Peristomal Skin Complications: Prevention and Management

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KEY POINTS
• For the person with an ostomy, a peristomal skin area that is intact and healthy is a prerequisite for leading a normal life.
• The authors review the most common peristomal skin problems and recommend grouping them according to their etiology.
• Many peristomal skin problems can be prevented if the person with a stoma receives optimal pre- and postoperative follow up care.

Ostomy surgery results in a dramatic alteration in elimination processes and body image - changes that impact both the patient and family. Peristomal skin complications further magnify this alteration, negatively affecting patient adjustment. For the healthcare system, peristomal skin complications usually mean resource utilization - increased patient care needs and the struggle to attain an optimal functional status or comfortable state of well-being are expensive. When addressing prevention and treatment, an outcomes measurement plan that tracks and documents 1) clinical effectiveness of the intervention; 2) impact on functional status and well being, 3) satisfaction with care provided, and 4) cost should be considered. Measuring outcomes documents intervention effectiveness and demonstrates the value of services.

As in most situations, treatment is more expensive than prevention. Additional patient visits, equipment expenses, embarrassment about leakage and odor problems, plus lost work days and altered social activities, are costs that could be avoided or significantly decreased with routine surveillance.

Background

The skin plays an important role in ostomy care, providing the surface on which the pouching system is adhered. Intact, dry epidermis and a well-fitted pouching system enable a sustained, predictable wear time. When skin integrity is compromised or when drains or an open incision infringe on adhesives, potential for pouch leakage exists. The cyclical pattern of pouch leakage/skin erosion/pouch leakage must be broken to enable epidermal resurfacing and
restoration of an intact seal. Peristomal skin protection is the cornerstone of ostomy management; treatment of the skin relies on methods to create dry surfaces, fill irregular contours, and treat infections, while an adhesive seal is maintained.\textsuperscript{6}

**Incidence and Risk Factors**

The incidence of peristomal skin complications is difficult to determine. In a review of the literature, Colwell et al\textsuperscript{7} report that the overall rate of peristomal skin complications ranges from 18\% to 55\%. However, these studies did not provide a standardized classification system nor was detailed information available on the type of peristomal skin complication.\textsuperscript{8} A survey conducted by the United Ostomy Association in 2000 recognized peristomal skin problems as the most common reason patients visited an outpatient wound ostomy continence (WOC) nursing service. Empiric evidence from the authors' 50 years of combined experience working with ostomy patients suggests that most patients living with a stoma will experience peristomal skin compromise and require treatment.

Risk factors that predispose patients to peristomal skin complications include a poorly located and/or poorly constructed stoma, obesity, wound complications adjacent to or in the peristomal field, and recurrent disease.\textsuperscript{9,10} Additionally, the presence of stoma complications (eg, retraction, prolapse, or hernia) increases the risk for concurrent peristomal skin complications because they change the abdomen and, subsequently, the pouching system may need alteration. Without adequate follow-up, leakage and peristomal skin complications result.

