Carol Rees Parrish, RD, MS, Series Editor

Ostomies and Fistulas: A Collaborative Approach


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Management of patients with ostomies can be challenging to say the least; the management of those with fistulas is even more so. Dietary management of patients with fistulas can often make the difference between healing versus a prolonged illness. In the past, 40%–65% of people with enterocutaneous fistulas died from associated complications, including malnutrition, however, mortality is now down to 5%–20%. Dietary restrictions for patients with ostomies are based on patient surveys and anecdotal evidence. The purpose of this article is to discuss nutritional therapy and skin care of patients with ostomies and fistulas.

INTRODUCTION

Ostomies are surgically created openings from the intestine to the skin (Figure 1). They are classified based on their location in the intestine: jejunostomy, ileostomy, and colostomy. There are an estimated 750,000 people in the US with ostomies; the number of people with fistulas is much lower. Fistulas are different from ostomies in many ways; fistulas are not intentionally created and the mortality rate and risk of complications is much higher. Fistulas can originate from any part of the gastrointestinal (GI) tract. One type of fistula, the enterocutaneous (EC) fistula, is similar to an ostomy in terms of the nutritional management and enterostomal care. Of note, jejunostomy and ileostomy fluid is called effluent; effluent becomes "stool" if it exits from anywhere in the colon.

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OSTOMIES

Nutritional management depends on the type of ostomy. Regardless of the type of ostomy, most surgeons will initiate nutrition via the GI tract when the ostomy starts working. However, earlier enteral nutri-

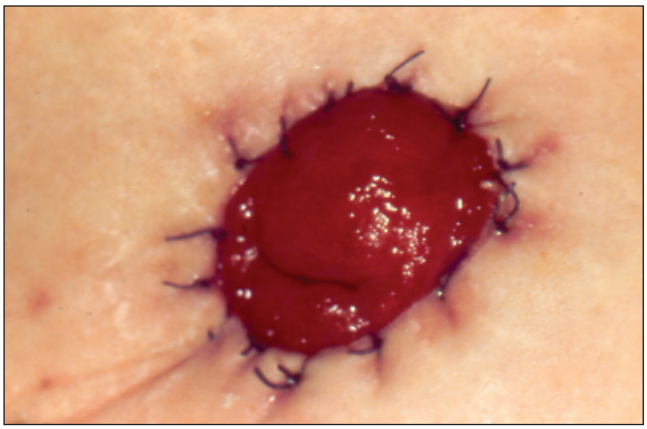

Figure 1. Stoma

tion has not been shown to be harmful. Nutrition is usually started by mouth, or in some cases tube feedings will be initiated. Generally, the greater the length of functional bowel remaining, the fewer absorption problems the patient will have. Knowledge of the specific location of the ostomy in the GI tract is essential in determining the appropriate nutritional regimen. For example, a proximal ileostomy may require prolonged intravenous fluids and electrolytes, whereas a distal ileostomy most likely will not.

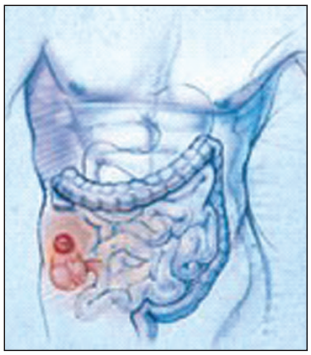

Figure 2. Ascending colostomy

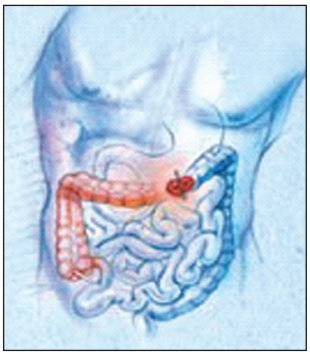

Figure 3. Transverse colostomy

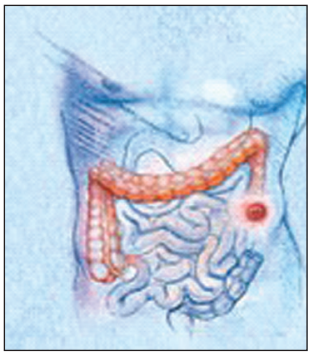

Figure 4. Descending colostomy

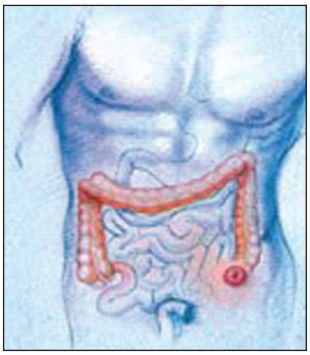

Figure 5. Sigmoid colostomy

COLOSTOMY

Colostomies are the most common type of ostomy, and are classified as ascending, transverse, descending or sigmoid. The most common type of colostomy is the descending or sigmoid colostomy. See Figures 2–5 for examples of each type of colostomy.

