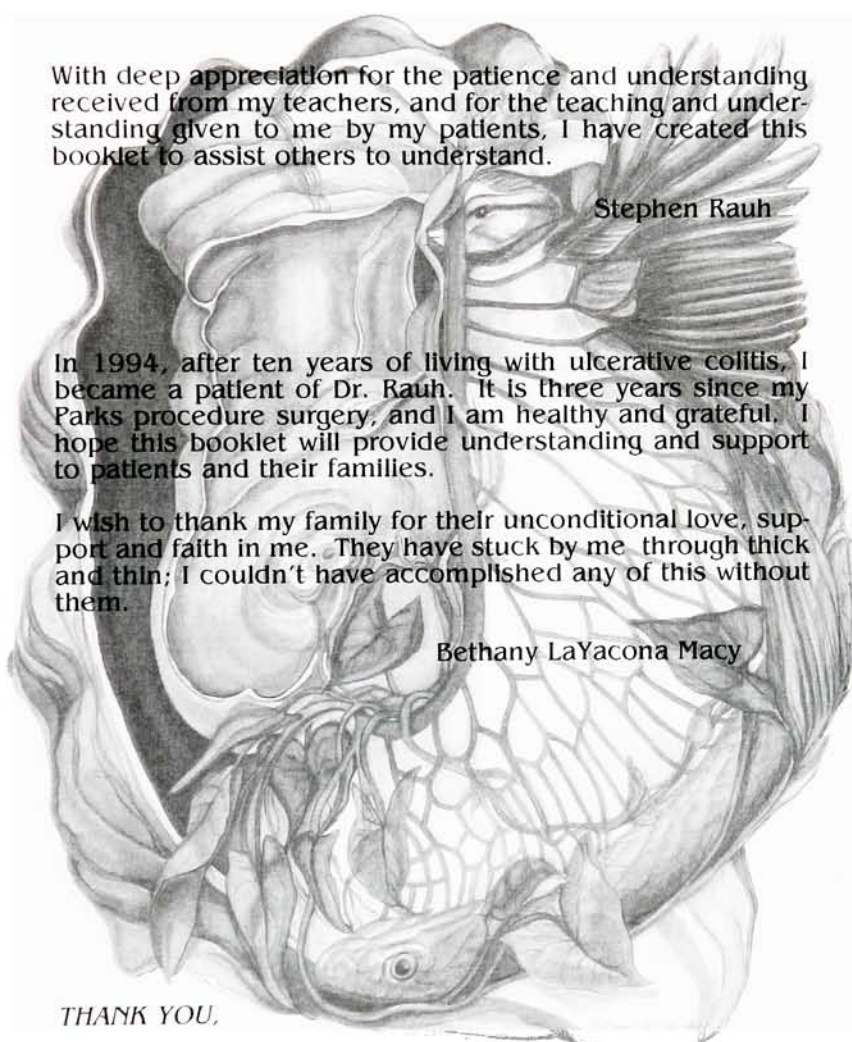


# **The Modified Parks Procedure:**

*A Patient's Guide to Surgery and Care*

Stephen M. Rauh, MD

Illustrated by  
Bethany LaYacona Macy



With deep appreciation for the patience and understanding received from my teachers, and for the teaching and understanding given to me by my patients, I have created this booklet to assist others to understand.

Stephen Rauh

In 1994, after ten years of living with ulcerative colitis, I became a patient of Dr. Rauh. It is three years since my Parks procedure surgery, and I am healthy and grateful. I hope this booklet will provide understanding and support to patients and their families.

I wish to thank my family for their unconditional love, support and faith in me. They have stuck by me through thick and thin; I couldn't have accomplished any of this without them.

Bethany LaYacona Macy

*THANK YOU,*

Glen Hintz  
Luvon Sheppard  
T. Jeffrey Dmochowski, MD  
Christa Heinsler, RN/NP-CETN  
Barbara Macey, MS, RN

May 1998

# **The Modified Parks Procedure:**

## *A Patient's Guide to Surgery and Care*

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# 1 Introduction

Rochester Colon-Rectal Surgeons is pleased to provide this reference guide for patients and healthcare providers regarding the procedure we refer to as the **Modified Parks Procedure**. There are many names used to describe the creation of a substitute rectum after the large intestine has been completely removed. These include:

Restorative Proctocolectomy  
Pull-through Pouch Procedure  
J-Pouch, W-Pouch, S-Pouch Procedure  
Ileoanal Reservoir (IAR)  
Ileal Pouch Anal Anastomosis (IPAA)

The goal of all these procedures is to provide an alternative to permanent ileostomy after the removal of the colon and rectum.

## History

A bit of history will add to the understanding of these operations. For over 50 years, surgeons have been studying the anal sphincter muscle mechanism. In the 1940s and 1950s, procedures that connected the small intestine directly to the anal sphincter often resulted in urgency (the sudden, unstoppable urge to defecate), frequency (too many bowel movements) and perianal skin breakdown (painful open areas).

In 1969, Nils Kock from Sweden developed a technique of creating a "reservoir" using the end of the small intestine (ileum). It is now known as the "Kock Pouch". In this procedure, the Kock pouch was connected to the abdominal wall and provided an alternative to the conventional ileostomy. The Kock pouch allowed fewer and more controllable evacuations through the abdominal wall ostomy.



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**Modified Parks Procedure:** *A Patient's Guide to Surgery and Care*

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This procedure has been further modified by Barnett (currently working in Florida), who promotes the "Living Collar Continent Ostomy."

Sir Allen Parks is credited with the first generally successful combination of creating a ileal reservoir and connecting it to the carefully preserved anal sphincter. This reconstruction eliminated the need for a permanent ileostomy and further normalized bowel function by allowing passage of stool through the anal orifice.

### **About Rochester Colon-Rectal Surgeons**

Rochester Colon-Rectal Surgeons currently has four surgeons. Dr. Michael Graney was the first surgeon to perform the ileoanal reservoir procedure in Rochester in 1980. Dr. Stephen Rauh joined the practice in 1988, bringing some major refinements from the Lahey Clinic in Boston where the surgeons had been trained by Dr. Parks. Since then, Drs. Rauh and T. Jeffrey Dmochowski have collaborated extensively. They have further developed and refined their procedural techniques thus calling it the Modified Parks Procedure. In 1997, Dr. Mary Lou O'Neill joined the practice, bringing new options and experience from the University of Toronto. We are confident that our experience and commitment will provide state of the art care to patients interested in this type of surgery.

### **A Note to Our Patients**

We encourage our patients to keep this booklet handy as a reference. Please, bring it to the hospital at the time of surgery. Use the information in discussions with physicians, nurses, other patients and family members. Enterostomal therapists (ET) are nurse experts in ostomy and perianal skin care. They provide physical, educational and emotional support for patients facing these health care challenges.

This booklet has been created with every attempt to provide accurate, current and useful information. It is important to note that each patient situation is different; therefore, protocols vary. Patients are advised to talk to their physicians, ET nurses and others when questions or problems exist.

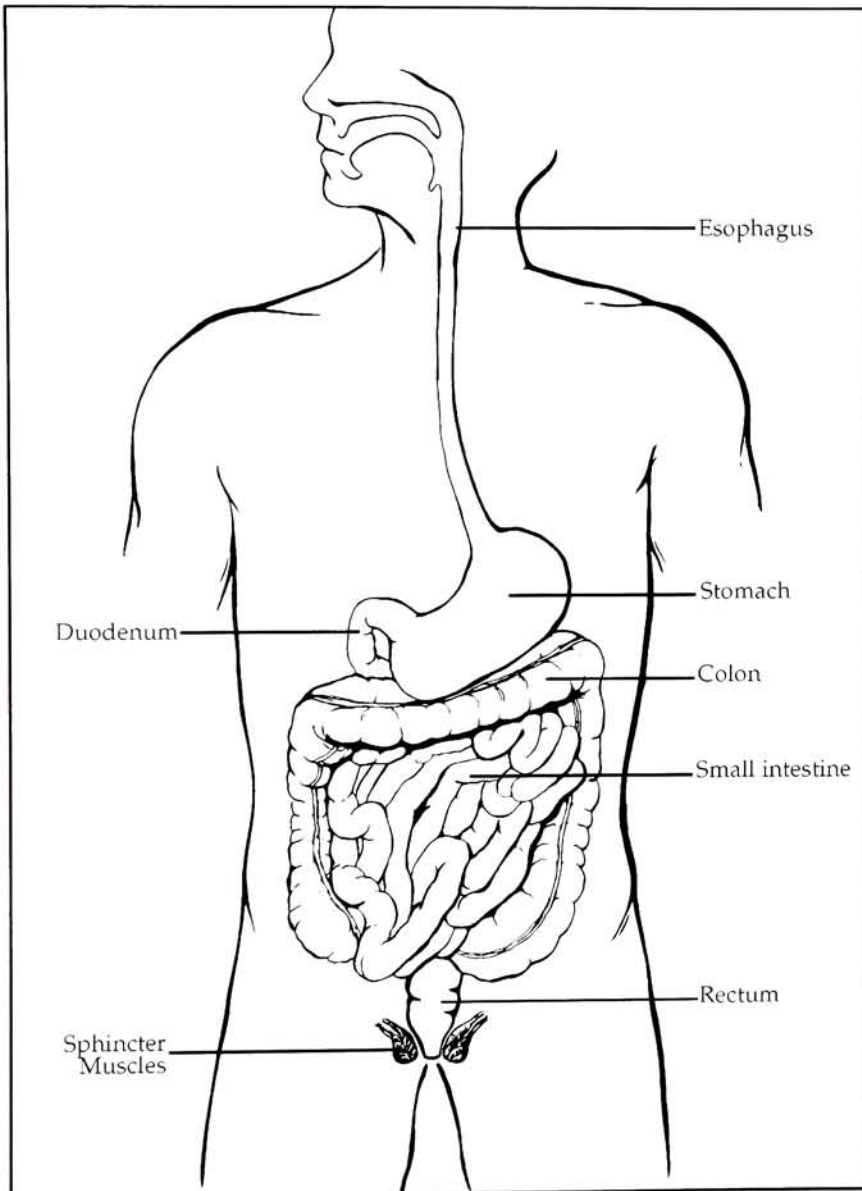
### **The Parks Procedure: An Overview**

The Parks Procedure has become widely accepted when eliminating colorectal disease and maintaining control over bowel function are simultaneously desired. This technique avoids a permanent ileostomy (a surgically created, open connection between the end of the small intestine and the skin of the abdominal wall).

Figure 1 depicts the normal digestive tract. Swallowed food, chewed and treated with saliva, passes through the esophagus into the stomach where acid is added in a churning process. The food then passes into the small intestine which is comprised of three consecutive segments: the duodenum (10 in.), the jejunum (8 ft.), and the ileum (10 ft.). Enzymes and bile are added in the duodenum to further break down the food. Critical absorption of nutrients, minerals and fluid occurs in the small intestine, which is a vital organ.

Liquid stool then enters the colon, which is the first portion of the large intestine (5 ft.). A healthy colon dehydrates stool and stores the waste until a convenient time when the rectum (15 in.) can be emptied. Evacuation of stool is controlled by the pelvic and anal muscles.