Ironically, the most common causes of peristomal skin complications occur because of lack of access to qualified healthcare professionals (WOC/ET nurses) who specialize in ostomy care and can manage these problems efficiently and effectively. Results of a longitudinal study of 4,739 stoma patients in Europe showed that the Quality of Life index is higher for patients who have access to a stoma care nurse for up to 6 months postoperatively as compared to those who do not.\textsuperscript{11} However, fewer than 4,000 WOC/ET nurses practice in the US and most are located in acute care settings. As hospital stays decrease, patients are moved into alternative care settings, accessing care as outpatients.\textsuperscript{12} Outpatient clinics offer access to WOC/ET nursing; however, reimbursement for the service is limited or not provided. As a result, ostomy-related problems may go untreated until they require definitive treatment and the patient is hospitalized.\textsuperscript{4} Of course, now the patient is in the most expensive care setting in the healthcare system, accumulating physician fees for problems that easily could have been managed in the outpatient setting. Insufficient resources and lack of reimbursement for specialized care represent barriers to access - a significant risk factor for complications because prevention and intervention strategies are not available to all patients with a stoma.\textsuperscript{13}
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| Chemical Injury              | **Clinical Features:** Skin appears erythematous and moist, shallow areas of erosion, painful, localized to the area of substance contact  | **Assess for:** 1. A pouching system with an opening that is too large for the stoma size 2. A pouching system that does not fit the contours of the abdomen, 3. Errors in basic care techniques: i.e. inconsistent frequency of pouch changing, inappropriate use of tape to reinforce (rather than change) a leaking pouch, indiscriminate use of skin care products. | Resize the opening of the pouching system to cover the peristomal skin and protect it from exposure to effluent.  
Reft the shape and support of the pouching system by selecting the appropriate convex adhesive surface when the abdomen is soft or retraction of the stoma or peristomal skin is present.  
Create a flat peristomal skin surface by filling creases or uneven surfaces with a skin barrier product: skin barrier paste, strip or wafer.  
Prepare eroded peristomal skin for a secure seal by dusting a hydrocolloid powder on the area and removing excess before applying the pouch adhesive.  
Reinforce basic care techniques: establish a schedule for pouch changes (i.e. every 4-7 days), a leaking pouch is changed rather than reinforced and only skin care products essential to care are used. |
|                              | **Etiology:** Irritant contact dermatitis is caused by substances in contact with the skin (e.g. gastric secretions, feces, mucus, urine, skin care products). |                                                                             |                                                                                        |
| Irritant Contact Dermatitis  |                                                                             |                                                                             |                                                                                        |
|                              | Example of irritant contact dermatitis caused by leakage of feces onto the peristomal skin. |                                                                             |                                                                                        |
| Pseudoverrucous Lesions      | **Clinical Features:** Thickened epidermis with white, gray, brown, or dark red wart-like papules or nodules; localized to areas of chronic exposure to effluent; bleeding and pain may also occur.  | **Assess for:** 1. A history revealing lack of follow-up and refilling by the WOCET nurse, 2. An opening in the pouching system that does not adequately cover the peristomal skin, 3. A pouching system that does not fit the contours of the abdomen. | Follow resizng and refilling techniques outlined under Irritant Contact Dermatitis above.  
The opening on the pouching is fit so that it COVERS the lesions. Pouch change intervals may be more frequent (q3-4d) during the initial period of treatment.  
Once the lesions have resolved, resumption of pouch changes to q3-7 days is recommended.  
Note: when managed properly, silver nitrate is not usually necessary. |
| (aka: hyperplasia, chronic papillomatous dermatitis, hyperkeratosis, pseudopapillomatous hyperplasia-PEH) | **Etiology:** Chronic exposure to effluent because opening on the pouching system is to large results in raised areas of thickened epidermal projections; more frequently seen with flush and retracted stomas and patients who are lost to follow-up for scheduled refillings. |                                                                             |                                                                                        |
|                              | Example: The patient above reveals a flush stoma with denuded peristomal skin. However, the area pointed out in this patient is the site of pseudoverrucous lesions. |                                                                             |                                                                                        |
| Encrustations                 | **Clinical Features:** Crystal deposits observed on exposed skin. This may appear as tiny kidney stones and stomal bleeding may occur with manipulation or the encrustations. Pseudoverrucous lesions are commonly present when encrustations occur.  | **Assess For:** 1. Exposure of skin to urine, 2. Pseudoverrucous lesions with crystal deposits on the skin that feel grainy or may rub off on exam, 3. High urine pH, 4. Inadequate fluid intake, 5. History of kidney stones. | Manage pseudoverrucous lesions as outlined above.  
Achieve a sufficient fluid intake to promote dilute urine.  
Vinegar soaks to dissolve encrustations: white vinegar saturated on a pad and applied to the area of encrustations for 5 minutes, gentle rubbing is then performed to dislodge the encrustations prior to application of the skin barrier.  
Check the pH of urine at each follow-up visit.  
Maintenance dose (e.g. 1gm) of vitamin-C, timed released may be useful to promote ongoing urine acidification.  
Consult with patient’s urologist. |
<p>|                              | <strong>Etiology:</strong> Chronic skin exposure to alkaline urine, concentrated urine, urinary tract infection |                                                                             |                                                                                        |</p>
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<td>Mechanical Injury</td>
<td><strong>Clinical Features:</strong> Unexplained erythema that is in the area where the pressure is delivered. Skin may also appear abraded. <strong>Etiology:</strong> Pressure in the from any device that is too firm or too deep (e.g. convexity, belts) Shear occurs when the firm surface slides.</td>
<td><strong>Assess for:</strong> 1. Erythema that does not resolve within 1-2 minutes of removing a pouching system, 2. A skin barrier with convexity that does not seat comfortably into the peristomal skin, 3. A tight ostomy belt or support belt.</td>
<td>Follow resizing and refitting techniques outlined under Irritant Contact Dermatitis above to eliminate cause, Discontinue the use of a belt when possible or loosen when in use.</td>
</tr>
<tr>
<td>Stripping Injury</td>
<td><strong>Clinical Features:</strong> Erythema with scattered denuded areas corresponding to adhesive surface areas <strong>Etiology:</strong> Adhesive and adhesive removal techniques.</td>
<td></td>
<td>Utilize porous tape or adhesive collars on the pouching system, Teach gentle removal procedures in the direction of hair growth. Skin should be supported during any adhesive removal. Use of a skin sealant may be indicated to decreases trauma during adhesive removal.</td>
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<tr>
<td>Mucocutaneous Separation</td>
<td><strong>Clinical Features:</strong> Interruption in the integrity of the suture line attaching the stoma to the skin in that may be partial or complete. <strong>Etiology:</strong> This complication may result from tension on sutures and surgical technique, poor healing and/or infection. It may occur early postoperatively.</td>
<td><strong>Assess for:</strong> 1. Integrity of the mucocutaneous suture line at each stoma assessment, 2. Extent of separation and measure length, width and depth as is possible, 3. Effluent at the base and walls of the wound to rule out the presence of a fistula.</td>
<td>Management usually includes irrigation and packing with a filling material (i.e. hydrocolloid paste or powder) or, for larger wounds, absorbent materials (i.e. alginate, hydrofiber). The pouching system is placed over the packing material and covers the entire peristomal field. If abscess or infection is suspected, irrigation and packing with the pouch opening exposing the wound may be required until resolution.</td>
</tr>
<tr>
<td>Mucosal Transplantation</td>
<td><strong>Clinical Features:</strong> Mucosa tissue migrating from the base of the stoma. <strong>Etiology:</strong> Caused by seeding mucosa into the skin during construction of the stoma.</td>
<td><strong>Assess for:</strong> 1. Moist, mucosal tissue scattered proximal to the mucocutaneous juncture, 2. Bleeding may occur with adhesive removal.</td>
<td>Create a dry environment by dusting a hydrocolloid skin barrier powder on the skin before application of the pouching system. Cover mucosal transplantation area. Change pouching system on regular schedule of q 4-7 days. Use gentle adhesive removal techniques to prevent bleeding: Prevented by surgical technique that avoids skin to epithemis suturing.</td>
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### Table 3
**Infectious Peristomal Complications**

<table>
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<tr>
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<tr>
<td><strong>Infectious</strong></td>
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<tr>
<td><em>Candidiasis</em></td>
<td>Clinical Features: Initially presents as a pustule, progresses to erythematous confluent plaque with satellite lesions burning, crusting. Etiology: Overgrowth of Candida Albicans organism resulting in a peristomal skin infection.</td>
<td></td>
<td>Treat with a prescription or over-the-counter antifungal powder with each pouch change until resolved. Educate patient to dry off the peristomal area after exercise, showers or swimming to avoid a moist environment. During humid or wet weather, using a skin sealant may be useful to enhance adherence of the pouching system.</td>
</tr>
<tr>
<td><em>Folliculitis</em></td>
<td>Clinical Features: Pyodermatitis and sometimes purulent lesion originating at the hair follicle. Tends to be superficial. Etiology: Staphylococcus aureus infection of the hair follicle.</td>
<td></td>
<td>Recommend a gentle shaving procedure that is not performed more than once a week. An antibacterial soap may be helpful.</td>
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</table>

### Table 4
**Immunologic Etiology for Peristomal Skin Complications**

<table>
<thead>
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<tr>
<td><strong>Immunologic</strong></td>
<td></td>
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<tr>
<td><em>Allergic Contact Dermatitis</em></td>
<td>Clinical Features: Peristomal skin erythemic, pruritic, vesicles, papules, bullae; skin is swollen, excoriated, or weepy; skin reaction located only where contact with allergen exists. Etiology: Sensitivity to chemical or other product ingredients (allergen). Examples include: dyes, perfumes, adhesive soaps, lotions, and preservatives.</td>
<td></td>
<td>Identify the sensitizing product and remove it from the care protocol. Treatment may require corticosteroid agents and/or antihistamines. When a product is suspected a patch test may be used.</td>
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Positive Patch test to a skin barrier wafer.
Prevention across the Lifespan

**Stoma sitting.** A comprehensive plan to prevent peristomal skin complications begins preoperatively because successful stoma management is predicated on the creation of a well-sited stoma. Site selection is performed by a qualified professional (WOC/ET nurse) who assesses and marks the abdomen. The site selected is located within the rectus muscle and at the apex of the infraumbilical bulge. Areas proximal to bony prominences, creases, and the umbilicus are avoided. The potential stoma site is evaluated in supine, sitting, and standing positions and must be visible to the patient. These guidelines result in a site that facilitates a secure pouch seal and enhances self-care postoperatively. It also reduces the potential for short-term and long-term stoma and peristomal skin complications.\(^{14,15}\)

**Surgical technique.** Surgical technique (ie, stoma protrusion, suturing) plays a critical role in preventing peristomal skin complications. Stoma protrusion has been identified as a risk factor for compromised skin because flush and retracted stomas discharge effluent at or below skin level. This increases the risk of effluent eroding the skin barrier adhesive. A stoma with adequate protrusion (ie, 2.5 cm) and a lumen pointed upward rather than bowing downward...
provides a spout to discharge effluent directly into the pouching system (see Figure 1).\textsuperscript{6}

**Post-op care.** Postoperatively, most peristomal skin complications can be minimized or avoided when patients understand the optimal environment for healthy skin and utilize that information during care. Not all peristomal skin complications are preventable; some are disease-related, immunologic, or infectious. However, knowledge and application of basic skin care approaches are key to keeping the skin clean, dry, and protecting it from exposure to effluent, trauma, chemical injury.\textsuperscript{16}

**Routine peristomal skin care.**

*Understanding what is normal.* Routine peristomal skin care is not complex, yet must be methodically taught, observed, and reinforced by healthcare providers so patients (or their caregivers) are able to demonstrate skill acquisition. Basic skin care begins with defining and demonstrating "normal" skin condition for the patient. Despite education to the contrary, many patients (and some clinicians) consider a chronic state of peristomal skin irritation as normal. However, peristomal skin should be intact and healthy even though covered with an adhesive skin barrier. It should appear similar to skin on the other side of the abdomen. This concept should be reinforced during routine teaching and assessment sessions to help patients recognize what is normal and what is not.\textsuperscript{16}

*Pouching system fit.* Because irritant contact dermatitis is the most common skin complication, all efforts are made to maintain a pouching system that is properly sized and contoured.\textsuperscript{15,17} This is the most critical prevention and treatment strategy as it protects peristomal skin from exposure the stool, urine, and mucus (the irritants). All too often patients and inexperienced healthcare providers assume that the initial pouching system is the type a patient uses throughout their lifetime. The pouching system fitted immediately after surgery will meet the needs at that time. However, within the first 3 months of surgery, stomal edema resolves and the stoma size changes, requiring several pouch refittings during this time. Additionally, abdominal distension and firmness will diminish, necessitating refitting to accommodate the contouring, rigidity, and depth of the skin barrier of the pouching system.\textsuperscript{18} Without reassessment of the pouching system, leakage results, exposing the peristomal skin to effluent.

Patient instruction should include use of a disposable measuring guide to measure the stoma at each pouch change and verify that the size of the opening to the pouch is correct. The pouching system must fit so the skin at the base of the stoma is covered. If the size of the stoma is significantly smaller than the size of the opening in the skin barrier, a pouch refitting with a knowledgeable expert is recommended. The need for assessment and refitting is a lifelong reality for the patient.

*Wear time/leakage.* Establishing a pouch change schedule and taking action if pouch leakage occurs are important tactics to protect peristomal skin. A routine pouch-changing schedule of once every 4 to 7 days provides consistency that usually avoids surprise leakage problems. Extending pouch wear time beyond what is recommended by the ostomy care nurse or manufacturer should be avoided to prevent both "silent leakage" and frank leakage. Silent leakage occurs when the skin barrier erodes and the skin is exposed to effluent, even though there are no visible signs of leakage. Usually, silent leakage is signaled by patient complaints of burning and excessive itching without signs of detached skin barrier adhesive. Skin barrier erosion is evident when the pouching system is removed. Frank leakage is evident when effluent leaks through the skin barrier. Odor also may be noted as this point. With either form
of leakage, the pouch should be changed and a clean system applied as soon as the problem is detected.

**Adhesives and cleansing.** Protecting skin also includes nontraumatic adhesive use and skin cleansing. Gentle removal of adhesives is recommended to avoid skin stripping. The pouching system is removed by supporting the skin and using a soft tissue with water. For patients with sensitive or friable skin, a skin sealant may be used to prevent trauma during adhesive removal. Cleansing is performed with soft tissues or cotton balls to avoid abrasion. Chemicals may cause irritant contact dermatitis; therefore, the rule of thumb is "avoid use of all skin care products for the skin unless there is a specific indication for that patient". Indiscriminate use of products exposes the skin to risk for irritant contact dermatitis and unnecessarily increases the cost of care. Peristomal skin is cleansed with a pH-balanced soap that does not have a lotion or oil base. In some situations, the cleansing agent of choice is water alone. The skin must be dry before applying the pouching system.

