Stoma and Peristomal Skin Care: A Clinical Review

Early intervention in managing complications is key.

ABSTRACT: Nursing students who don't specialize in ostomy care typically gain limited experience in the care of patients with fecal or urinary stomas. This lack of experience often leads to a lack of confidence when nurses care for these patients. Also, stoma care resources are not always readily available to the nurse, and not all hospitals employ nurses who specialize in wound, ostomy, and continence (WOC) nursing. Those that do employ WOC nurses usually don't schedule them 24 hours a day, seven days a week. The aim of this article is to provide information about stomas and their complications to nurses who are not ostomy specialists. This article covers the appearance of a normal stoma, early postoperative stoma complications, and later complications of the stoma and peristomal skin.

Keywords: complications, ostomy, peristomal skin, stoma

In 46 years of clinical practice, I've encountered many nurses who reported having little education and even less clinical experience with patients who have fecal or urinary stomas. These nurses have said that when they encounter a patient who has had an ostomy, they are often unsure how to care for the stoma and how to assess various problems of the stoma and the surrounding skin. This lack of knowledge can contribute to the nurse's stress and may cause the patient and family members to lose confidence in the nurse. This article covers essential information about stomas, stoma complications, and peristomal skin problems. It is intended to be a brief overview; it doesn't provide exhaustive information on the management of complications, nor does it replace the need for consultation with a qualified wound, ostomy, and continence (WOC) nurse. It will address the normal stoma and peristomal skin as well as early and late postoperative stoma complications and peristomal skin problems. Recommendations are also provided for nursing management of stomas and peristomal skin.

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THE NORMAL STOMA

Nurses need to know the expected appearance—as well as other characteristics—of the normal stoma before they can recognize stoma complications (see Figure 1). Ideally, the stoma should be "budded," meaning that it protrudes about 1 to 3 cm above skin level.[1] Because the stoma is constructed of bowel mucosa, and the mucosa contains many small blood vessels, the stoma should be dark pink to red in color. The surface of the stoma is a mucous membrane and therefore should be warm and moist.[1] To the touch, the stoma should have a tissue consistency similar to the lips.

The skin around the stoma should look like the skin on the rest of the abdomen. It shouldn't be discolored. In patients with lighter skin tones, the peristomal skin shouldn't be reddened; in patients with darker skin tones, it shouldn't have darker discolorations. The peristomal skin should also be clear of lesions of any kind.

Remember that the stoma is part of a patient. Therefore, factors that affect the general health of the patient may also affect the color of the stoma. Patients experiencing significant hypoxia may have a bluish stoma. This should not be confused with a lack of blood flow to the stoma. When oxygen levels return to normal, the stoma will return to a pink-to-red color. Similarly, when a patient is extremely anemic, the stoma may be a dull-looking light pink. When the hemoglobin count returns to normal, the stoma resumes its dark pink-to-red color. These color differences are related to the overall health of the patient and are not considered stoma complications.

Figure 1. Normal Stoma. Photos are courtesy of the WOCN Image Library, except where noted.

For a review of the different types of stomas and pouch systems, see *Stoma Care Basics*.[2]

STOMA AND PERISTOMAL SKIN COMPLICATIONS

According to a 2017 study, between 100,000 and 130,000 new stomas are created in the United States each year.[3] However, the incidence of stoma and peristomal skin complications varies widely, with studies reporting rates as low as 10% and as high as 82%.[4-6] Therefore, it's difficult to say with any certainty what the percentage of patients who will experience complications might be.[7] Stoma and peristomal skin complications may cause pouch leakage, pain, problems adjusting to the stoma, increased equipment expense, higher postsurgical care costs, and diminished quality of life.[4,8] Prompt recognition and management of stoma and peristomal skin problems is essential to the care of these patients.

Photo by Amelie-Benoist / BSIP / Alamy.