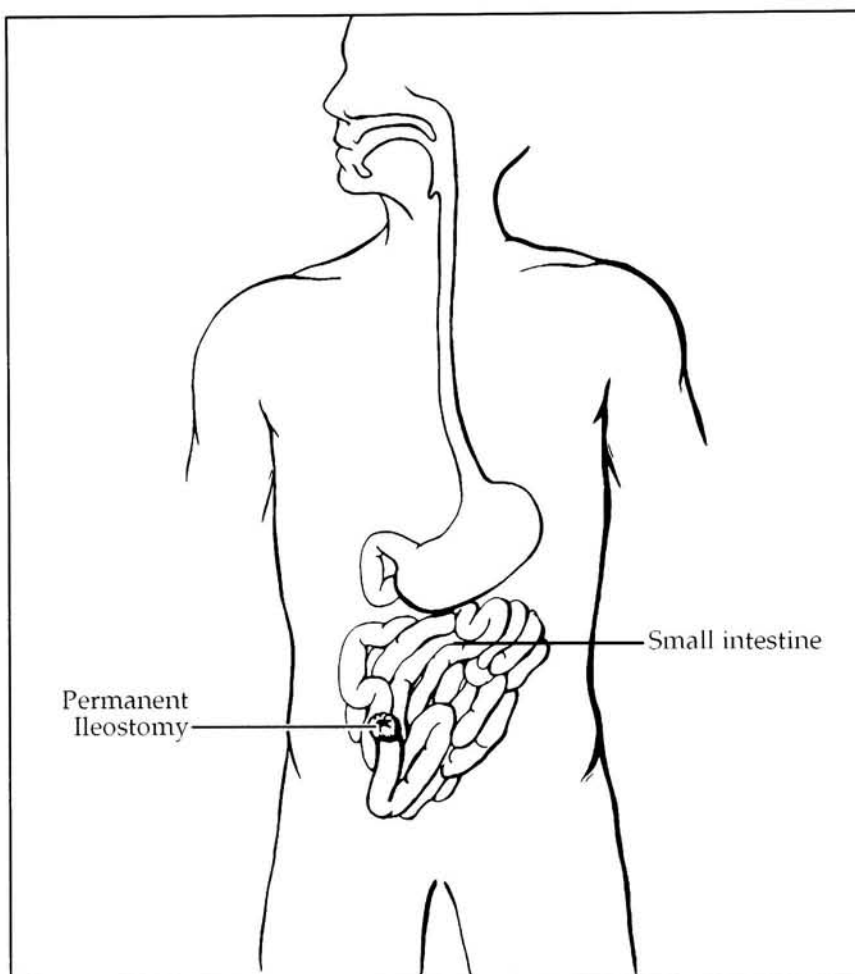
**The Modified Parks Procedure:** *A Patient's Guide to Surgery and Care*



**FIGURE 1:** Anatomy of a Normal Digestive Tract.



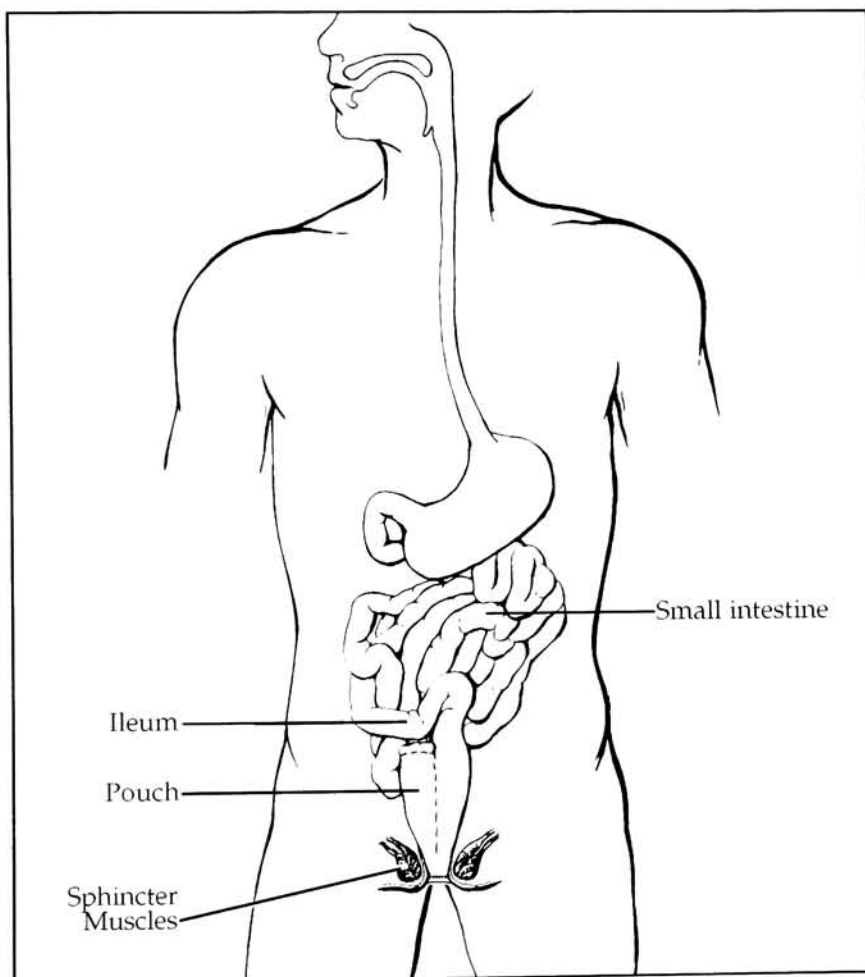
In the original cure for diseases of the large intestine, an ileostomy was constructed after the colon and rectum were removed. This procedure is known as proctocolectomy with permanent ileostomy (Figure 2). This is still a very useful and practiced option today. However, there are now alternative choices available to many patients.



**FIGURE 2:** Proctocolectomy with Permanent Ileostomy.

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During a Parks Procedure, a reservoir (pouch) is constructed from the ileum, positioned in the pelvis, and then connected to the carefully preserved anal muscles. The pelvic ileal reservoir is a substitute for the rectum which aids in storing stool until it can be evacuated. Figure 3 illustrates the completed Parks Procedure after closure of the temporary ileostomy.



**FIGURE 3:** Anatomy of the Completed Parks Procedure, after Temporary Ileostomy Closure.

Satisfaction with the Parks Procedure has been high. Eighty-five to ninety percent of patients studied would not choose a different treatment, if offered to start over. However, this complex surgical procedure is still evolving, and does have its drawbacks. At present, there is no surgical option that can completely restore the function of the absent colon and rectum. Although not *perfect*, the Parks Procedure is a good alternative for many people.

### **Who Can Benefit from this Procedure ?**

The Parks Procedure is an option primarily for people affected with two colorectal disorders: ulcerative colitis and familial polyposis.

Ulcerative colitis is a condition of inflamed lining of the large intestine causing diarrhea, mucus discharge, rectal bleeding and urgency. After ten years, the affected person has a higher chance of developing colon cancer. Surgical intervention can restore general health, regain control over bowel function, eliminate the need for potentially harmful medications, allow a more normal diet and eliminate the increased risk of cancer.

Familial polyposis is an inherited disorder in which hundreds of polyps (precancerous tumors) grow on the lining of the colon and rectum. These polyps will develop into cancer unless removed surgically.

Very rarely, the Parks Procedure is offered to people suffering from severe motility disorders of the colon and rectum. Despite years of trying simpler solutions such as laxatives and medication, these people have remarkably severe constipation due to the absence of large intestine muscle function which cannot be explained.