**Drying the skin.** Maintaining dry skin reduces the risk of developing candidiasis and is critical to obtaining a good adhesive seal. Patients may shower with the pouch off on the day they are due for a pouch change and apply the clean system once the skin is patted dry. When bathing with the pouch on, the skin barrier and pouching system should be dried before dressing. Patients may use a hair dryer on a cool setting or simply air dry the outside adhesive and any pouch cover material.

**Surveillance.** Following hospitalization, surveillance in the outpatient setting includes inspection of the skin, stoma, and pouching system as well as evaluation of patient adjustment and an educational update. Initial postoperative visits with the WOC/ET nurse should take place 2 to 4 weeks following hospitalization, with subsequent visits at 3 months and 6 months. Annual visits are part of a standard surveillance for patients with abdominal stomas.

**Abdominal changes.** Changes in the abdomen over a lifetime impact pouch fittings and the condition of the peristomal skin. Pregnancy, a new exercise program, a change in weight, lifestyle changes, and some disease states change the contours of the abdomen. Although the size of the stoma and pouch opening are essential characteristics in fitting pouches, the contour, rigidity, and depth of the skin barrier on the pouching system are equally important. These characteristics, rather than stoma size, are the most common long term reasons for refitting pouching systems.

**Treating Peristomal Skin Complications**

Patients are usually the first to know that the skin has changed and has become irritated. The pouch is leaking; the peristomal skin is itching, burning, or painful. Something has changed. If the skin is eroded and moist, patients generally are instructed on how to use skin barrier powder to manage these areas. The powder is dusted over the moist area and excess removed to avoid interference with the pouch adhesive. If the pouch is routinely worn for 6 days, the patient may change the pouch after a shorter weartime interval in order to check the skin. If a pouching system is regularly leaking in one location, using skin barrier paste, strips, or other forms of skin barriers to fill irregular skin surfaces may alleviate the problem. When first-line defenses fail, a visit with a knowledgeable ostomy care provider (WOC/ET nurse) is scheduled.
Peristomal skin complications and management approaches can be categorized by etiology: chemical (see Table 1), mechanical (see Table 2), infectious (see Table 3), immunologic (see Table 4) and disease-related (see Table 5). Crohn's Disease ulceration of the peristomal skin is also a disease-related condition resembling pyoderma gangrenosum; however, the lesions are not violaceous nor do they exhibit extensive undermining. Treating the underlying disease is indicated in Crohn's ulcerations; topical management is similar to pyoderma gangrenosum. Categorizing complications helps organize and manage outcome measurement databases.

Frequently, peristomal skin complications are classified by early or late presentations. The peristomal skin complication seen in the early postoperative period is mucocutaneous separation. Allergic contact dermatitis is a rare occurrence in stoma patients, particularly in the early postoperative period because allergies usually occur following repeated contact with the allergen. Pseudoverrucous lesions, encrustations, pressure/shear injuries, mucosal transplantation, folliculitis, varices, pyoderma gangrenosum, and malignancy generally occur over the longer term. Candidiasis, irritant contact dermatitis, and stripping injuries can occur any time.

Assessment, treatment, and follow-up are key to successful management of peristomal skin complications (see Table 6). Assessment and documentation should always incorporate parameters specific to the care setting.

**Discussion**

Prevention and management of peristomal skin complications is an important aspect of ostomy care. It is also a component to be tracked in quality management plans in the hope of recommending quality measurement. The peristomal skin classification system demonstrated in the tables is a useful way to classify complications in databases in order to begin a standardized approach to reporting outcomes. By consistently providing basic care, assessment, documentation, and treatment approaches, the quality management principles of "doing the right thing at the right time, in the right way, for the right person and getting the best possible results" is demonstrated.

Research is needed related to peristomal skin complications because much of what is used in practice today is based on expert opinion. Additionally, much of the current research related to abdominal stomas may be performed to justify the need for continent diversion surgery, rather than to discover more effective approaches to caring for stoma patients. Although such research is important, in the US, an estimated 450,000 people are currently living with and may continue to require stomas.
Conclusion

Providing quality care for the person with an abdominal stoma requires attention to clinical care, quality of life issues, and cost. The condition of peristomal skin in this matrix is significant because compromised tissue leads to increased care, health-seeking activities, problems with adjustment, and increased costs. A comprehensive approach to the prevention and management of peristomal skin complications begins preoperatively and continues until the stoma can be closed or for the rest of a person's life. Access to knowledgeable care providers is key to decreasing complications and minimizing their effect. - OWM

References: