Ileal Pouch Anal Anastomosis: An Overview of Surgery, Recovery, and Achieving Postsurgical Continence

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Abstract

Ileal pouch anal anastomosis (IPAA) is a two- or three-stage surgical procedure performed to treat patients with ulcerative colitis (UC) or familial adenomatous polyposis (FAP). Following ileostomy closure and anastomosis, patient goals of care typically include obtaining continence and preventing complications. Nursing interventions to achieve these goals may include developing a skin care regimen, pelvic muscle floor exercises (PFME), diet changes, medication use and coping strategies. Research suggests that patient quality of life following surgery is generally good, especially in patients with a functioning pouch or a history of severe UC and a functioning pouch. However, the procedure is relatively new, and long-term (>20 years) outcomes remain largely unknown. Ongoing assessments to monitor complications such as pouchitis and pouch stricture are needed, as is research to determine the long-term effects of vaginal delivery and of living into the seventh, eighth, and ninth decades of life.

Keywords: ileal pouch anal anastomosis, fecal incontinence, nursing interventions, quality of life

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Ileal pouch anal anastomosis (IPAA) is the standard surgical procedure performed to treat patients affected by ulcerative colitis (UC) or familial adenomatous polyposis (FAP). UC and Crohn’s disease both are classified as inflammatory bowel disease (IBD). In the US, IBD is estimated to affect approximately 1.4 million people.1 Accurate incidence and prevalence rates are difficult to obtain due to disease misclassification and the lack of standard diagnostic criteria. IBD usually is diagnosed during adolescence or young adulthood years, tends to affect persons of Caucasian and Ashkenazic Jewish descent, and is more prevalent in developed (rather than developing) countries.1

In 2010, the National Institutes of Health (NIH) estimated that in 1998 approximately 619,000 people were living with UC in the US; in 2004, approximately three million ambulatory care visits were related to this condition.2 In 2010, the Centers for Disease Control and Prevention (CDC) estimated that 1.4 million persons in the US have UC, and approximately 25% of these patients will need surgical intervention at some point in their lives.3 A diagnosis of FAP also can result in the need for surgery — ie, a restorative proctocolectomy (ie, surgical removal of colon and rectum) — due to an extremely high risk for colon cancer.4 The annual incidence rate of FAP is two per million and the prevalence is approximately 40 per million persons.4 However, only 1% of all colon cancers are due to an FAP diagnosis,3 making UC the more common reason for restorative proctocolectomy. Also of note: FAP has a strong genetic link and genetic testing is crucial for early diagnosis and treatment to prevent colorectal cancer.1

Traditionally, the standard procedure for patients diagnosed with UC or FAP included a total proctocolectomy and creation of a permanent ileostomy.5 Multiple factors such as disease, disability, and surgery can affect body image and self-concept; treatment outcomes may have a substantial affect on patient self-image, cognitive processing, and personal relationships. Patients requiring a stoma related to an intestinal disease process may feel embarrassed by their condition.6 A review of the literature7 suggests that a permanent ostomy may be associated with major sexual dysfunction and altered...
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Description. Parks and Nicholls10 first developed the IPAA procedure in 1976. Other names for IPAA include ileal anal reservoir (IAR), restorative proctocolectomy, and Park’s pouch.11 Treatment is a two- or three-stage process. In the two-stage process, the first surgical procedure consists of a proctocolectomy with preservation of the anus; the ileum of the remaining small bowel is reshaped into an internal reservoir where stool can be stored to help facilitate continence.12 The reservoir then is attached to the rectum or anus, and a temporary loop ileostomy is made above the reservoir to direct stool away from the anastomosis. The second stage of the process simply involves closure of the loop ileostomy.11

If patients are compromised by nutritional deficit, high-dose steroid therapy, or severe exacerbation of UC, the procedure may be performed in three stages.11,13 The first stage is a total colectomy with end ileostomy and oversew of the rectal stump. The second stage is the surgical creation of a pouch and a protective loop ileostomy,11 and the third stage consists of loop ileostomy closure.11,13

Since its development, the pouch construction process has undergone several changes.14 The reservoir can be created as a J-, W-, S-, or lateral shape.15 The J-shape, generally called a J-pouch, is the most commonly used technique1,13 because it is easier to construct and functions just as well as the other pouch shapes.11 It is created during surgery using 20 cm of the terminal ileum, and the temporary loop ileostomy is typically created 30 cm above the pouch.5

