Ostomy Management

Colostomies and ileostomies are surgical procedures performed to bypass or remove injured or diseased bowel. This creates a temporary or permanent fecal diversion where a portion of the bowel is pulled through an incision in the abdominal wall creating an ostomy or stoma. Colostomies or ileostomies may be used to manage medical conditions such as congenital anomalies, colon obstruction, cancer, diverticulitis, trauma to the intestinal tract, or inflammatory bowel disease (Hendren et al., 2015; Francone, et al., 2017). Urostomies are created to bypass the bladder by diverting the normal flow of urine from the kidney and ureters. Ureters are implanted into a small segment of ileum (called an ileal conduit) and pulled through the abdominal wall as a stoma. This procedure may be used to treat bladder cancer, neurologic dysfunction of the bladder, birth defects, chronic bladder inflammation, radiation injuries, or spinal cord injury (Scemons, 2013). In the United States, approximately 100,000 people each year will have an operation resulting in a colostomy or ileostomy (Hendren et al., 2015) and over 800,000 people are living with an ostomy of some type in the U.S. (Deitz & Gates, 2010).

Patient Preparation (Francone, et al., 2017):

- The American Society of Colon and Rectal Surgeons recommends that to achieve optimal care for patients undergoing ostomy surgery, preoperative, perioperative, and postoperative care should be performed by an ostomy nurse specialist, such as a nurse certified by the Wound, Ostomy, and Continence Nurses Society (WOCN) Certification Board.
- Stoma site selection
  - Site should be selected in collaboration with an ostomy nurse specialist, surgeon, and the patient.
  - Preoperative ostomy site markings should be performed by a trained ostomy nurse specialist whenever possible.
  - Factors to consider:
    - Abdominal wall shape, both sitting and standing
    - Prior abdominal incisions
    - Bony prominences
    - Occupation
    - Clothing style (i.e. belt line)
    - Physical limitations
  - Ostomy should lie on either side of the abdominal midline, lateral and inferior to umbilicus, and preferably over the rectus abdominis muscle for support.
  - Patient should be able to visualize the stoma and access it easily; in obese patients, stoma may be located higher on the abdominal wall.
  - Ostomy should be at least 5 cm from all folds, creases, previous incisions, belt line, umbilicus, and bony prominences.
Patient education, emotional support and counseling:
  o Preoperative topics include (Hendren et al., 2015):
    ▪ Gastrointestinal (GI) anatomy and physiology
    ▪ Planned surgical procedure
    ▪ Demonstration of ostomy appliances
    ▪ Description of lifestyle adjustment with an ostomy
    ▪ Psychological preparation

  – Early planning or discharge
  – Rehabilitation care
  – Outpatient follow-up

Pouch Systems (Landmann, 2017):
The effluent is typically drained into an external pouch system. Pouch systems contain the ostomy effluent, contain odor, and protect the skin around the stoma.

  • When selecting a system, consider (Deitz & Gates, 2010):
    o Size
    o Shape of the stoma
    o Anatomic location of the stoma
    o Location of the stomal lumen
    o Level of stomal protrusion
    o Abdominal contour
    o Type of drainage
    o Patient preference

  • One-piece systems have a barrier ring with a tape border fused to an odor-proof pouch. These are simple and often used when the stoma is in a deep crease.

  • Two-piece systems have a barrier ring with a tape border and adhesive landing zone to which the patient attaches a separate odor-proof pouch. One advantage is that the pouch can be replaced without having to remove the protective skin barrier every time.
    o A closed-end pouch is removed and discarded one to three times daily.
    o A drainable pouch has a clip or self-sealing closure at the bottom and may be emptied as needed and used for several days.
    o A urostomy pouch has an anti-reflux valve that keeps urine at the bottom of the pouch.

Pouch Placement (Landmann, 2017)
Effluent drainage contains proteolytic digestive enzymes which can cause skin irritation and damage. Strategies to help the pouch adhere to the skin and minimize leakage include:

  • Selecting a pouch system that conforms to the abdominal contour.
• Cutting or molding the adhesive-disk skin barrier to fit the size and shape of the stoma, leaving no more than 1/8 inch of skin showing around the stoma (Deitz & Gates, 2010) to minimize the amount of exposed skin*.

• Using products to help the pouch adhere (adhesive agents, skin prep), and prevent irritation and injury to the skin surrounding the stoma (skin barrier paste, skin barrier powder).