Nutritional management of colostomies is the simplest of all types of ostomies. Colostomies start functioning 2–5 days after surgery (1). Typically, colostomy output ranges from 200–600 mL/day. There is no evidence to support a specialized diet for patients with colostomies of any type, a regular diet is appropriate. In fact, a large survey conducted among people with ostomies found that 85% did not restrict their diets at all (2). However, because of bacterial fermentation in the colon, some patients may choose to avoid foods that cause undesirable gas production. Possible gas and odor causing foods (based on anecdotal reports) are listed in Table 1. Although rare, hydration can be an issue in patients with minimal remaining colon, as in the case of an ascending colostomy. These patients can usually manage the additional fluid loss by increasing fluid intake per os in conjunction with some gut slowing medications; IV hydration is seldom necessary.

ILEOSTOMY

Ileostomies will normally start functioning within 24 hours after surgery (1) (Figure 6). Initially, expected output is >1 liter per day. After a week or more of this high volume output, the effluent thickens and the total volume gradually falls to roughly 600 mL/day. Maintaining adequate hydration in patients with ileostomies may require increased consumption of fluids (an additional 500–750 mL per day) (3).

As with colostomies, specialized diets are not necessary for patients with ileostomies. Ileostomies generally do not result in as much gas or odor production

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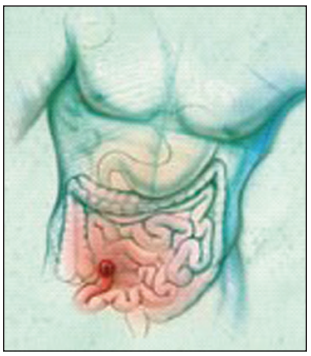

Figure 6. Distal Ileostomy

as colostomies due to the lower bacterial content of the small bowel. However, if gas is a problem, patients may need to avoid activities that increase the amount of swallowed air, such as smoking, chewing gum, drinking through a straw (3), or consuming carbonated beverages. Salt intake should be liberalized due to higher sodium losses in ileostomy output. People with ostomies report that certain foods tend to thicken the stool (Table 1). Other foods have been reported to cause "blockages" at the ileostomy site. These foods include high fiber or difficult to digest foods such as: nuts, popcorn, dried fruits, raw cabbage, corn, celery, coconut, apples with peels, and grapes. A blockage is more likely to occur in a patient with an ileostomy than a colostomy due to the smaller diameter of the ileal lumen. To decrease the risk of blockage, patients are instructed to chew their food well and to introduce fibrous foods in small amounts one at a time gradually increasing their intake (3).

Patients with ileostomies often require gut-slowing medications such as Lomotil or Imodium during the adaptation phase. If these prove inadequate, stronger medications such as paregoric or codeine may be needed. If hydration or electrolyte balance cannot be maintained with a regular diet and gut-slowing medications, oral rehydration therapy (ORT) can be attempted. ORT is readily available, brands include Pedialyte, Ceralyte and the World Health Organization (WHO) packet (4); homemade recipes can be found in the article on short bowel syndrome in the September 2005 issue of *Practical Gastroenterology* (5). If ORT is unsuccessful, supplemental intravenous fluids will be necessary.

Table 1
Foods that may alter gas production, odor and viscosity

Gas-forming foods	
Legumes (dried beans)	Carbonated beverage
Broccoli	Garlic
Brussels sprouts	Onion
Cabbage	Eggs
Onion	Fish
Odor-producing foods	
Asparagus	Eggs
Broccoli	Fish
Brussels sprouts	Garlic
Cabbage	Onion
Cauliflower	
Stool thickening foods	
Cheese	Pasta
White bread	Pretzels
White rice	Creamy peanut butter
Marshmallows	

JEJUNOSTOMY

Patients with jejunostomies are managed in a similar way to those with short gut, in fact, the patient *may have* a short gut. These patients will most likely need intravenous fluids and electrolytes, if not total parenteral nutrition at least initially. To minimize GI secretions and ostomy output, oral fluid intake needs to be limited. Patients with jejunostomies should be prescribed gut-slowing medications to lengthen transit time and maximize nutrient absorption, along with a proton-pump inhibitor to decrease gastric secretions. Gut slowing not only aids in increasing transit time, but can also help with rapid gastric emptying that can lead to malabsorption secondary to the denaturing of pancreatic enzymes. Monitoring electrolytes, sodium in particular, is important due to losses in jejunostomy output. As the bowel adapts with time, it may become better able to absorb fluids and electrolytes. Oral rehydration therapy may be a useful adjunct in these patients as well. A more thorough review on the short gut syndrome is available elsewhere (5).

OSTOMY SKIN CARE AND EFFLUENT/STOOL CONTAINMENT

Skin care and containment of ostomy output are major considerations in the overall rehabilitation of the per-

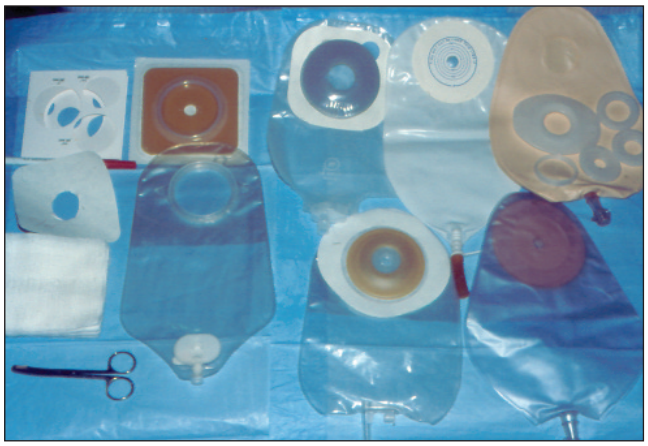

Figure 7. Ostomy products

son who has undergone surgery resulting in the creation of an ostomy. An effective pouching system protects the skin, contains the effluent/stool and odor, and remains securely attached to the skin for a dependable amount of time.

A solid skin barrier (wafer) and the collection device (pouch) are the components of the pouching system (Figure 7). The most important part of the device is the skin barrier that interfaces with the skin and the pouch. This barrier protects the skin from fecal drainage and seals the pouch to provide a wear time of approximately 3 to 7 days. Wear time is primarily influenced by 2 factors—the rate of breakdown of the barrier, and adhesion adequacy of the barrier to the skin. The volume and consistency of the ostomy output, and the specific characteristics of the solid barrier chosen, determine the rate of barrier breakdown. Frequent output, as with an ileostomy, erodes the barrier more quickly than the output from a colostomy. When the ostomy output is more liquid, barriers are also more susceptible to "undermining," as this interferes with the adhesion of the barrier and stool seeps under.

Specific barrier characteristics can influence the adhesion and barrier resistance to ostomy output. The composition of the barrier can affect performance. The two most common types of solid barriers are "regular wear" and "extended wear." With the extended-wear barrier, the breakdown from stool contact is slower than with the regular skin barrier, hence, wear time is longer. For example, a person with an ileostomy who has a high volume of liquid output may benefit from an extended-wear skin barrier, whereas a patient with a colostomy and a lower volume of more solid stool may do well with a regular skin barrier.

Table 2
Factors Influencing Pouch Selection

- Stoma size and shape
- Location of stomal opening
- Characteristics of stomal output
- Skin integrity around stoma
- Pouch wear time
- Manual dexterity of patient
- Visual acuity of patient
- Cost of pouches

Table 3
Ostomy Product Supply Companies

Coloplast	www.us.coloplast.com
Convatec	www.convatec.com
Hollister, Inc.	www.hollister.com
Marlen	www.marlenmfg.com

Barrier shape can affect adhesion potential. A flat skin barrier is level with the skin surface whereas a convex shape has an outward curve. The decision as to which type is best depends on the stoma height and location, and the presence of creases or folds when the patient changes positions; for example, a flush ileostomy stoma may need a convex barrier to push into the peristomal surface to minimize undermining.

The collection device of the pouching system is the pouch. Pouches are available in many shapes (Figure 7). Pouches that come from the manufacturer attached to the barrier are called one-piece systems, those that attach to the skin barrier with a flange (two pieces of plastic that snap together) are classified as two-piece systems. Pouches also come in different sizes and accommodate different types of output. Although larger pouches will hold more, it is important to realize that liquid output can be very heavy and when full, the weight actually interferes with the adhesion of the barrier to the skin. There are drainable and