EARLY POSTOPERATIVE STOMA COMPLICATIONS

In the first few days after the surgery to create the stoma, complications including edema, bleeding, and ischemia of the stoma as well as mucocutaneous separation may occur.[3,4,9]

Stoma edema is quite common immediately after surgery. The stoma takes on a lighter pink color and has a translucent, fluid-filled appearance. Edema normally subsides over a period of six to eight weeks.[1] Edematous stoma tissue is fragile and can be easily scraped or lacerated during skin cleansing and pouch application and removal. It's important to accommodate the edematous stoma by cleansing very gently and cutting the skin barrier slightly larger than the usual one-eighth of an inch in diameter to accommodate any additional edema that may occur.

The stoma appears a darker pink to red when the edema has subsided.

Stoma bleeding. Minor stoma bleeding after surgery is common owing to the abundant vascular supply to the bowel. In my experience, the presence of a few drops of sanguineous drainage is normal right after surgery, and this generally subsides in a day or two. The application of a cool cloth with light pressure to the bleeding area will normally stop minor bleeding. A steady drip, trickle, or flow of blood from the stoma is not normal and requires prompt physician notification.

Stoma ischemia. Blood circulation to the stoma can become impaired for many reasons. A stoma with impaired circulation appears less shiny than usual and more burgundy or purple in color than the normal red. This is usually a temporary condition and is likely to occur more often in those who have abdominal distention or a smaller-than-optimal opening in the fascia or muscle; it may also occur in those with a high body mass index, which is associated with thicker abdominal walls and correspondingly greater tension exerted on the bowel.[5] Prolonged impaired circulation to the stoma can lead to stoma ischemia, tissue death (necrosis), and sloughing of the stoma (see Figure 2).[1, 10, 11] In the first few days after surgery, it's important to assess the viability of the stoma daily by examining the color, temperature, and moistness of the surface of the stoma as well as its tissue turgor.[2] The surgeon should be notified immediately of suspected impaired circulation to the stoma. Careful application of a transparent two-piece pouch will protect the fragile stoma from harm and facilitate ongoing stoma assessment.[10] Tissue that is peeling or sloughing from a stoma should not be pulled on or cut away.

Figure 2. Stoma Ischemia

Mucocutaneous separation. The edges of the stoma are secured to the surrounding skin with sutures. Mucocutaneous separation, also called stoma dehiscence, is the pulling away of the stoma from the peristomal skin. The separation may involve only one or two sutures or the sutures around the entire stoma (see Figure 3). Mucocutaneous separation is seen more often in patients who are diabetic, who have poor nutritional status, or who have been receiving high-dose steroid therapy or chemotherapy before surgery.[1] In minor separations, the gap between stoma and skin can be filled with pectin-based stoma powder or a small bit of absorbent dressing, such as calcium alginate (silver alginate may be used if there's inflammation or if infection is suspected), and the pouch applied directly over the separated area.[10] The surgeon should be notified promptly of any mucocutaneous separation. The most serious separations involve most or all of the perimeter of the stoma and can lead to serious complications such as retraction of the stoma below fascia level and leakage of effluent into the abdominal cavity.

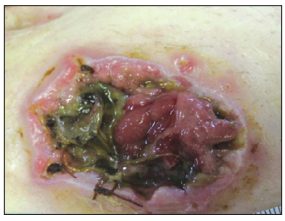

Figure 3. Mucocutaneous Separation

EARLY PERISTOMAL SKIN COMPLICATIONS

The most frequent postoperative complications after stoma surgery involve the peristomal skin, the most common being peristomal skin irritation.[1, 12] The incidence rates of peristomal skin complications may be nearly as high as 45%.[1] Peristomal skin complications can be both a short- and a long-term problem. The most common early complications include irritant dermatitis, mechanical injury, and candidiasis. (Peristomal skin complications that are likely to occur after the immediate postoperative period include folliculitis, peristomal hyperplasia, allergic dermatitis, and uric acid crystal deposition; these will be addressed later in the article.)