Indications for IPAA surgery. UC. The two primary indications for IPAA are UC and FAP. Tindall16 describes UC as chronic colorectal inflammation of unknown etiology generally characterized by periods of remission following medical management and incidents of relapse. Symptoms of UC typically include diarrhea, rectal bleeding, tenesmus, urgency, pain, fever, and anemia.14 Because UC is confined to the colon and rectum, a proctocolectomy is considered a curative procedure.12 FAP. FAP is caused by an autosomal-dominant gene that stimulates more than one hundred adenomatous polyps to grow in the colon.1 All patients who inherit this genetic aberration will develop colorectal cancer, usually by age 40 years, unless the colon is removed. Patients with FAP typically do not experience any symptoms of the illness until they develop colon cancer.1 Even when colon cancer is present, symptoms may not manifest until the later, more severe stages. Colon cancer symptoms typically include rectal bleeding, change in bowel habits, abdominal pain, and unintentional weight loss.17 Unlike with UC, a proctocolectomy is not considered curative for FAP. Polyps may continue to grow in the stomach and small bowel, and tumors may grow in the skin, bones, and eyes. For this reason, people with FAP should be monitored for cancer the rest of their lives after proctocolectomy.3

Postoperative IPAA Care and Continence Strategies

Postsurgical changes. Due to surgical changes, patients with IPAA will not have bowel movements that mimic a healthy colon. Moreover, some patients will acquire postsurgical bowel dysfunction (PSBD) in the acute postoperative phase.18-21 An overview of the literature19 lists the following symptoms of PSBD: frequent defecation, rectal urgency, fecal incontinence, and difficulty in complete evacuation of stool, with the sudden urge to defecate or multiple urges to defecate occurring in clusters.18,21 Functional outcomes data for IPAA are reported as case series and by individual symptoms; consequently, aggregate data are not available. However, individual PSBD symptoms have been reported in a descriptive quantitative study to range in 12% to 76% of patients.21 After IPAA closure, bowel movement frequency can be as high as 20 per day, which may lead to soreness, irritation, and
itching of the perianal area. Colwell and Gray and Berndtsson have shown that the median number of bowel movements after recovery from the postoperative phase are six per a 24-hour period, with one or more bowel movements at night. Therapeutic goals. Therapeutic goals after ileostomy closure generally include increasing stool thickness, controlling elimination, and decreasing frequency and urgency without restricting food and fluid intake. Nursing care should focus on perianal skin care, diet, medications, controlling stool leakage, and instructions for when to notify a physician.

Skin care. Irritant contact dermatitis is a skin condition that occurs from prolonged skin exposure to an irritating substance. Bowel movements in the acute postoperative phase are generally copious, diarrheal, and contain a high enzyme content. Moreover, stool leakage may occur, increasing the risk for and severity of irritation. To help prevent or reduce this complication, patients usually are instructed to clean the area with warm water using a nonsoap, alcohol-free cleaning product and to pat or blow-dry the area after cleaning. Two reviews of the literature address ways to reduce or prevent skin irritation: Hocevar and Remzi recommend the use of moisture barrier ointments and zinc oxide on the perianal skin, and Sloots and Bartlett recommend absorbent pads or other continence aids to control leakage. If skin irritation occurs, a sitz bath of tap water and aluminum acetate or calcium acetate solution applied to the affected area with a moisture barrier ointment or lotion is reported to be helpful.

Witch hazel and aloe vera are commonly found in over-the-counter consumer products for perianal hygiene and relief of irritation. In order to provide accurate, knowledgeable counseling to patients, healthcare providers need to be knowledgeable about the efficacy of these ingredients. Scientific studies indicate that aloe vera can have positive effects on wound healing and suggest that aloe vera can increase circulation by capillary dilation, stimulate collagen synthesis, and provide antibacterial effects; antiviral and immunomodulating effects also have been suggested. In vitro research on aloe vera inner gel, the jelly-like substances from the inner part of the leaf (as opposed to the aloe latex from the plant’s skin), found aloe vera to have an antimicrobial effect against Gram-positive and Gram-negative resistant methicillin-resistant Staphylococcus aureus (MRSA), Enterobacter, and Enterococcus. A randomized, double-blind, placebo-controlled study (n = 49) showed that, compared to a placebo cream, aloe vera cream reduced posthemorrhiodectomy pain and healing time. Aloe vera also has been studied for its effect on healing skin graft donor sites. Khorasani et al conducted a randomized, controlled trial comparing aloe vera gel, a placebo gel, and untreated (no dressing) control on 45 patients with split-thickness skin graft donor sites. Wounds covered with the moist treatment modalities healed 8.2 days faster than wounds treated with the control cream. Although the rate of healing was slightly longer (9.7 days to heal) with the aloe vera dressing than with the non-aloe vera moist dressing group (8.8 days to heal), the difference was not statistically significant.

A review of the literature showed witch hazel extract to have anti-inflammatory, astringent, and vasoconstrictive properties. When applied topically, it can soothe the minor symptoms of acute inflammation. However, the report also showed that over-the-counter clear witch hazel solution is not beneficial; the tannins in witch hazel are responsible for its anti-inflammatory effects and they are completely removed in clear solutions. A colored witch hazel tea solution applied as a topical compress has been reported to be more helpful. Although rigorous scientific studies on herbal products are lacking, from these reports WOC nurses may find it reasonable to suggest that patients try products containing witch hazel and aloe vera for comfort and convenience.

Diet and medication. After IPAA surgery, patients will experience frequent watery bowel movements. Because certain foods can have a direct effect on bowel function, diet can help promote continence. Foods can affect stool texture and the speed of intestinal transit time; softer or liquid stools are more difficult to hold than thicker or formed stools. Describing their clinical observations treating about 1,000 patients per year in their nurse-run clinic for fecal incontinence, Norton and Chelvanayagam observed that softer stool is more likely to “passively leak than firmer stool.”

It generally is recommended that food products that produce gas and loose stools should be avoided and foods that produce a bulking effect should be increased. If diarrhea or loose stools are present, the Australian Department of Health and Aging suggests avoidance or caffeine products; alcohol; dairy products; cured or smoked meats such as sausage or ham; spices; fruits; fatty and greasy foods; and artificial sweeteners. Foods high in soluble fiber are useful bulking agents, and intake of bread, potatoes, bananas, cheese, smooth peanut butter, yogurt, pasta, applesauce, and porridge should be encouraged. Recommendations for improving bowel regulation include small frequent meals (about six per day) and small frequent amounts of fluid to prevent dehydration.

Medications such as loperamide (Imodium, McNeil, Ft. Washington, PA) and diphenoxylate with atropine (Lomotil, Pfizer Labs, New York, NY) may help reduce bowel elimination frequency, while fiber supplements like psyllium (Metamucil, Proctor & Gamble, Cincinnati, OH) and methylcellulose (Citrucel, GlaxoSmithKline, Middlesex, UK) thicken the stool. Herbst et al conducted a quantitative study to assess the effect of loperamide in 14 patients following IPAA on pouch motility, bowel movement frequency, and total stool weight. Fourteen patients with a functional pouch and anus following IPAA construction were included in the study. Stool weights and anal motility were recorded for 24 hours without administering any antidiarrheal medication. Then all 14 subjects were given 8 mg of loperamide, and the variables were reassessed for the next 24 hours. In all patients, 8 mg of loperamide was found to be sufficient to reduce total bowel frequency, stool weight, and pouch motility for a 24-hour period. In the authors’ personal and
clinical experience, 1 tablespoon of psyllium products consumed with 4 oz of water will increase fecal bulk and reduce movement frequency.

Cognitive strategies and relaxation techniques. Individuals who have experienced one or more episodes of incontinence may become anxious and rush to the bathroom at the slightest sensation to defecate. Anxiety also can stimulate the bowels, producing increased intestinal motility and propulsion. In their clinical practice treating fecal incontinence, Norton and Chelvanayagam have noted that a state of anxiety will generally cause an individual to hold his or her breath and contract the rectus abdominis and accessory muscles. This action causes an increased propulsive pressure in the rectum, making it more difficult to hold stool. In addition, contracting the anal sphincter is more difficult while running (panic) than when staying still (calm). Such observations suggest that anxiety and panic increase the likelihood of an incontinent episode, regardless of underlying etiology.

To combat their fear of incontinence, patients need to accommodate their anxiety reflex by realizing that if they resist the urgency, the feeling will diminish with time, and they will not have a fecal accident. In one fecal incontinence program, nurse clinicians teach their patients a technique called “The Holding on Program” to help guide them to a healthier defecating pattern. This program begins by allowing patients to sit on the toilet seat when the urge to defecate arises. Then they are instructed to hold their bowels for up to 5 minutes before defecating. When this step is mastered, the time is increased to 10 minutes. The next step is to stay near the toilet but not sit on the toilet for an allotted time. Time and distance from the toilet are gradually increased until patients gain confidence and the urge to defecate no longer provokes anxiety or fecal accidents.

Slow diaphragmatic breathing is another technique that can promote relaxation and continence. Sloots et al teach this technique to their IPAA clients for the management of PSBD. The technique involves slowly inhaling through the nose by expanding the diaphragm and then slowly exhaling while placing a hand over the upper abdomen to monitor breaths. Up to eight breaths per minute or less are recommended. Slow diaphragmatic breathing increases bloodflow...
to the gastrointestinal system, improving bowel regulation. This technique should be performed when the need to defecate triggers feelings of anxiety.19

Pelvic floor muscle exercises. Anatomically, the pelvic floor muscles consist of superficial and deep layers. The pelvic muscles crucial to anal canal function include the internal anal sphincter, external anal sphincter, and the puborectalis muscles.33 Pelvic floor muscles play two major roles: they provide support for the abdominal organs and rectum and they provide urethral and anal sphincters with their continence abilities.34 By providing conscious control of bowel and bladder functions, these muscles facilitate a delay in evacuation of flatus, feces, and urine, thus enabling continence.33,34 Patients with fecal incontinence generally have a defect in more than one muscle of the pelvic floor; the more muscles affected, the greater the risk of incontinence.34

The benefits of pelvic floor muscle exercises, also referred to as Kegel exercises,16 may include improved control over bowel and bladder function, reduced risk of prolapse, better recovery postchildbirth and surgery, increased sexual sensation, and overall increased social confidence and quality of life.34 According to expert opinion, these exercises promote continence after IPAA by strengthening the pelvic muscles, stimulating pelvic muscle nerves and anal sphincter nerves, and improving blood flow to the pouch.19,34

The number of repetitions for daily exercise should be tailored to each patient’s own level of function.19,34 Mayo Clinic staff recommend patients with fecal incontinence begin by emptying the bowel and bladder, holding the contraction for 5 seconds, and then relaxing for 5 seconds. This should be done four or five times in a row, gradually increasing the duration of contractions to 10 seconds and relaxing for the same amount of time as the duration of the contraction. The overall goal is to reach the ability to contract the muscles for 10 seconds. Patients are advised to perform three sets of 10 exercises daily.36

Pelvic floor muscle exercises can be performed when sitting, standing, or lying down. When the technique is mastered, exercises also may be performed during activities of daily living.36 Patients should be instructed to tighten their muscles as if they are attempting to hold in gas or stool. They should not hold their breath or tighten abdominal muscles, buttocks, or thighs.29

Patients with fecal incontinence and their nurses should expect to see a difference in continence control after about 8 to 12 weeks of daily exercise. Clinicians have observed that for some, the difference may be drastic, for others it may simply prevent the condition from getting worse.36

Squatting positions. Patients frequently complain about feelings of incomplete evacuation during the acute postoperative phase.19 The Continence Foundation of Australia (CFA) suggests that defecating in the correct sitting position may help promote complete evacuation. When a person has the urge to defecate, he/she should sit on the toilet with elbows on the knees, lean forward and have a footstool placed under the feet. Individuals should relax the abdomen and anal sphincter without holding their breath or straining.

Sikirv38 conducted a study among 28 healthy volunteers (range 17 to 66 years old) with healthy bowel function to compare the degree of straining and complete evacuation during defecation in the following three positions: 1) sitting on a standardized toilet, 2) sitting on a lower toilet, and 3) squatting.38 All volunteers were given a digital timer to record the total time it took to defecate in each position and were asked their opinion on the degree of straining experienced during defecation. Six consecutive bowel movements were recorded for each of the three sitting positions. The study found fecal straining was reduced and the sensation of complete evacuation was significantly improved in the squatting position.38 Because using a toilet to defecate in the sitting position has become part of standard Western culture, patients may find it helpful to place a footstool under their feet while defecating as suggested by the CFA.37 This position helps mimic a squat, thus improving fecal evacuation in persons with IPAA.

Complications. Inflammation of the pouch (pouchitis) is the most common complication of IPAA.9,13,20,39,40 Pouchitis has been shown to occur in 20% of patients during their first year after surgery, and approximately 50% will experience it within 10 years after surgery.19 Symptoms may include change in bowel function, rectal urgency, abdominal pain, fever, lethargy,13,41 and new onset rectal bleeding or bloody diarrhea.41 Pouchitis diagnoses generally require a flexible pouchoscopy and biopsy of mucosal tissue.13 A computed tomography (CT) scan or magnetic resonance imaging (MRI) is recommended to rule out an abscess or anastomotic leak that may be associated with pouchitis.41

The cause of pouchitis remains unknown; it is theorized to occur from an imbalance of the intestinal flora.42 According to a review of 11 trials,42 treatment options include oral antibiotics such as ciprofloxacin and metronidazole, although recent evidence shows the former to be the more effective antibiotic. The review also shows that daily consumption of VSL #3, a live lactic acid bacteria probiotic, can also help extend pouchitis remissions.42

Another frequently encountered complication, pouch strictures, most commonly occurs at the anal-anastomotic site, and at the pouch inlet, also called the afferent limb.43 In a 15-year prospective, descriptive study conducted at Mayo Clinic that examined the incidence of and contributing factors for the different types of strictures, strictures were found to develop in 213 out of 1,884 patients who had undergone IPAA surgery, yielding an incidence rate of 11.2%.

A person with strictures may exhibit one or more of the following signs and symptoms of strictures: abdominal pain, distention, nausea, vomiting,41,44 diarrhea, urgency, bloody stools, difficult evacuation, and bloating.45 Strictures can occur after fibrosis from partial dehiscence or ischemia of the anastomotic site. Typically, some degree of narrowing will occur for all patients who undergo IPAA.45 The goal is to obtain a lumen that
allows passage of the distal interphalangeal joint of the index finger or a proctoscope 1 cm in diameter. CT scan is the preferred exam for evaluating stricture and pouch obstruction. Pouch wall thickening and a pouch filled with fluid, desiccated stool, or both on a CT scan is indicative of a stricture. Treatment options for strictures include dilation of the pouch, which can be performed endoscopically with or without general anesthesia. Persons experiencing recurrent strictures can be taught to self-dilate with a Hegar dilator.

Patients should be educated on signs and symptoms of pouchitis and pouch stricture and should be advised to contact their physicians for treatment as soon as symptoms occur. Delayed physician notification can cause more complications and worsen the condition.

Support and education. Due to the complex nature of IPAA surgery, patients may become discouraged during the recovery process. Social support groups are believed to be helpful in boosting patient confidence and creating an overall positive attitude towards their situation. WOC nurses in the US can contact the Crohn’s and Colitis Foundation (CCFA) at www.ccfa.org or the J-Pouch Group at www.j-pouch.org for guidance in finding local support groups. Patients also may find the discussion boards on the J-Pouch Group website informative; however, patients must be counseled that any advice posted on a forum should be discussed with their WOC nurse or physician before implementation.

Assessing progress. Patients may be advised to keep a journal of bowel movement frequency throughout therapy to monitor improvement. Treatment goals should be tailored to fit the needs of each individual according to unique symptoms, but the overall goals are to consume an adequate amount of a variety of foods, to decrease stool frequency, and to improve fecal consistency and control.

Fortunately, long-term, health-related quality of life for patients with UC who underwent IPAA appears positive. Berndtsson et al conducted a quantitative descriptive study of long-term outcomes in patients who had an IPAA surgical construction between 10 and 21 years ago. Three hundred, ninety-nine patients invited to participate completed the survey and answered questions about daytime and nighttime bowel movements, incontinence of liquid and solid stools, pad usage, urgency, diet, medication use, and thoughts that having a pouch was a social handicap. Patients with pouch failures also were included. Findings demonstrated that patients with a functioning pouch reported a positive, health-related quality of life, while persons with pouch failures did not.

Similarly, a functional outcomes, complications, and quality-of-life study conducted among 1,885 patients in Switzerland who underwent restorative proctocolectomy for treatment of UC showed that functional outcomes were very good and stable for up to 20 years after surgery.

Conclusion

Since its development in 1978, IPAA has become the gold standard for the surgical treatment of UC and FAP. Increasing availability of information about the long-term outcomes of this procedure suggests that IPAA will remain...
the surgical treatment of choice for some time, although many questions about optimal interventions to prevent complications and promote continence remain unanswered. Nursing interventions should focus on intervention and management of fecal incontinence, perianal skin care, and coping mechanisms. Questions that hopefully will be answered through future research include: 1) How does vaginal birth affect women with a history of IPAA surgery? 2) What complications may occur when these patients are in the seventh, eighth, and ninth decades of life, and how should they be managed? 3) What specific interventions promote fecal incontinence? 4) What natural remedies are effective for skin care? 5) Is the quality of life after IPAA? Although many questions remain unanswered, the potential problems appear to outweigh the overall benefit of avoiding a permanent ileostomy and its associated negative effects on self-concept and quality of life. For young patients in particular, this benefit may be well worth the potential complications of living with an ileal anal pouch.

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References