**The Modified Parks Procedure: A Patient's Guide to Surgery and Care**

The following elements are necessary to achieve the best results from this surgery:

- \* Well informed patient, highly motivated to avoid a permanent ileostomy.
- \* Good anal sphincter function.
- \* Commitment to sacrifice the time and resources to the reconstructive process.
- \* Willingness to cooperate with and be a member of the health care team.

Patients for whom the Parks Procedure is not considered appropriate (contraindicated) include:

- \* Those with serious health problems in addition to bowel disease (e.g. heart disease, etc.).
- \* Severe mental health problems.
- \* Crohn's disease patients (whose disease may inflame the ileal reservoir or anal area).
- \* Patients who have developed certain stages of colorectal cancer or other tumors.

**Choices: Which Surgery is Best?**

As long as the goal of treating the primary disease is achieved, there is often more than one "right" operation to correct colorectal conditions. It is then most desirable to allow each patient to elect the proper operation for his/her unique situation. Patients are encouraged to learn as much about their condition and the medical (non-surgical) and surgical treatments as possible. Multiple educational sessions with physicians, ET nurses and other patients are common. Some communities, including Rochester, have support groups for people who have had or will have this surgery. For more information about the Parks Procedure Support Group, please contact the office of the Rochester Colon-Rectal Surgeons.

The first major consideration is called staging. The surgeon's judgement and expertise will dictate whether to perform the surgical treatment in one, two or three operations. Five issues are considered to determine the number of stages appropriate for each patient. They are:

- 1) the severity of the disease
- 2) confidence in the diagnosis
- 3) presence of other health problems  
(e.g., heart ailment, malnutrition,  
infection, hemorrhage)
- 4) Intraoperative findings and risks
- 5) surgical expertise.

Next, the patient, his/her personal support, and the health care providers reach a decision on which surgical option is preferred after the colon and rectum are resected. Despite the apparent desirability of avoiding a permanent ileostomy, proctocolectomy with permanent ileostomy remains a desirable choice for many situations. This is because the surgical process is completed in one stage. However, the Parks Procedure has become the "procedure of choice" for the majority of ulcerative colitis and familial polyposis patients and experienced surgeons.



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## 2 The Parks Procedure

### **Preparing for Surgery**

Patients will meet with the enterostomal therapist (ET) to further their understanding of ileostomies. The ET will work with the patient to determine and mark the most suitable location on the abdomen for placement of the stoma.

Particularly for those patients with colitis, adjustments in medication prior to surgery can be helpful. If prednisone (steroid) therapy has been ongoing, appropriate steroid therapy will be necessary before and during hospitalization. Some medications may need to be completely stopped before operative treatment (check with your surgeon).

The bowel preparation will be explicitly prescribed by the surgeon. The better prepared (cleaner) the intestine, the less risk of infection after the surgery. Cathartic medications, and/or enemas will be needed along with a clear liquid diet for a specific period prior to the surgery. Until the colon has been removed, each bowel prep for surgery includes antibiotics taken by mouth.

If the surgery can be planned in advance, it is possible for patients to donate their own blood to have available at the time of his/her hospitalization. This process, called autologous blood donation, provides the safest blood if a transfusion is needed. If no autologous blood is available, blood from the Blood Bank (heterologous) may be required, which carries a remote risk of transfusion reaction or viral infection from hepatitis or AIDS. Transfusions are infrequently used and not given unless medically necessary, regardless of which blood is available.

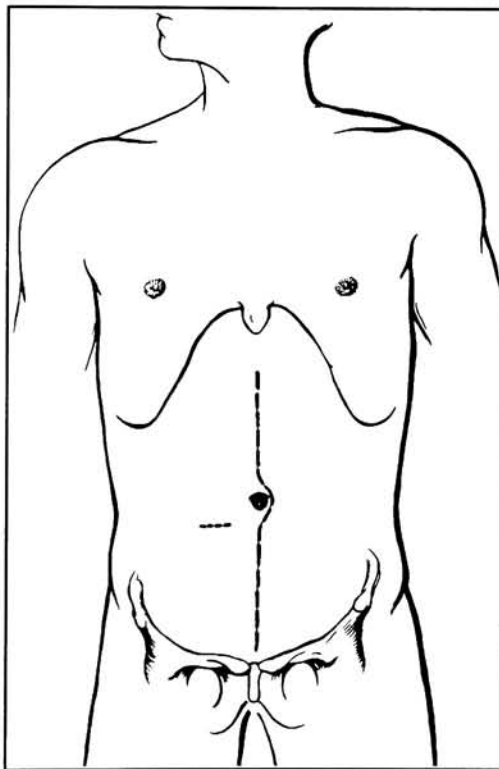
A week or so before admission, a preadmission visit to the hospital for routine testing and check-up is required. Most patients will be admitted to the hospital the morning of the operation.

### **The Modified Parks Procedure:** *A Patient's Guide to Surgery and Care*

#### **Technique**

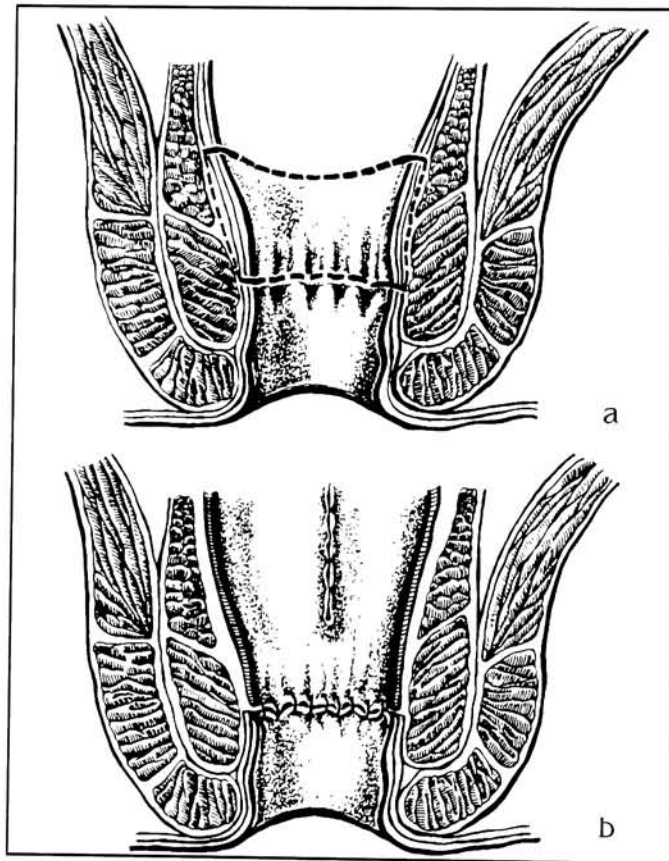
There are multiple steps for restorative proctocolectomy: total abdominal colectomy, proctectomy, ileal reservoir construction, diverting ileostomy creation, and ileoanal anastomosis. In our opinion, these are best summarized as the Parks Procedure!

**Colectomy:** After general anesthesia, a vertical midline abdominal incision (Figure 4) is used to gain access to the intra-abdominal organs. An exploration is carried out to assess the pre-op working diagnosis, and to detect any other information about the condition of the abdominal organs. The diseased colon is removed. In some cases (three stage construction), the operation ends with the preservation of the defunctionalized rectum (i.e., rectum not removed), and creation of an ileostomy from the very end of the ileum (Brooke ileostomy). This procedure is done if the diagnosis is in question (e.g., Crohn's disease is possible), or if the general health of the patient is so poor that further operation is considered too risky. However, most patients can continue with the next step, proctectomy.



**FIGURE 4:** Incision and Stoma Site.

**Proctectomy:** The rectum is carefully separated from the adjacent pelvic structures: the bladder, prostate and seminal vesicles in males or the bladder, uterus, ovaries, fallopian tubes and vagina in females. The surgeon attempts to stay as close to the rectal wall as possible to reduce irritation of the adjacent organs, and thereby minimize the risk of urinary and/or sexual dysfunction. The anal sphincter muscles are carefully preserved (Figure 5).

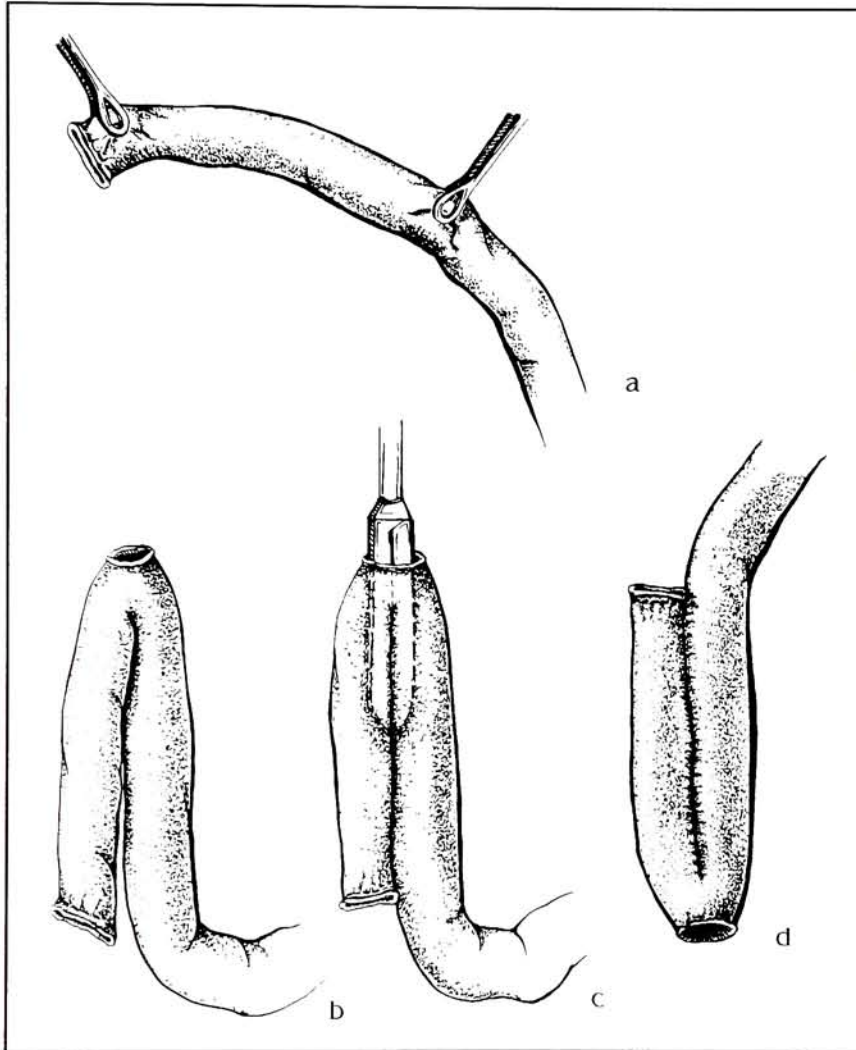


**FIGURE 5:** Anal Sphincter Muscles.

a) Lining removed (dotted line), with sphincter muscles preserved.

b) J-Pouch anastomosed (connected) to anal canal.

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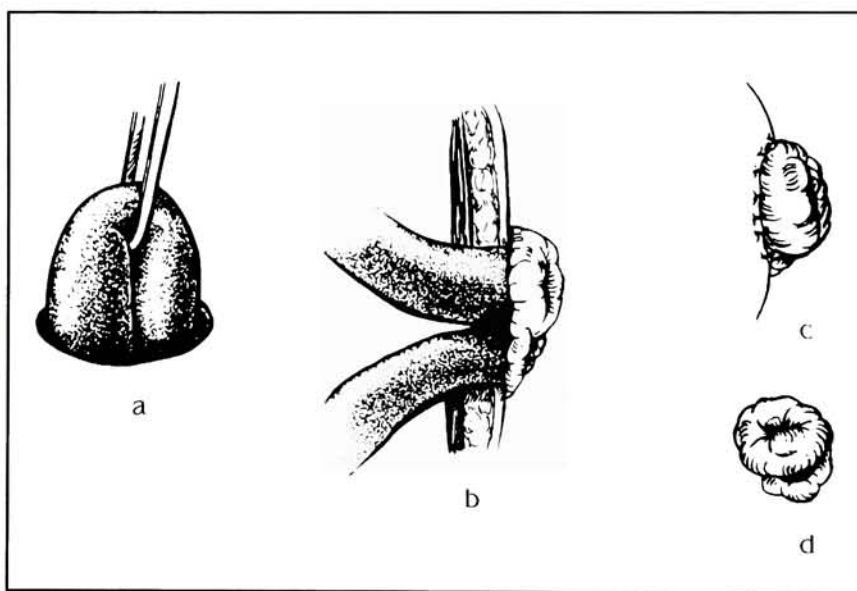
**FIGURE 6:** J-Pouch Construction.

- a) The end of the ileum is detached from the colon, and closed.
- b) Ileum is folded into "J" shape, and a new opening is made.
- c) Stapler, inserted through the new opening, connects ileum walls to create a reservoir.
- d) Pouch is inverted to connect new opening to anal canal.



**Ileal Reservoir Construction:** The end of the small intestine, the ileum, is closed. The ileal reservoir is created by surgically forming an intestinal pouch using 30-35 cm. (approx. 12 in.) of the closed end of intestine. A new opening is made in the pouch for eventual connection to the anal canal. Multiple pouch configurations have been studied without conclusive evidence supporting any one shape. We, at Rochester Colon-Rectal Surgeons, prefer the "J" pouch (Figure 6), for its ease of construction and good functional results.

**Diverting Ileostomy:** In almost all cases, a temporary ileostomy is constructed (Figure 7) using a section of ileum upstream from the newly constructed pelvic reservoir. This allows stool to bypass the complex pelvic reconstruction until healing fully occurs.

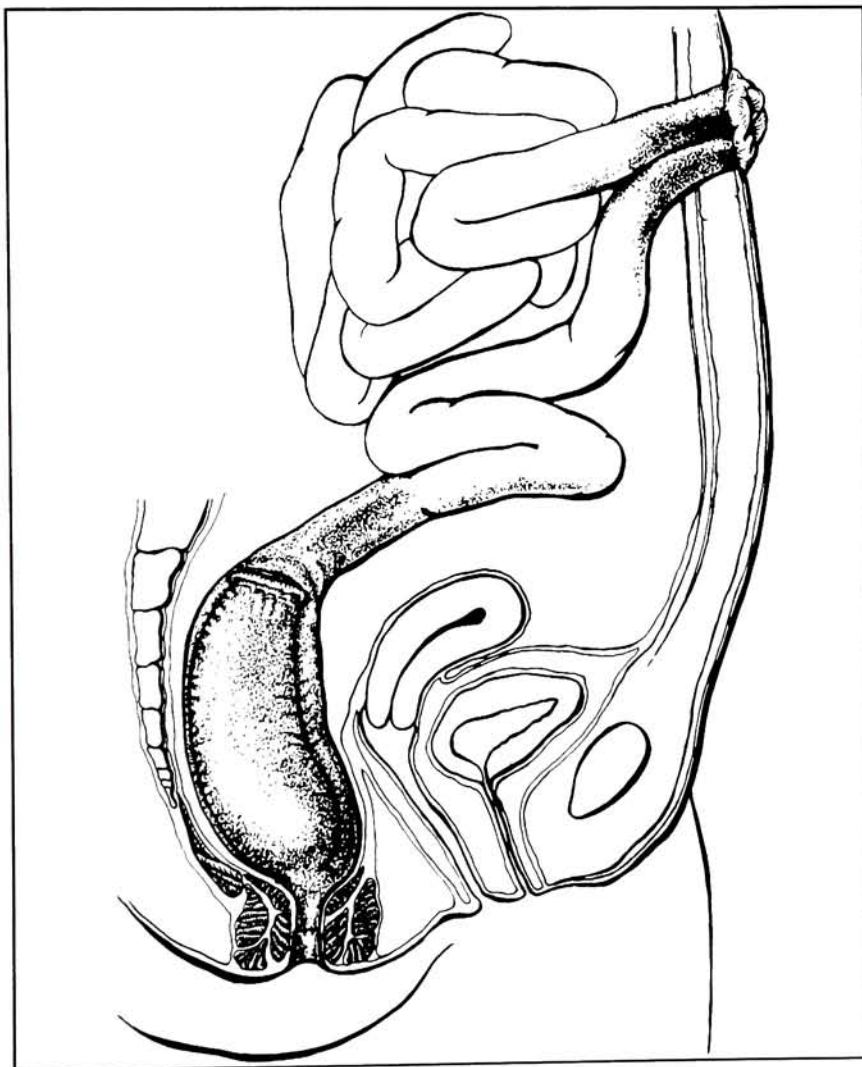


**FIGURE 7:** Loop Ileostomy.

- a) Loop of small intestine is pulled through the stoma site.
- b) Side view (coming through abdominal wall).
- c) Stoma as seen from the side.
- d) Stoma as seen from the front.

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**Ileoanal Anastomosis:** The ileal reservoir is prepared for placement in the pelvis and then connected by sutures or titanium staples to the anal canal (Figure 8). Such connections in surgery are called anastomoses.



**FIGURE 8:** J-Pouch Placed and Connected to Anal Canal.

**Hospital Care**

It is most likely that a "Day of Surgery Admission" (DOSA) will be planned. This means that a preoperative visit, some days in advance, is needed for a routine check-up, pre-op blood work and other tests. On the day of the Parks Procedure, an IV will be started for fluids and medications. The anesthesiologist will discuss pertinent aspects of the anesthesia care. After the procedure, and a stay in the post-anesthesia care unit of at least an hour, transport to a hospital room ensues where the expected stay is 6-8 days. Care is provided by many professionals, including nurses, the enterostomal therapists and surgical housestaff.

Surgical housestaff includes nurse practitioners and surgeons in training (residents). Your attending surgeon, or one of his/her associates of Rochester Colon-Rectal Surgeons will visit daily to supervise your recovery.

Hospital recovery utilizes many therapies including intravenous fluids and antibiotics, drain tubes, lung exercises, stoma therapy, blood testing and lots of visits by members of the health care team. In some cases, a nasogastric (NG) tube is placed to empty the stomach, thereby relieving or preventing nausea and vomiting. The NG tube is passed through the nose, into the stomach during or after surgery.

It takes a variable amount of days for intestinal function to return; solid foods are introduced slowly. Discharge from the hospital is appropriate when oral intake is going well, the IV and drains have been removed, the ileostomy can be managed, and after any postoperative concerns (e.g. fever) have been addressed.

If you have any needs or concerns about your hospitalization, let us know so that they can be promptly addressed.



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**Ileostomy Management**

In preparation for the Parks Procedure, the patient will have a private consultation with an Enterostomal Therapy (ET) nurse, who is specially trained in caring for patients who have an ostomy. The ET nurse discusses the patient's understanding of ileostomy surgery, and clarifies any questions the patient or family may have.

Many patients have never seen the appliance that is worn to manage drainage from an ileostomy. Patients are often surprised that the "bags" are actually much smaller than was thought, and are pleased with the variety of appliances available. The ET nurse stresses that there is an appliance to fit each patient's needs and lifestyle. The ostomy appliance application is briefly explained. Patients are reassured that they will be able to manage their ostomy care by discharge. During this visit the optimal place for the ileostomy is marked, usually on the right side of the abdomen, below the belt line and away from any skin folds. Marking the site before surgery allows the surgeon to create the ileostomy in the position for easiest management after surgery.

An important part of this pre-op visit is the opportunity for the patient and family to ask questions and talk about their feelings regarding their disease and the surgery. All are relieved to know they will soon be free of their diseased colon, but many are concerned about effectively managing their ostomy after they are home from the hospital. Support and reassurance are given, as well as the opportunity to voice concern about the physical and emotional changes after surgery.

After surgery, the ET nurse spends time with the patient and family to answer questions, and teach the most effective ways to manage the ileostomy. Changes can be made in appliance types, even after discharge by setting up an appointment with the ET nurse to discuss ostomy management. Home nursing support is often arranged following discharge.

Having an ileostomy, even temporarily, requires adjustment and patience from both the patient and the family. The ET nurse is a valuable resource to be utilized during this period.

### **Diet and Fluid Guidelines**

Once patients resume solid food, a low residue diet will be needed. The nutritionist will provide instructions for a low residue diet which avoids bulky, poorly digested foods. The best way to adjust to the surgically created intestinal tract is to start by taking smaller, more frequent meals, chew food thoroughly and avoid highest fiber foods, such as stringy vegetables, popcorn and nuts. The low residue diet will be temporary for all but a few. If colitis caused the need for the operation, one of the benefits of the Parks Procedure is more freedom of choice when eating!

A word about fluid intake is useful. The healthy colon absorbs fluid and electrolytes (salts). After the removal of the colon for the Parks Procedure, the loss of fluids and electrolytes is increased. Within months, the body will adjust by absorbing and retaining more fluids than before. Obtaining enough fluid and salt after surgery is essential. Added salt and salty foods are quite helpful, particularly early on.



**The Modified Parks Procedure:** *A Patient's Guide to Surgery and Care***Discharge Instructions**

After discharge, most routine activities are allowed. There is no restriction on walking, stairs, riding in the car or participating in household activities. Actions which would stress the abdomen or pelvic region, such as lifting more than 15 pounds and many sports are prohibited. Driving is not allowed until all soreness has resolved. It is expected that much more rest, including naps, is needed. At discharge, written instructions are provided.

Sexual intercourse may resume when postoperative pain has resolved. Other less physically stressful forms of sexual activity can be utilized earlier in the recuperation. Anal intercourse is forever prohibited.

Patients should not insert hard objects into the anus (i.e., thermometers, enema tips), unless instructed by their surgeon.

The time period until return to employment varies based on the nature of the individual's stamina, job duties, support and other factors. This subject should be discussed before discharge.

## 3 Ileostomy Closure

The final procedure of the reconstruction is closure of the ileostomy, which typically occurs 6-12 weeks after the Parks Procedure. Your surgeon will have performed an examination in the office including the reservoir connection (anastomosis) to the anal canal. If this exam is healthy, referral to a radiologist for a "pouch study" x-ray to ascertain the completeness of healing concludes the minimum testing needed for closure. The x-ray is brief and usually painless. It is often performed through the ileostomy. It is helpful to have extra ileostomy supplies at the pouch study.

Ileostomy closure is decidedly less complex and shorter than the first stage operation. However, ileostomy closure is not minor surgery. Usually, the incision is horizontal (transverse) at the stoma site. Hospitalization averages 4-5 days.

It is following ileostomy closure that the new anatomy of evacuation is first experienced. Stool frequency, urgency and some leakage are to be expected. These imperfections improve with time. It is important that the perianal skin be protected from prolonged contact with stool. Usually, a zinc oxide cream such as Desitin is used after every bowel movement. It is far easier to prevent perianal skin breakdown than to heal it!

After discharge, the same restrictions apply. Return to work varies, but is often sooner than after the previous operation.

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## 4 Complications

Abdominopelvic surgery is associated with a variety of potential problems. Complications may include bleeding (hemorrhage), infection, adverse reactions to anesthesia or medications, or phlebitis (circulation system blood clots). If anemia is present preoperatively, the possibility of blood transfusion increases. When feasible, elective surgery is planned to allow for autologous blood donation. The individual provides his/her blood weeks in advance, to have it ready at the time of surgery. All major operations carry a risk of death. Fortunately, the Parks Procedure has a very remote risk of death, less than 1%.

### **Small Bowel Obstruction**

About 20% of patients will require medical assistance with a bowel obstruction (blockage), which is often secondary to adhesions (scar tissue on the intestine), at some time in their life. A few will require surgery to correct the blockage. Bowel obstruction is the most common postoperative complication.

### **Stenosis**

Stenosis or narrowing of the ileoanal anastomosis occurs occasionally, and with rare exception, is treated in the office.

### **Pouchitis**

Pouchitis is a unique condition exclusive to ileal pouches. The lining of the pouch becomes irritated, causing pelvic discomfort, blood with stool, urgency, and increased bowel frequency. Pouchitis occurs in about one person out of ten. The treatment is usually antibiotics.

### **The Modified Parks Procedure: A Patient's Guide to Surgery and Care**

#### **Sexual Dysfunction**

Rarely, sexual dysfunction occurs, creating discomfort with intercourse for women, or difficulty/inability to achieve erection or ejaculation in men. Infertility can result from this dysfunction or from adhesions around the uterine tubes.

#### **Pouch Failure**

Pouch failure, or return to ileostomy, occurs in less than 4% of patients after the Parks Procedure. The most common causes for pouch failure are unexpected Crohn's Disease, ileoanal infections, pouchitis and poor anal sphincter function.



## 5 Life After Surgery

### **Expected Bowel Function**

After the large intestine is gone, the ability to reduce the water content (dehydrate) and store stool is less than in the healthy, intact intestinal tract. This results in stool that varies in consistency and frequency.

Continence, the ability to control the passage of gas and stool, is generally excellent. If the anal muscles are strong going into surgery, control after surgery is rarely difficult. The muscles of the anal canal relax during deep sleep which can result in nocturnal seepage. This problem occurs to a minor degree for about 25% of people with an ileoanal pouch. Perineal strengthening exercises can help.

Bowel movement frequency varies greatly from person to person. In general, the number of bowel movements per 24 hours decreases to 5-7 after one year. This 24 hour total includes one movement between 11p.m. and 7a.m., which depends in part, on the amount and type of food eaten during the evening.

Even though the stool consistency is different, and the frequency is increased from normal, the urgency, pain and ill feeling associated with ulcerative colitis is gone.

### **Medications**

One of the magnificent features of recovery and future life after the Parks Procedure is the reduction in medication many patients experience. Usually, no medications are needed on a regular basis. About 20% of people benefit from loperamide (Imodium) to reduce bowel frequency, particularly for overnight.

**The Modified Parks Procedure:** *A Patient's Guide to Surgery and Care*

Bulk forming fiber additives can be helpful. These include psyllium (Metamucil) or methylcellulose (Citrucel). The cookie or wafer form of these products add bulk without as much liquid, a plus for anyone with a more liquid stool already.

**Sexuality and Pregnancy**

The ability to be a sexual person and perform sexually is enhanced by a state of wellness. The absence of an abdominal stoma may seem particularly important when a person anticipates sexual intimacy, but most patients who have an abdominal stoma adjust well and resume normal sexual activity. The low incidence (5% or less) of sexual dysfunction in men and women after the Parks Procedure is the same as that for patients with permanent ileostomy.

Once surgical recovery is complete, there are no restrictions on pregnancy. However, pregnant women should advise their obstetrician that they have had the Parks Procedure surgery. A vaginal tear during delivery can adversely affect the delicate continence muscles, causing a greater detriment to Parks Procedure patients than their non-Parks counterparts. For this reason, cesarean section may be advisable, but is not mandatory.

## 6 Appendix

### Glossary

**anal sphincter** Tube of muscles surrounding the anal canal that is able to narrow or close the anal opening.

**anastomosis** A surgical joining of one structure to another.

**anus** Opening at the end of the rectum through which stool is eliminated from the body.

**appliance** Device used to collect bodily discharge, such as stool, mucus, gas or urine. It consists of a pouch or bag, skin barrier, clip, etc.

**bowel** The intestine; the part of the digestive tract that lies between the stomach and the anus.

**colon** Lower 3 to 6 feet of digestive tract; also called the large bowel or large intestine.

**colostomy** Surgically created opening from the colon to the skin of the abdomen.

**continence** The ability to keep stool, gas or urine inside the body voluntarily.

**Crohn's disease** Inflammatory bowel disease that can involve any part of the digestive tract, but usually affects only the small bowel, colon, rectum and/or anus. The disease is characterized by diarrhea, fever, weight loss and pain; the cause is unknown.

**electrolytes** Electrically charged chemicals essential to the functioning of many complex processes in the body.

**The Modified Parks Procedure:** *A Patient's Guide to Surgery and Care*

**enterostomal therapy (ET) nurse** A registered nurse specially educated to provide physical and psychological support to patients with stomas, draining wounds, fistulas, chronic wounds or incontinence.

**familial adenomatous polyposis (FAP)** An inherited disease characterized by a tendency to develop masses of polyps in the colon, which results in cancer unless the colon and rectum are treated.

**frequency** Term used to describe the state of having abnormally high rate or number of bowel movements per day.

**gastrointestinal** Pertaining to the digestive system.

**ileal pouch-anal anastomosis (IPAA)** Term most often used in medical literature to describe the Parks Procedure.

**ileoanal** Pertaining to both the ileum and anus; for example, an ileoanal anastomosis is a suture line connecting the ileum and anus.

**ileostomy** Surgically created opening from the ileum to the skin of the abdomen.

**ileum** Last portion of the small bowel.

**incontinence** Inability to control the elimination of urine, stool or gas.

**large bowel** Colon and rectum; part of the intestine that extends after the small bowel to the anus; also called the large intestine.

**mucus** Clear or whitish secretion from the lining of digestive tract.

**ostomy** Surgical opening in which a portion of bowel is connected to the outer surface of the abdomen for drainage of waste.

**perianal** Located around the anal opening.



**polyp** Growth protruding from the lining of the intestine; often precancerous.

**pouch** (1) Term used to describe a reservoir created from the ileum; (2) Device used to collect stool from a stoma.

**pouching system** See appliance.

**pouchitis** Inflammation of an ileal reservoir.

**proctocolectomy** Surgical removal of the colon, rectum and anus, and creation of a permanent ileostomy.

**rectum** Last part of the large bowel; it joins the colon to the anus.

**reservoir** Anatomic structure that serves as a storage place (e.g., the bladder, the rectum or an ileal reservoir).

**small bowel** Part of the intestine between the stomach and the large bowel; also called the small intestine.

**stoma** Surgically created opening to the outside of the body on the abdomen.

**ulcerative colitis** Disease of the colon and rectum that is characterized by inflammation of the lining, bleeding and cramping. The cause is unknown.

**urgency** Strong need to eliminate urine or stool.



**Modified Parks Procedure:** *A Patient's Guide to Surgery and Care*

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**Support Resources**

**Crohn's and Colitis Foundation of America (CCFA)**

For information call: (800) 343-3637

CCFA web site: [www.ccfa.org](http://www.ccfa.org)

Rochester Chapter: 1279 Chili Ave. Suite 543  
Rochester, NY 14624

(716) 244-9457

**The Parks Support Group**

Rochelle Hildebrand, RN  
Stephen M. Rauh, MD  
Rochester Colon-Rectal Surgeons  
1736 East Ridge Rd.  
Rochester, NY 14622

(716) 266-8401

**The American Society of Colon and Rectal Surgeons**

The Research Foundation of ASCRS  
85 West Algonquin RD. Suite 550  
Arlington, IL 60005

(800) 791-0001

(847) 956-1846

web site: [www.fascrs.org](http://www.fascrs.org)

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