Table 4
Characteristics of Different Types of Ostomies

Type of Ostomy	*Location of Stoma*	*Type of Discharge*	*Patient Problems*
Ileostomy	Lower right quadrant	Liquid or paste-like Continuous drainage Contains digestive enzymes	Skin protection Odor control Dehydration Food blockage
Ascending Colostomy	Middle or upper right side of abdomen	Liquid or semi-solid Almost continual drainage Contains digestive enzymes	Skin protection Odor control Dehydration Gas control
Transverse Colostomy	High on abdomen; toward center	Likely semi-solid Maybe frequent drainage Odorous May contain enzymes	Skin protection Odor control Gas control
Descending or Sigmoid Colostomy	Lower left quadrant	Likely normal stool Odorous	Skin protection Odor control Gas control

Adapted from Hollister, Inc. Types of Ostomies, Libertyville, 1992 (6)

closed ended pouches. Closed ended pouches are used for colostomy patients with formed stool and less frequent output. Adult pouches can hold approximately 150 mL to a maximum of 300 mL of effluent or stool.

Many factors influence the selection of a pouch system: stoma size and shape; location of the stoma, and characteristics of the ostomy output are but a few. See Table 2, 3 and 4 for factors influencing pouch selection, ostomy product supply companies and for different characteristics of various types of ostomies (6).

FINANCIAL CONSIDERATIONS

It is important for the nutritionist and ostomy nurse to work together to minimize the amount and consistency of output, which in turn affects the pouching system wear time. Ostomy supplies are expensive; average cost is between $55 and $70 per month. Medicare reimburses 80% of the cost of pouches and must be accompanied by a prescription; the patient or a secondary insurance must pay for the other 20%. Reimbursement for ostomy supplies varies with the insurance company. Some insurance companies have preferred providers through which the supplies must be purchased or the patient will need to pay 100% of the cost. Many small retailers will charge the patient at the time of purchase and then bill their insurance or Medicare, consequently the patient must come up with the entire cost of their supplies and then wait for Medicare or insurance reimbursement. This can take several months and be a hardship for those on fixed incomes. See Table 5 for the quantity of supplies Medicare typically covers. See Table 6 for a sample letter requesting coverage for more than the allotted number of supplies. Information on filing an appeal can be found on the Medicare web site www.cms.hhs.gov. The Convatec website includes a helpful section on Medicare reimbursement (www.convatec.com).

ENTEROCUTANEOUS (EC) FISTULAS

An enterocutaneous fistula (EC fistula) is an abnormal passage originating in the bowel and exiting at the skin. EC fistulas can be classified several ways: by output volume, etiology, site of origin and number of fistula

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Table 5
Ostomy Supplies Covered by Medicare

Supply	*Number covered/month*
Ostomy pouch w/attached wafer (1 piece system)	20
Ostomy wafer (part of 2 piece system)	20
Ostomy drainable pouch (part of 2 piece system)	20
Ostomy closed-end pouch (nondrainable pouch)	60
Ostomy belt	1
Ostomy paste	4 oz
Ostomy skin barrier powder	10 oz
Ostomy skin barrier liquid	2 oz

Table 6
Sample Letter to Medicare Justifying the Need for More Pouches

Re: Mr. Jay Jones
Medicare #

To Whom it May Concern at Medicare:

I am writing to request an increase in the number of one piece pouches which Medicare covers for Mr. Jones from 20 a month to 30 a month. Mr. Jones has recently undergone further surgery to remove more diseased bowel leaving him with a high jejunostomy. This results in a very liquid effluent and despite trying various appliances to correct the problem the pouch must be changed every day and a half to 2 days to prevent leakage. It is important that the pouch be changed prior to leakage as the caustic effluent from the jejunostomy could severely denude and further impair pouch adherence.

Please feel free to contact me with any questions at (XXX) 111-22222. Thank you for your assistance with this matter.

Dr. Brown
Surgeon

Jane Doe
Wound Ostomy
Continence Nurse

tracts. Seventy-five to eighty-five percent of EC fistulas occur after surgery (7), and usually arise 7–10 days post-operatively (8). Good epidemiological data regarding frequency of occurrence and location is lacking. The surgical procedures most commonly associated with fistula development are lysis of adhesions, and bowel resection for inflammatory bowel disease, cancer or pancreatitis. Emergent surgery on an unprepped bowel or surgery on previously radiated bowel can increase the risk of fistula formation. Anecdotally, some surgeons believe that fistulas are more likely to form in a malnourished patient. Table 7 lists conditions associated with spontaneous fistula development (9).

ASSESSMENT OF A DEVELOPING FISTULA

On initial presentation, patients may have abdominal pain, tenderness, fever, and/or leukocytosis. The wound or area where the fistula will eventually exit may be cellulitic; enteric drainage begins within 24-48 hours after the appearance of cellulitic skin. Evaluation of the odor, color, consistency and volume of the fluid draining can help identify the source of the leak. Blue dye or methylene blue can be given proximal to the fistula in the GI tract to confirm that the source of the fistula is indeed the GI tract. Definitive assessment of the fistula source, route and presence of obstructions or abscesses is essential in determining appropriate intervention and method of feeding. CT scans and MRI are helpful for determining the presence of obstructions or abscess formation, however a fistulogram is considered the gold standard for identifying the location and route of the fistulous tract. A fistulogram uses contrast medium delivered directly into the fistulous tract. Water-soluble agents are typically used as they do not cause the acute inflammatory reaction that can be seen with extravasated barium; however they do not coat the mucosa as well as barium and are less likely to highlight small leaks (8), and have a higher incidence of false negatives. Potential complications of fistulas are listed in Table 8.

NUTRITION SUPPORT

Prior to the use of parenteral and enteral nutrition, mal-

Table 7
Clinical Conditions Associated with Fistulas

Causes of surgical fistulas

- Lysis of adhesions
- Bowel resection for IBD
- Bowel resection for cancer
- Surgery for pancreatitis
- Unprepped bowel
- Surgery on radiated bowel
- GI surgery in malnourished patient

Causes of spontaneous fistulas

- Radiation
- Inflammatory bowel disease
- Diverticular disease
- Appendicitis
- Ischemic bowel
- Perforation of duodenal ulcers
- Pancreatic and gynecologic malignancies
- Intra-abdominal abscesses
- Abdominal penetrating trauma

Table 8
Potential Complications of Fistula

- Sepsis
- Fluid/electrolyte imbalance
- Hemorrhage
- Pain
- Anxiety/poor body image
- Expense
- Death

nutrition was a major determinant of adverse outcomes in patients with enteric fistulas; high output fistulas in malnourished patients were 100% fatal prior to the use of nutrition support. See Table 11 for characteristics of fistulas that are likely to close without surgery and those that are not likely to close. The presence of a fistula increases morbidity and predisposes the patient to malnutrition by reducing the patient's desire to eat, increasing the loss of nutrients via fistula drainage (if located in the proximal gut), and/or by increasing energy and protein needs due to sepsis. Chapman in 1960 reported 58% mortality in patients who did not receive nutrition support and 16% mortality in those who did (10). With the advent of nutrition support, mortality in high output fistulas had decreased to 20% by 1989 (9). The current body of evidence on nutrition and EC fistulas consists of retrospective case reports or studies that include a small number of subjects. Robust evidence is difficult to obtain due to the significant variation in patient co-morbidities, the many different types of fistulas and the relatively low numbers of fistulas treated at any single institution.

Table 9
Fluid and Electrolytes Your Patients May Be Losing (mEq/L)

Body Fluid	*Na*	*K*	*HCO_3*	*H*	*Cl*	*pH*	*Volume/ 24 hours (L)*
Sweat	30–50	5	–	–	45–55	–	0.5
Saliva	45	20	60	–	44	7	0.5–1.5
Gastric	40–65	10	–	90	100–140	2	2–4
Pancreas	135–155	5	70–90	–	55–75	8	1.0
Bile	135–155	5	35–50	–	80–110	7	1.5
Jejunum /Ileostomy	100–120	10	50–70	–	50–60	7	1.8
Diarrhea	25–50	35–60	30–45	–	20–40	–	
Normal stool	5	10	–	–	10	–	0.1

Used with permission from the University of Virginia Health System Nutrition Support Traineeship Syllabus (5)

Table 10
Fistula Products and Their Indications

Product	*Action*	*Indications*
Skin Barrier Wipes	Provides protective film to skin	Low output fistulas—provides protective layer to skin. Use in combination with dressings. High output fistulas—use in combination with pouches, suction systems and V.A.C. therapy to increase adhesion and protect skin.
Moisture Barrier Creams	Repels moisture and protects skin	Low output fistulas—provides protection to skin around fistula. May be used in combination with dressings. High output fistula—not indicated. Does not provide enough protection with high output drainage. Contraindicated with use of any adhesive products (i.e. Pouches) as creams will not allow products to adhere to skin.
Pectin Barriers	Provides physical barrier to effluent/stool	Low output fistulas—skin protection against effluent. High output fistulas—used to fill in uneven surfaces for pouching or as part of pouching system.
Pouches	Contains effluent/stool and odor from fistula	Low output fistulas—where odor is a problem or patient prefers to change pouch as opposed to dressings. High output fistulas—to contain stool and odor.
Suction systems	Contain effluent in combination with low intermittent suction and dressings	Low output fistulas—not indicated. High output fistulas—where pouching systems are not effective due to large amounts of liquid effluent. Not a long-term solution.
V.A.C. Therapy	Direct pressure closure	Low output—not indicated. High output—where closure is a possibility. No abscess can be present. Patient must be NPO on TPN. There can be no evidence of epithelial cells on opening of fistula.
Dressings	Absorb drainage	Low output—for use in combination with other skin protectants such as skin barrier wipes, barrier creams and pastes and pectin wafers. High output—not indicated.