• For loop ileostomies in which the effluent empties close to the skin surface, using barrier wafers, rings, and/or paste to protect the skin from the drainage.

*Note: stomas will change shape and size in the postoperative period, typically taking its final shape after several weeks. Pre-cut barrier rings may then be used.

**Postoperative Care (Deitz & Gates, 2010)**

• The stoma should be edematous, dark pink to red, and moist.
  o A pale stoma may indicate anemia.
  o A dark or purple-blue stoma may indicate ischemia.

• The stoma may be round, oval, or irregular, and changes may occur over the first 6 to 8 weeks.

• A moderately protruding stoma (1 to 3 cm) with a central opening is ideal.

• Post-operative stomal edema may last up to 6 weeks.

• Provide postoperative education (Hendren et al., 2015), including:
  o Anatomy and function of the ostomy
  o Pouch procedural training
  o Nutrition
  o Clothing options (loose fitting around the stoma)
  o Discharge medications
  o Psychological issues (grief, depression, anxiety, body image, sexual and intimacy issues)
  o Social and recreational issues
  o Interpersonal relationships
  o Common complications such as leaking and dermatitis
  o Available resources, such as support groups and on-line resources

**Pouch Care**

• The time interval between changing the pouching system varies based on the type of stoma, type of drainage, patient’s body shape, patient activity level, skin moisture, and patient preference (Deitz & Gates, 2010).
  o Some pouch systems need to be changed one to two times daily, and as needed, and others can be changed every 3 to 7 days.
  o In general, the pouch system should be changed with any signs of leakage, or if itching/burning around the stoma occur.
• Procedure for changing the pouch system (Deitz & Gates 2010):
  o Carefully remove the skin barrier.
  o Wash the skin gently with warm water and washcloth (soap is not needed).
    ▪ Avoid premoistened wipes and products containing alcohol, as it can affect skin barrier adherence.
    ▪ Gently and cautiously clean the peristomal skin and stoma to prevent trauma and bleeding.
  o If a skin sealant or barrier film is used, let it dry completely before applying the pouch system.
• While ostomy pouches are odor proof, odor and gas are normal when the pouch is emptied.
  Strategies to help mitigate odor include the following (Landmann, 2017):
    o Empty the pouch when it is 1/3 full to prevent the pouch from dislodging from the seal.
    o Clean the tail of the pouch thoroughly.
    o Use room spray or pouch deodorant; over-the-counter products include:
      ▪ Bismuth subgallate: flatulence and fecal deodorizer; thickens stools.
      ▪ Chlorophyllin copper complex: may cause diarrhea; more useful for descending/sigmoid colostomies.
      ▪ Simethicone-containing products (Beano® and Gas-X®).
• Diet (Landmann, 2017)
  o Gas-producing foods include: beans, legumes, cabbage, cauliflower, brussel sprouts, broccoli, corn, and peas.
  o Inform patients that the “lag time” between eating gas-producing foods and flatulence is between 2 to 4 hours for ileostomy, and 6 to 8 hours for distal colostomy.

Ileostomy Patients (Landmann, 2017)
• Instruct the patient to increase daily fluid intake by 500 to 750 mL.
  o Average ileostomy output ranges from 500 mL to 1300 mL per day, with up to 1800 mL in early postoperative period. Due to the amount of output, patients are at high risk for dehydration.
  o Effluent contains large amounts of sodium and potassium.
  o Inform patient to increase oral fluid intake if experiencing high-volume output or heavy sweating.
  o Recommend water, broth, vegetable juices, and pediatric electrolyte solutions. Discourage the use of sports drinks as some may not be absorbed.
• Patients with a proximal ileostomy may experience poor absorption of vitamins, minerals, and electrolytes.
• Instruct patients to avoid time-released, enteric-coated medications, and large tablets, as they may not be absorbed completely.
• Instruct patients to avoid laxative use due to the risk for dehydration.
• Teach patient the signs and symptoms of fluid-electrolyte imbalance, such as dry mouth, reduced urine output, dark concentrated urine, dizziness on standing, increased fatigue, and abdominal cramping.
• Educate patients to avoid large amounts of insoluble fiber which could cause an obstruction, and to avoid foods such as popcorn, coconut, mushrooms, black olives, stringy vegetables, foods with skins, dried fruits, and meats with casings. These foods should be consumed one at a time, in small amounts, and chewed thoroughly.
• Instruct patients to manage increased ileostomy output with a soluble fiber supplement (i.e. Metamucil®, psyllium, Konsyl, FiberCon®, Fiber Gummies), which can be slowly increased up to four times daily.
• Teach patients to manage excessive and inappropriate output with antimotility agents (i.e. Imodium®, lomotil, octreotide); these agents should be added one at a time and titrated slowly to avoid paralytic ileus or obstruction.