Irritant dermatitis is the most common peristomal skin complication.[2, 6, 11, 13] This is skin irritation caused by stoma output (feces or urine) coming into contact with the skin (see Figure 4).[14] The severity of peristomal dermatitis can range from minor erythema to blisters to open skin. The longer the stomal output is in contact with the skin, the greater the degree of skin damage.[14] Peristomal dermatitis is commonly associated with ileostomies. The digestive enzyme and electrolyte content of ileostomy output can be extremely corrosive and, therefore, damaging to the peristomal skin.[13]

Figure 4. Irritant Dermatitis

To prevent peristomal dermatitis, stoma output must be kept off the skin. Cut the

pouch skin barrier to a diameter one-eighth of an inch larger than the stoma. As the stoma reduces in size for several weeks after surgery, the opening cut in the skin barrier should be adjusted with each pouch change.[12] A leaking pouch should not be taped at the leaking edge, keeping output in contact with the skin; it must be changed to protect the skin from contact with the output. Irritant dermatitis can be managed by application of pectin-based ostomy powder that is sealed to the skin with a protective barrier wipe or a water-dampened cloth to make the skin sticky. Approximately three months after the surgery to create the stoma, the size of the opening should stabilize; at that time a patient may choose to purchase precut skin barriers.

Mechanical injury (skin stripping). Skin stripping is a particular kind of mechanical skin injury that can happen when the adhesive parts of the pouch system are removed (see Figure 5).[13,14] When a nurse removes the tape from the skin, the epidermis may adhere to the tape and separate from the dermis, causing an open wound.[14] These superficial wounds can be managed with application of pectin-based ostomy powder on the open skin prior to placement of a new pouch.[14] Prevention of skin stripping involves careful removal of the adhesive portions of the pouch system. Application of a non-alcohol-based skin protectant wipe or spray before pouch placement and use of an adhesive remover wipe to aid pouch removal may be helpful.[13,14] When skin stripping is present, management is the same as for irritant dermatitis, with application of pectin-based powder made sticky with a non-alcohol-based adhesive wipe or damp cloth.

Figure 5. Mechanical Injury (Skin Stripping)

Candidiasis. Fungal skin infections may occur under the ostomy skin barrier because of the dark, warm, moist skin environment.[13,14] *Candida* species are a common type of fungal organism that causes these infections.[13] Candidiasis presents as scattered papules, pustules, or redness of the skin (see Figure 6). Patient complaints include "burning" or itching skin. Fungal rashes can result from the reduction of normal skin flora under the skin barrier portion of the pouch system.[13,14] The administration of broad spectrum systemic antibiotics or cleansing of the skin with antibacterial soaps can reduce the normal flora.[13,14] To maintain normal skin flora, nurses should cleanse the skin with water or, if grossly soiled, a mild nonantibacterial soap and rinse thoroughly.[14] Management of peristomal candidiasis includes cleansing with water and thoroughly drying the skin. Spray antifungal medication can be applied to the infected area and allowed to dry before pouch application. In instances where antifungal spray is

Figure 6. Candidiasis. ConvaTec © 2009. Used with permission.

Stoma Care Basics

The stomas discussed in this article result from three types of surgery: colostomy, ileostomy, and urostomy.

A *colostomy* is "a surgically created opening in the abdomen where part of the colon is brought to skin level to allow passage of stool waste."[2]

An *ileostomy* is "a surgically created opening where the small intestine (ileum) is brought to skin level to allow passage of stool waste."[2]

A *urostomy* is "a surgically created opening in the abdomen, created after bladder removal, to allow drainage of urine."[2]

Appropriate stoma care is a key component of the care of any patient who has had one of these surgeries. Stoma care includes the selection and application of a pouch system to contain the stoma output and maintenance of the pouch system by emptying and changing the pouch at regular intervals. Pouches are available in both one- and two-piece systems. A one-piece pouch combines the protective adhesive skin barrier and the pouch in a single product. A two-piece pouch has a separate adhesive skin barrier, and the pouch snaps onto it. A clear pouch is used initially to allow for assessment of the stoma without removal of the pouch. The center opening of the skin barrier is usually cut one-eighth of an inch larger than the stoma. Because the stoma size often changes in the postsurgical period, sizing may need to be adjusted each time the pouch is changed. Pouches should be emptied when one-half to two-thirds full to prevent leakage. Pouches are initially changed every few days; later, the amount of time the pouch system can be worn without changing can be adjusted based on the type, frequency, and consistency of the output.

unavailable or the cost for the patient is prohibitive, a very small amount of antifungal (water-based) cream or antifungal powder can be applied to the skin and rubbed in thoroughly until the skin feels dry prior to pouch application.[13, 14]

LATER-ONSET STOMA COMPLICATIONS

Some complications, including stoma retraction, prolapse, and stenosis, as well as peristomal hernia, develop after the first postoperative month.

Stoma retraction. A stoma indented below skin level is referred to as a retracted stoma (see Figure 7).[1] Retracted stomas may result from tension on the stoma (because of obesity or abdominal distension), mucocutaneous separation, stoma ischemia and sloughing, or extreme weight gain after stoma surgery.[1] To correct for the retracted stoma contour, it may be necessary to use a pouch system with a convex (curved) skin barrier or an ostomy appliance belt or both to maintain pouch security.[10, 15]

Figure 7. Stoma Retraction

Stoma prolapse is the protrusion of additional bowel tissue through the stoma (see Figure 8).[4] Stoma prolapse is most common in loop stomas (created by elevating a loop of bowel above the skin level and kept in place with a supportive rod or bridge device, without internal and external sutures) and stomas in patients who have abdominal muscular weakness, including the extremely young, the elderly, and those who are malnourished.[1] If the bowel tissue is pink-to-red and moist, and the stoma is functioning well, a prolapse is not an urgent situation; however, stoma prolapse presents a pouch application challenge. In my experience, the pouch is most easily applied when the stoma prolapse is less prominent and with the patient lying supine. The prolapse can often be reduced in size by application of a cool cloth.[10] The pouch opening should be enlarged to accommodate the prolapsed stoma.[11] I've found that convex pouches or ostomy appliance belts should be avoided because they can increase the prolapse.

Figure 8. Stoma Prolapse

Stoma stenosis. A stenosed stoma is one in which the opening has shrunk to an extremely small diameter (see Figure 9).[4] Stoma stenosis can result from complete mucocutaneous separation or stoma necrosis, with resultant sloughing down to the skin level or below.[11] Stoma stenosis can also result from repeated placement of ill-fitting pouches with openings that have been cut too large for the stoma, leaving peristomal skin unprotected for a long period of time. If the stoma is still functioning, stenosis is not an urgent problem.[11] Urostomies can be stenosed and still function well because of their fluid output; however, stenosis may adversely affect stool evacuation, especially in colostomies, because of the diameter and consistency of the stool. Efforts to keep the stool looser by increasing fluid and fiber intake may be effective.[10] In some instances, if ordered by the surgeon, gentle digital dilation of the stoma may be required to maintain patency of the stenosed ileostomy or colostomy stoma.[10, 11] This approach is controversial because dilation may be effective for only a brief time.[10] Also, if not performed carefully, dilation of the stoma may traumatize the walls of the bowel and cause the stoma to become narrower.

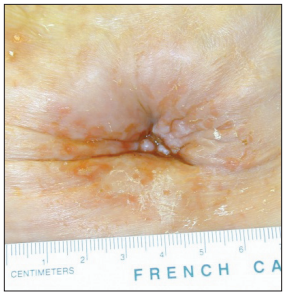

Figure 9. Stoma Stenosis

Peristomal hernia. A peristomal hernia presents as a bulge or bump around the stoma (see Figure 10).[11] Peristomal hernias occur when additional intestinal tissue protrudes through the muscle layer.[4] If the stoma is pink-to-red in color and still functioning, the hernia is not an emergent problem.[11] However, a peristomal hernia often affects the fit of the pouch system and the amount of time one system can be worn without changing to another. A two-piece pouch may need to be changed to a one-piece pouch to provide a more flexible fit over the bulge of the hernia.[10, 11] A stoma hernia support belt may also be

Figure 10. Peristomal Hernia

fitted.[10] Patients who irrigate the stoma should stop irrigation and resume natural evacuation.[10, 11] If the patient is experiencing abdominal pain, lack of stool output, or vomiting, or if the stoma is bluish in color, which could indicate that the circulation is compromised, the patient should see a physician or go to the ED.[11]

LATER-ONSET SKIN COMPLICATIONS

Folliculitis is an inflammation of the hair follicles under the adhesive of the pouch system.[13, 14] Folliculitis presents as pustules at the hair follicles (see Figure 11), and is caused by repeated pulling on the hairs surrounding the stoma when the pouch system is removed.[11, 13, 14] Folliculitis is more common in men because they typically have more abdominal hair.[14] This inflammation can be prevented by periodic hair removal, either by plucking or shaving with an electric razor or trimmer.[10, 13, 14] Blade razors are not recommended because of the potential for scraping the skin or the stoma.[13]

Figure 11. Folliculitis

Peristomal hyperplasia, also known as pseudoverrucous lesions, is a buildup of epithelial tissue around the stoma. Hyperplasia presents as tissue that appears "warty" or bumpy around the stoma (see Figure 12).[13, 14] Hyperplasia is a response to chronic inflammation of the peristomal skin caused by chronic exposure to stoma output from leaking pouches or from pouch barriers that are repeatedly cut too large in diameter.[11] Hyperplasia can be prevented by changing the pouch before leakage occurs and cutting a smaller opening in the skin barrier to fit snugly around the stoma as it decreases in diameter.[10, 13] When peristomal hyperplasia lesions have already developed, applying a pouch can be challenging because of the uneven skin surface. A silver nitrate applicator (a thin stick with a cotton tip, similar to a Q-tip, containing silver nitrate, usually used to cauterize bleeding) can be applied to the lesions to help reduce them in size. The surfaces of the peristomal skin can be evened with the application of ostomy powders or flexible skin barrier wafers prior to attaching the pouch.

Figure 12. Peristomal Hyperplasia

Allergic dermatitis is skin inflammation resulting from an allergy to one or more components of the skin barrier component of the pouch system.[11, 14] Allergic dermatitis is a much less frequently observed complication than irritant dermatitis. Skin barrier materials used in stoma pouches are normally well tolerated by the patient's skin. Often it is the adhesive substance on the tape border of the pouch that causes the allergic reaction. This presents as redness, blisters, or weeping tissue that is the same size and shape of the pouch component to which the patient is sensitive.[2, 14] The unaffected skin is the same hue as the rest of the abdomen. The affected skin will be reddened and possibly blistered in patients with lighter skin (see Figure 13). In patients with darker skin, the affected skin will be darker than the surrounding skin and may show blisters or seepage. This inflammation is managed topically with application of a steroid spray that should be allowed to dry before pouch placement. In instances where steroid spray is

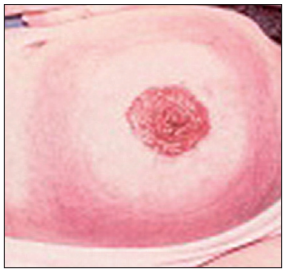

Figure 13. Allergic Dermatitis

Patient Resources

Several resources are available to patients who have a new or ongoing ostomy.

- Patients may contact the nearest large hospital to see if they employ a wound, ostomy, and continence (WOC) nurse who sees stoma patients.
- The Wound, Ostomy and Continence Nurses Society can be contacted for a list of nearby WOC nurses (go to www.wocn.org).
- Patients who travel may contact the World Council of Enterostomal Therapists to see if there are WOC nurses in countries they plan to visit (see www.wcetn.org).
- The United Ostomy Associations of America is for patients who have an ostomy; it has a website and a magazine and can inform the patient of the nearest ostomy association (see www.uoaa.org).

unavailable or cost prohibitive for the patient, a small amount of (water-based) steroid cream can be rubbed into the skin until the skin feels dry prior to pouch placement. To prevent further skin irritation, the skin barrier should be changed to a product that is better tolerated by the patient (for example, a barrier with no border tape).[10, 14]

Uric acid crystal deposits. Over time, uric acid crystals may build up on the skin around an ileal conduit urostomy stoma.[13, 14] This presents as whitish-gray macerated (wet-looking) peristomal skin (see Figure 14).[11, 14] The crystal deposits can be removed by applying a dilute acetic acid solution (consisting of one part vinegar to four parts water) with a small cloth or gauze pad to the skin for a few minutes to loosen the crystals, then cleansing the skin with water at the time of a pouch change.[11, 14]

Figure 14. Uric Acid Crystal Deposits. ConvaTec © 2009. Used with permission.

DISEASE-RELATED SKIN COMPLICATIONS

Disease-related peristomal skin complications are not related to the creation of the stoma or exposure to stoma effluent. They occur as a symptom of an exacerbation of a chronic medical condition experienced by the patient such as liver disease, Crohn's disease, rheumatoid arthritis, or lupus. The two disease-related conditions discussed here are peristomal varices and pyoderma gangrenosum.

Peristomal varices (caput medusae) are prominent veins present in the peristomal skin.[2] They present as a purple discoloration, often in a "sunburst" pattern around the stoma (see Figure 15). These varices occur because of portal hypertension related to liver pathology.[2] Peristomal skin with varices may be fragile and bleed very easily.[16] Gentle pouch removal using an adhesive remover wipe and gentle skin cleansing should be performed to prevent trauma to the fragile skin. Additionally, less frequent pouch changes and the use of skin barrier wipes may reduce the possibility of bleeding. If minor bleeding occurs, it can be managed with application of calcium alginate or silver nitrate.[10] More extensive bleeding that cannot be managed with these interventions requires more aggressive therapy[10] and collaborative practice with a physician who may order coagulant materials to be applied.

Figure 15. Peristomal Varices (Caput Medusae)

Pyoderma gangrenosum presents as a painful ulceration with a bluish-purple discoloration at the wound edges (see Figure 16).[2, 14] Pyoderma gangrenosum is not the result of contact with stoma output or mechanical injury; rather, it's symptomatic of an exacerbation of a systemic chronic inflammatory physical condition such as Crohn's disease, rheumatoid arthritis, or lupus.[2, 10, 16] Healing pyoderma gangrenosum ulcers requires nursing care, including local wound care using topical steroid preparations and ostomy powder as well as physician- or NP-ordered systemic disease management using oral steroids.[2, 10, 16]

Figure 16. Pyoderma Gangrenosum

AN OVERVIEW

Any patient who undergoes surgery to create a stoma may experience problems involving the stoma or the peristomal skin or both. Ideally, patients with stomas and the nurses who care for them should have ready access to a stoma therapy specialist. In the real clinical world, this is not always possible. Before patients go home from the hospital it is important that they and their family, if present, can demonstrate basic ostomy care, including knowing what the stoma should look like, emptying the pouch, changing the pouch, and managing minor skin irritation. See *Patient Resources* for a list of sources of information and assistance.

This article has briefly outlined the more common stoma and peristomal complications that the nonspecialist nurse might encounter in clinical practice. Knowledge of the appearance of the normal stoma and peristomal skin is paramount in recognizing complications. Knowledge of the basics of stoma care can help to make nonspecialist nurses more confident in the care of patients with stomas.

Some peristomal skin complications, such as irritant dermatitis, can be prevented through basic stoma management techniques. This includes correct pouch selection and application and pouch changes at the appropriate interval to prevent stoma leakage. The

skin barrier opening should be adjusted with each pouch change to be one-eighth of an inch larger than the stoma. The skin should be cleaned with water and allowed to dry. Antibacterial soaps are not recommended because they can affect the normal flora of the skin. The pouch should be placed on dry skin. To prevent leakage, pouches should be emptied when one-third to one-half full and changed every few days before effluent seeps under the skin barrier. A pouch that is leaking under the skin barrier must be changed promptly, not taped at the edges. Minor skin irritation such as irritant dermatitis can be managed with application of pectin-based stoma powder as described above. ▼

For 11 additional continuing nursing education activities related to stomas, go to www.nursingcenter.com/ce.

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