Traditionally, parenteral nutrition has been used in the treatment of EC fistulas, however when possible, enteral nutrition is preferable. Enteral nutrition maintains the health of the GI tract, potentially minimizes risk for future fistula takedown operations, and may allow the patient to be discharged from the hospital sooner and avoid the financial obligations associated with home parenteral nutrition. Spontaneous closure of fistulas may take only 4–6 weeks; for Medicare patients, parenteral nutrition will not be reimbursed unless the therapy is needed for three months or longer (11).

Fistula types and locations that may permit enteral feeding and/or oral diet include: low output fistulas, esophageal, gastric, duodenal or proximal jejunal with distal enteral access, or distal ileal or colonic fistulas. To minimize fistula output in patients with distal fistulas, a fiber free formula and/or diet should be used and

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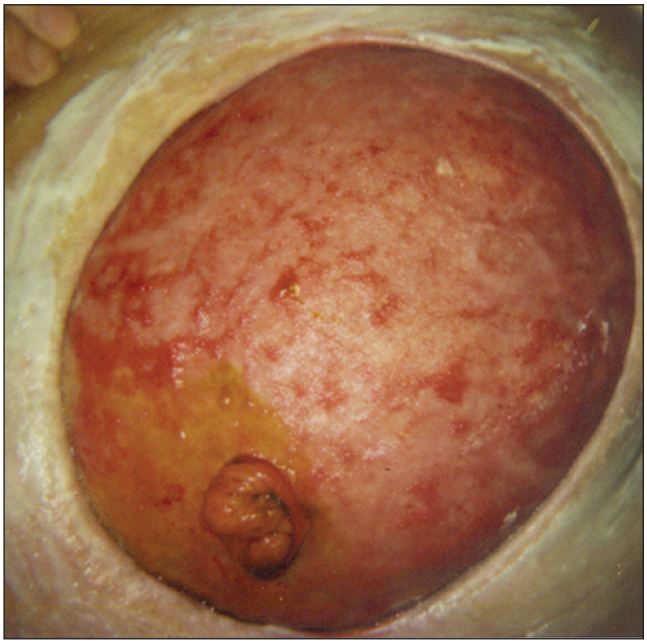

Figure 8. "Pouch this" Fistula in a wound.

the patient fed as proximally as feasible from the fistula (i.e. for patients with feeding tubes, feed gastrically and not post-pylorically or via the duodenum). However, if the fistula is proximal to the site where feedings enter the bowel, a fiber-containing formula can be given. There are some reports of using elemental formulas in an effort to reduce GI secretions and pancreatic enzyme concentration in fistula output (12,13); elemental formulas *theoretically* do not stimulate pancreatic secretions as much as standard formulas (14). Elemental or semi-elemental feedings may be indicated if pancreato-biliary secretions are lost via the fistula and are not reinfused, as the patient will be left with a functional malabsorption syndrome. Powdered pancreatic enzymes can be mixed with intact protein formulas to enhance absorption. There are no controlled clinical trials comparing elemental or semi-elemental feedings to standard tube feedings, nor use of standard formulas with the addition of pancreatic enzymes in patients with fistulas.

Reinfusion of proximal fistula output into a more distally placed jejunostomy tube has been employed to prevent loss of electrolytes, trace elements and protein (15,16). A case report in the literature demonstrated how this method was used to prevent the need for intravenous fluids (16). Depending on the overall patient care goals, creative methods of feeding may be necessary. There are also case reports of using the fistula as the access site for a feeding tube if closure is not the goal (16).

Many patients with fistulas require parenteral nutrition (PN). In fact, the first time PN was used in humans was in 1968 in a 52-year-old male with multiple fistulas secondary to Crohn's Disease, who had sustained an 80-pound weight loss prior to initiation of PN (17). PN is more likely to be utilized in patients with fistulas that originate in the pancreas, are high output fistulas located in the jejunum or ileum, or proximal fistulas where distal enteral access is not feasible.

HYDRATION/ELECTROLYTES

Fluid balance must be monitored very carefully to prevent dehydration. Fistula output needs to be carefully measured, as well as urine, stool, or any ostomy output. A drop in urine output should be interpreted as a sign of dehydration; immediate measures should be taken to rehydrate the patient including the addition of intravenous fluids. Electrolyte content of the enterocutaneous fistula output varies depending on the location of the fistula in the bowel (Table 9).

VITAMIN AND MINERAL SUPPLEMENTATION

Patients with high output fistulas who are not on parenteral nutrition may require extra vitamin and mineral supplementation. Loss of zinc and copper, in particular, can be excessive from proximal EC fistula drainage (18). Patients with ostomies or fistulas that drain above the ileum and who are not receiving IV multivitamins will require IV or nasal vitamin B_{12} supplementation.

SKIN CARE OF FISTULAS

Unlike an ostomy, where site selection and surgical creation of the stoma optimize the conditions for pouching, fistula sites are not selected and many times occur in areas where pouching is difficult such as in

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Table 11
Factors Affecting Likelihood of Closure

Factor	*Likely to Close*	*Unlikely to Close*
Anatomic Location	Oropharyngeal Esophageal Duodenal stump Pancreato-biliary Jejunal	Gastric Ligament of Treitz Ileal
Nutritional status	Well nourished	Malnourished
Sepsis	Absent	Present
Etiology	Appendicitis Diverticulitis Postoperative	Crohn's disease Cancer Radiation Foreign body (such as a stent, mesh or staple)
Condition of bowel	Health of adjacent tissue Small leak No abscess Quiescent disease	Total disruption Distal obstruction Abscess Active disease (such as Crohn's or tumor)
Other	Tract >2 cm in length	Tract <2 cm, epithelization

Adapted from Maykel J, Fischer J. Current management of intestinal fistulas, Advances in Surgery, Mosby, 2003 (25)

wounds or along folds (Figure 8). For many patients pouching a fistula may not be possible and other options will need to be utilized. Drainage may need to be managed with skin protection, dressings, regulated wall suction, or negative pressure therapy such as a vacuum assisted closure (VAC®) device. An effective fistula skin management plan should strive to achieve skin protection, patient comfort, odor control, patient mobility, drainage containment, and cost containment.

Preserving and protecting the skin is absolutely essential and should be the top priority (19). The caustic effluent that seeps onto the skin from a draining fistula results in skin breakdown, fungal infection, odor, and discomfort for the patient. EC fistulas that exit from the small bowel drain intestinal enzymes that destroy proteins in the skin quickly leading to red weepy skin around the fistula (20); within 3–4 hours, skin breakdown may be apparent from a draining fistula. Prevention necessitates immediate action as soon as a wound with drainage is apparent, or increased drainage from an already existing wound occurs (9).

Skin protection can be provided by a variety of methods such as skin sealants, creams, ointments, solid wafer barriers and pouches. See Table 10 for a list of products used for fistula management. Choosing the most effective method requires an assessment of the fistula, including an evaluation of fistula output, and the condition of the surrounding skin.

Skin barrier products are often used to protect the skin around the fistula from caustic drainage; powders or liquids can be used to treat weepy denuded skin and to provide a dry surface to pouch. Petroleum or zinc oxide skin barrier pastes may provide a slightly absorbent as well as protective layer to the skin. Another option for skin protection is a solid skin barrier, these hold up well to fistula output and provide a physical barrier between stool and skin. Skin barriers can be used alone when there is minimal drainage, or in combination with other products, such as dressings and ostomy pouches when the amount of drainage exceeds their ability to protect the skin.

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Fistula effluent can be managed with dressings when drainage is less than 100 mL in 24 hours. Wound dressings can range from simple gauze to more absorptive choices such as foam or hydrofiber. Each caregiver may use a different type and number of dressings to absorb the drainage thus impeding accurate measurement of output and subsequently complicating the accurate monitoring of ins and outs. Dressings are not practical when they need to be changed more often than every 4 hours (21).

Perifistular skin (skin immediately surrounding the fistula) needs to be reassessed each time the dressing or pouch is changed. Stool in persistent contact with skin provides a warm moist environment ideal for the growth of fungal infections. Treatment with an antifungal powder is appropriate.

Other options for controlling fistula effluent include use of continuous low wall suction. If a pouching system cannot be used due to fistula location or copious drainage, a suctioning system hooked to continuous low wall suction may be implemented (20). A suction catheter is placed in the distal portion of the wound bed to the fistula to drain effluent. The suction catheter is used in conjunction with normal saline dressings and a film dressing. It is important that the catheter not be placed in the fistula tract, as it will be recognized as a foreign body and slow closure. The continuous suction helps reduce dressing changes by diverting drainage to the suction system. Suctioning systems are not long-term management solutions, as they require the patient to be hooked to continuous low wall suction 24/7 and require a caregiver who is not only capable of understanding and maintaining the equipment, but also dedicated to the time required for managing the system.

One of the newest modalities in treatment of fistulas is vacuum assisted closure (V.A.C.) (K.C.I., San Antonio, Texas http://www.kci1.com/products/vac/index.asp). VAC therapy provides direct pressure closure to the fistula. The V.A.C. pulls the effluent away from the fistula site into its self-contained canister. The negative pressure is thought to assist in the closure of acute fistula tracts. V.A.C. therapy however is not indicated purely as a containment device for fistulas; it should be implemented only where closure of the fistula is a possibility.

Pouching of fistulas can be very challenging, even for those skilled in pouching. Because of the difficulty in achieving and maintaining pouch adherence, pouching may require more frequent pouch changes, resulting in greater inconvenience and expense for the patient. Expectations of a 4–5 day wear time for a fistula pouch is reasonable for many patients; however, some fistulas, due to location and output, may never obtain more than 24-hour pouch adherence. In these cases, a period of bowel rest may be necessary. Reduction in effluent can provide enough time for effective pouch application and decrease the probability of disrupting the seal due to copious enzymatic effluent. Use of pharmaceuticals to slow output may also be indicated. As the condition of the skin improves, so should the length of time the pouch adheres. Quality of life for patients with a fistula rests on the reliability of their pouching system (19,22).

Fistula supplies are very expensive and insurance reimbursement may influence the type of containment devices used. As with ostomy supplies, Medicare will cover 80% of the cost of pouches if the fistula is a result of surgery, the other 20% to be covered by the patient or secondary insurance. Currently there is a specific Medicare code for fistula pouches. If fistulas are spontaneous (such as those occurring after radiation therapy), Medicare does not cover the cost. Some of the larger fistula pouches cost up to $61.00 per pouch.

PHARMACOTHERAPY

Medications are often implemented to decrease effluent from a high output fistula when conservative methods have failed. Octreotide is a synthetic analog of the hormone somatostatin, it decreases gastric and pancreatic secretions. Somatostatin's short half-life often makes Octreotide the preferred drug. A meta-analysis of nine randomized clinical trials concluded that use of somatostatin (or its analogs) be evaluated on an individual basis (23). Use of these medications in patients with fistulas is controversial due to a lack of studies showing improved closure rates. These drugs should be discontinued if there is no reduction in fistula output within 48 hours, or if the fistula does not close within 2–3 weeks of initiating treatment (24).

Antidiarrheals are important therapeutic agents commonly prescribed to decrease effluent from high output ostomies and fistulas. Two of the most commonly used medications are loperamide (Imodium) and diphenoxylate (Lomotil). Loperamide slows bowel transit and as a result, decreases output. Diphenoxylate is a synthetic opiate agonist. It affects the smooth muscles of the GI tract to decrease motility. Since diphenoxylate is chemically related to some narcotics, it may be habit-forming if taken in doses that are larger than prescribed. To help prevent possible abuse, atropine (an anticholinergic) has been added. Most clinicians start with Imodium as a result, especially in the elderly. In cases where loperamide or diphenoxylate are not effective, codeine or opium tincture may be prescribed. Opium tincture increases smooth muscle tone of the intestine and decreases stomach, pancreas and biliary tract secretions. The overall effect is to decrease GI motility. In clinical practice, a combination of these agents is frequently used to decrease effluent volume adequately. Suggested dosing guidelines are available elsewhere (5).

CONCLUSION

In summary, the nutritional therapy and skin care management of patients with ostomies and fistulas is best accomplished using a multi-disciplinary approach that includes a clinical nutritionist and a wound, ostomy continence nurse. The nutritionist works not only to maximize the provision of nutrition therapy, but also aids in affecting the consistency and amount of output from both the ostomy and fistula. The effective management of effluent or stool output can positively impact the wear time of pouching systems. The ostomy nurse uses multiple techniques to provide the patient with systems that protect the skin and contain ostomy/fistula output. The nutritionist and the wound, ostomy, continence nurse collaborate to enhance each other's contribution towards optimal care and quality of life for patients with ostomies and/or fistulas. ■

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