Colostomy Patients (Landmann, 2017)
• There aren’t any absolute dietary restrictions, and patients should be encouraged to increase fiber and fluid intake to prevent constipation.
• Inform patients that intermittent mucoid discharge is normal.
• Constipation may be managed with laxatives or irrigation.
  o For severe constipation, digital disimpaction may be needed, but performed only by an experienced ostomy nurse or physician.
• Routine colon irrigation is only appropriate for distal colostomy patients.
  o 500 to 1500 mL of tap water is instilled in the descending or sigmoid colon ostomy, daily or every other day, thus stimulating peristalsis causing the distal colon to empty.
• Most physical activities can be resumed, with the exception of extreme contact sports.
• Counsel patients on resuming sexual activity. If an ostomy was placed secondary to pelvic surgery or radiation treatment, the autonomic nerves controlling sexual function may be injured.
• When traveling, patients should pack extra ostomy supplies, avoid extreme temperatures, and drink only bottled water if tap water is not safe to consume.

Complications (Landmann, 2017)
Operations in which ostomies are created have high rates of surgical complications compared to other surgeries (Hendren et al., 2015).

• Risk factors for complications
  o Height of stoma < 10 mm.
- **Comorbidities:** Crohn’s disease, inflammatory bowel disease, diabetes.
  - Tobacco use.
  - Obesity may cause retraction, skin excoriation within abdominal folds, and parastomal hernia.

- **Stomal necrosis**
  - May occur following emergency surgery, due to obesity, or inflammatory bowel disease, such as Crohn’s disease.
  - Most commonly occurs in the early postoperative period due to venous congestion or arterial insufficiency.
  - Management includes observation or surgical revision.

- **Stomal bleeding**
  - Minor bleeding is normal in the immediate postoperative period and may occur with “vigorous” stoma cleaning.
  - Major bleeding from the stoma is rare but may be caused by a stomal laceration from a poorly fitted pouch system, or by peristomal varices due to portal hypertension.
  - Management:
    - Direct pressure.
    - Local cauterization (cautery, silver nitrate).
    - Suture bleeding vessel if possible.

- **Stomal retraction:** Defined as a stoma that is 0.5 cm or more below the skin surface within 6 weeks of surgery; may lead to leakage and difficulties with pouch adherence.
  - Risk factors include obesity, thick abdominal wall, foreshortened mesentery, and initial stoma height less than 10 mm.
  - Management:
    - Use a convex pouching system and belt or binder.
    - Surgical revision may be needed.

- **Stomal prolapse:** Defined as telescoping of the intestine out from the stoma, which can make pouch placement and adherence difficult. Prolonged prolapse can cause intestinal edema and may lead to constriction of the bowel lumen.
  - The highest rates of prolapse occur with loop-transverse colostomies, and end-descending colostomies.
  - Uncomplicated prolapse can be managed with cool compresses and/or osmotic agents (i.e. table sugar or honey) to reduce edema, followed by manual reduction of the prolapse (by a trained health care professional) and application of a binder.
  - Complicated prolapse with ischemia or severe mucosal irritation and bleeding requires surgical intervention.

- **Stomal stenosis:** Narrowing of the stoma causes dysfunction; common with end-colostomies.
May occur in early postoperative period, but more likely to develop months later.

- May result from peristomal sepsis, retraction, poor fitting pouch system, suboptimal surgical technique, Crohn’s disease, or primary or recurrent malignancy.
- Early stenosis may be conservatively managed by gentle catheter dilation (not inflation) performed by an experienced practitioner.
- Mild stenosis may be managed with diet modifications (i.e. avoid insoluble fiber).
- Significant stenosis causes cramps and explosive output, and usually requires surgery.

**Peristomal pyoderma gangrenosum (PPG):** an uncommon ulcerative condition seen in patients with inflammatory bowel disease, Crohn’s disease and intraabdominal malignancy.

- May develop within weeks to years after stoma surgery.
- Presents as painful, full-thickness ulcers.
- No definitive diagnostic test; skin biopsy will show chronic inflammation and will rule out cancer and Crohn’s disease.
- Obtain cultures from the ostomy to assess for infection.
- Manage with systemic, intralesional, and/or topical anti-inflammatory agents, such as steroids.

**Mechanical trauma:** appears as patchy areas of irritated, denuded skin resulting from repeated removal of adhesive products and aggressive cleaning techniques.

- Instruct patients to use plasticizing skin sealants to prevent skin damage with pouch removal, and to gently clean the peristomal skin.

**Dermatitis:** peristomal skin irritation

- May result from mechanical trauma, an allergic reaction to a pouch or adhesive product, peristomal fungal infection, or antibiotic therapy. Allergic reactions are characterized by pruritis, erythema, and/or blistering.
- Refer patients with peristomal skin problems to an ostomy nurse specialist.
- Treatment:
  - If necessary, remeasure the stoma to ensure a proper skin barrier fit.
  - Identify and correct the causative factors.
  - Eliminate allergens.
  - Treat affected areas with skin barrier powder or antifungal powder.
  - Topical steroids may be required for severe reactions.
Ostomy Types (Deitz & Gates, 2010; Scemons, 2013)

Ostomies for fecal diversion are classified based on the segment of the bowel (i.e. sigmoid, colon, ileum) and the manner of surgical construction (i.e. loop, end, reservoir). The type and volume of effluent and fluid loss depends on the location of the ostomy.

<table>
<thead>
<tr>
<th>Type of Ostomy</th>
<th>Location</th>
<th>Effluent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascending colostomy</td>
<td>Ascending colon, right abdomen</td>
<td>Semi-liquid stool; contains highly acidic digestive enzymes</td>
</tr>
<tr>
<td>Transverse colostomy</td>
<td>Transverse colon, upper abdomen, middle or right</td>
<td>Semi-liquid to semi-formed stool; contains few digestive enzymes</td>
</tr>
<tr>
<td>Descending colostomy</td>
<td>Descending colon, lower left abdomen</td>
<td>Soft, semi-formed to formed stool; most water has been reabsorbed</td>
</tr>
<tr>
<td>Sigmoid colostomy</td>
<td>Sigmoid colon, lower left abdomen</td>
<td>Soft to firm and formed stool</td>
</tr>
<tr>
<td>Loop colostomy</td>
<td>Transverse colon with proximal and distal stoma; upper abdomen, middle or right side</td>
<td>Semi-formed stool; few digestive enzymes; mucus from second stoma</td>
</tr>
<tr>
<td>Double barrel colostomy</td>
<td>Proximal and distal stoma; distal stoma is a mucus fistula</td>
<td>Semi-formed stool; few digestive enzymes; mucus from second stoma</td>
</tr>
<tr>
<td>Ileostomy</td>
<td>Small intestine (if entire colon is removed or bypassed); lower right abdomen or lower left depending on surgical findings</td>
<td>High volume, liquid stool; contains high digestive enzyme content</td>
</tr>
<tr>
<td>Ileoanal anastomosis (J-pouch, pull through, or pelvic pouch)</td>
<td>Lower right abdomen; must have intact, disease free anus; bowel surgically attached to anus; no ostomy appliance needed</td>
<td>Liquid to soft stool; high digestive enzyme content; initially 8-10 stools/day; after pouch is stretched, stools decrease to 4-6/day</td>
</tr>
<tr>
<td>Continent ileostomy (Kock pouch or Barnett continent ileal reservoir)</td>
<td>Used when there’s damage or disease in the rectum and/or anus</td>
<td>Liquid to paste-like stool; contains higher digestive enzymes than a colostomy</td>
</tr>
<tr>
<td>Urostomy or ileal conduit</td>
<td>Lower right abdomen; bladder removed or bypassed by implanting the ureters into small segment of ileum and bringing segment to the abdominal wall as a stoma</td>
<td>Continuous urine and some mucus</td>
</tr>
<tr>
<td>Procedure</td>
<td>Description</td>
<td>Output</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Ureterostomy (rare)</td>
<td>Surgical placement of ureters directly to the right and left abdomen – 2 stomas</td>
<td>Continuous urine and some mucus</td>
</tr>
<tr>
<td>Continent urostomy (Kock pouch or Indiana pouch)</td>
<td>In thin patients, more midline above pubic hair; placed higher in older adults or obese patients</td>
<td>Urine through straight catheterization every 4 to 6 hours</td>
</tr>
<tr>
<td>Bladder substitute</td>
<td>Internal pouch is surgically created to which ureters are attached; no stoma</td>
<td>Urine through the urethra</td>
</tr>
</tbody>
</table>

References:


