CLINICAL MANAGEMENT

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Practice Implications for Peristomal Skin Assessment and Care from the 2014 World Council of Enterostomal Therapists International Ostomy Guideline

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To earn CME credit, you must read the CME article and complete the quiz and evaluation on the enclosed answer form, answering at least 13 of the 18 questions correctly.

This continuing educational activity will expire for physicians on June 30, 2016.

PURPOSE:

To provide an overview of the 2014 World Council of Enterostomal Therapists International Ostomy Guideline recommendations.

TARGET AUDIENCE:

This continuing education activity is intended for physicians and nurses with an interest in skin and wound care.

OBJECTIVES:

After participating in this educational activity, the participant should be better able to:

1. Describe the anatomy and physiology of ostomies and their complications.

2. Identify evidence-based best practice interventions to prevent and manage ostomy complications.

ABSTRACT

All persons with an ostomy are at risk for development of peristomal skin problems. This is true regardless of the person's nation of residence, type of stoma, or supplies available for stoma care. There are measures that can be taken to lessen the potential for peristomal skin problems. These measures include preoperative stoma site marking, preoperative education, appropriate pouch/barrier fitting, and pouch maintenance. The 2014 World Council of Enterostomal Therapists International Ostomy Guideline includes recommendations that can be implemented to prevent situations that may lead to peristomal skin complications.

KEYWORDS: ostomy guidelines, stoma, peristomal skin problems, stoma site marking, preoperative teaching, stoma care

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INTRODUCTION

Skin Anatomy and Functions

The skin is an amazing organ. It is the largest organ of the body, covering more than 20 sq ft in an average adult and weighing 6 to 8 lb. One square inch (6.5 sq cm) of skin may contain up to 15 ft (4.5 m) of blood vessels. The skin is composed of 3 main layers: epidermis, dermis, and hypodermis (subcutaneous fat)[1] (Figure 1).

The epidermis has 5 layers. The outermost layer is the stratum corneum whose function is to maintain the barrier function of the skin. It consists of hardened dead cells that are shed daily. The stratum lucidum cells lack active nuclei but are areas of intense enzyme activity preparing cells for the stratum corneum. This layer appears to be absent in eyelids, where skin is especially thin, and is most apparent in areas of thickened skin, such as soles of the feet. Next is the stratum granulosum or granular layer. This is made up of flat cells with active nuclei 1 to 3 cells thick. As the nuclei of these cells disintegrate, a tough impermeable protein called keratin is produced. This layer also contains Langerhans cells that are important for immune response and affect the inflammatory phase of allergic contact dermatitis. Next is the stratum spinosum followed by the stratum germinativum or basal cell layer. This is the innermost sublayer that forms the base of the epidermis and is the only layer with the ability to regenerate or undergo mitosis to form new cells. This single-cell layer runs along ridges that extend down into the dermis called rete pegs, or epidermal ridges. These ridges are surrounded by vascularized dermal papillae in a complex area called the dermal-epidermal junction. The dermal-epidermal junction serves as structural support and means of attachment between the dermis and epidermis and allows exchange of fluids and cells between the skin layers.

These 2 layers are held together by filaments composed of type 7 collagen.[2] The dermis is composed of dense collagen, sweat glands, hair shafts, and blood vessels. The last layer, the hypodermis, is composed of subcutaneous fat and provides protection and attachment of the skin to underlying bone and muscle.[1,2]

The skin has an acid mantle with its pH ranging from 4 to 6.5.[2] It provides protection from external damage and injury, and it plays an important role in maintaining immunity. The Langerhans cells in the epidermis play a major role in the body's immune surveillance. The skin performs a major role to maintain an appropriate water moisture level by its ability to regulate transepidermal water loss.[3] Other major skin functions include thermoregulation, insulation, sensation, sweat production, storage (water), and the synthesis of vitamins.[1]

Peristomal Skin

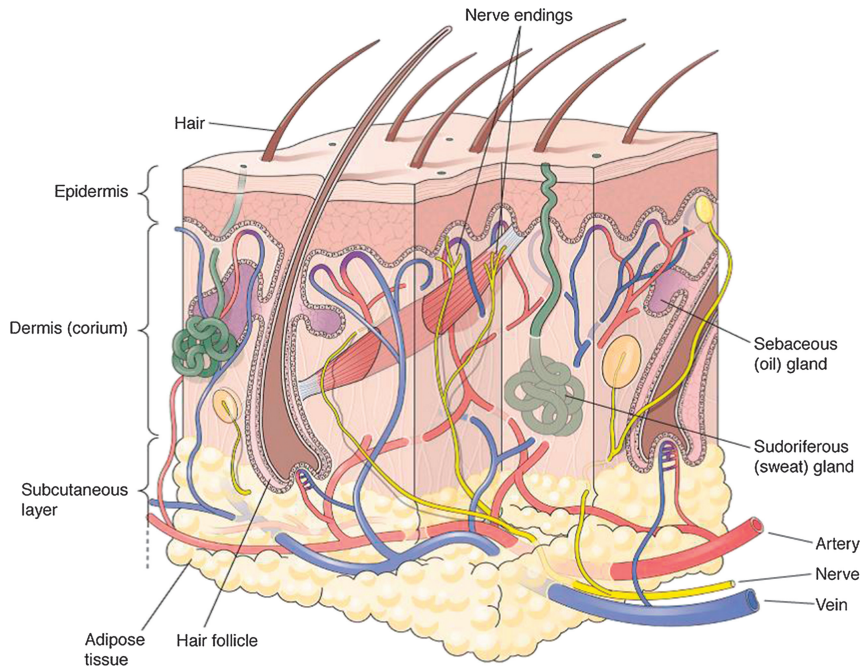
When medical conditions or procedures present the possibility of disruption of this protective organ, the impact on quality of life and functional aspects of a patient's life may become evident. Proper protection of peristomal skin and prompt identification with accompanying appropriate treatment are vital for a person with an ostomy. According to the United Ostomy Association of America, more than 1 million Americans have an ostomy, and 130,000 ostomy surgeries are performed each year in the United States.[4] Therefore, the use of best practice recommendations is of critical importance.

Challenges of Peristomal Skin Care

Despite the importance of adequate skin protection and self-care knowledge, not all patients have the benefit of specialized care from a healthcare professional educated to meet the needs of a person with an intestinal or urinary ostomy. A 2014 survey of general nurses in North America revealed gaps in skin and wound care knowledge.[5] Nurses identified that their basic nursing education was lacking in skin and wound care content.[5,6] A recent study by Zulkowski et al[7] has also raised the question about skin and wound care content being taught in nursing programs and suggested that there is room for improvement in preparing nurses during their basic educational experience. Results of this study of baccalaureate nursing programs in the United States found that content about fistulas was taught to nursing students by 31% of the programs, fistula management by 25%, and perineal dermatitis by 45.5%.[7]

All patients deserve to be cared for by healthcare professionals who, regardless of their basic professional education, have adequate knowledge of how to identify and manage their daily ostomy care needs, as well as any problems that may occur. Several resources are available to help the nonostomy specialist, including an article by Stelton and Homsted,[8] which describes in table

Figure 1.
ANATOMY OF THE SKIN



format common ostomy problems and color codes them by urgency of need for healthcare professional intervention.

To provide expertise in identification and oversight of standards for stoma care, the World Council of Enterostomal Therapists (WCET) published the WCET International Ostomy Guideline (IOG) in 2014.[9] The IOG is based on an exhaustive search of evidence concerning aspects of intestinal and urinary stomas and stoma care. MEDLINE, CINAHL, and Cochrane library databases were searched for ostomy articles. The initial search was for articles published from 2009 through May 2013. This was expanded to 2000 as few research articles were found. Several sentinel articles were also included that were older but considered by the editorial panel to be important. Any international articles suggested from WCET members were from peer-reviewed journals and were evaluated by at least 2 WCET members proficient in that language. All articles were scored for level of evidence by at least 2 people. Recommendations were written and graded by the editorial board. Recommendations were then circulated to the WCET executive board, a doctorally prepared nurse with expertise in culture and fluent in several languages but not an enterostomal therapy nurse, and an international group of stakeholders from the WCET who volunteered to review the draft document.

In addition, the IOG is unique with cultural content contributed by stoma care experts from around the world. The guideline is intended to be a stoma care resource for nurses worldwide. The 9 recommendations from the WCET IOG can be found in the Table. Translation of these recommendations in French, Portuguese, Spanish, and Chinese can be found on the WCET website (www.wcetn.org). The majority of these recommendations have an impact on peristomal skin assessment and management.

Using the WCET IOG as a framework, this continuing education article summarizes some of the major peristomal skin problems, including contributing factors, how to prevent them, how to recognize them, and how to manage them. Topics include how to mark stoma sites, preoperative patient teaching about stomas and stoma care, selecting and correctly applying an appropriate pouch system, managing the pouch system, and recognizing and managing peristomal skin problems.

Stoma Site Marking

Planning is a critical component to generate positive outcomes for a patient undergoing surgery to create an ostomy. The literature supports the practice of preoperative stoma site marking for persons undergoing surgeries that will (or may) result in the creation of a stoma.[10–12] The American Society of Colorectal Surgeons Committee and the Wound, Ostomy and Continence Nurses (WOCN) Society published a joint position statement in 2007 on the value of preoperative stoma site marking for patients undergoing fecal

ostomy surgery.[13] Similarly, the American Urology Association and the WOCN Society published a joint statement in 2009 on the value of preoperative stoma marking for patients undergoing creation of an incontinent urostomy.[14] A 2014 Turkish multicenter, retrospective study to evaluate the effect of preoperative stoma site marking on stoma and peristomal complications supports the efficacy of preoperative stoma site marking.[15]

The IOG recommendation 3.1.1 (Table) suggests that stoma site marking should be done preoperatively for both elective and nonelective surgery (whenever possible). Site marking should be performed by an enterostomal therapy nurse or other clinician who has been educated on how to select an appropriate stoma site and on care of ostomies.[9] Site marking begins with assessing the patient's skin with the patient in a standing, sitting, and lying position (Figure 2A-C). The abdomen is inspected for bulges, creases, and scars. The IOG further states that the stoma site should be marked on the summit of the infraumbilical mound within the rectus muscle and away from abdominal creases, scars, skin folds, and the belt line. A well-sited stoma, in addition to being easier to care for, is less likely to incur certain skin problems than a stoma that is poorly sited.[16] It is particularly challenging to mark a stoma site for a patient whose abdomen is extremely distended with conditions such as a bowel obstruction. The clinician must make an educated guess, based on experience with similar patients, as to what the abdominal contours will be like postoperatively and mark a site accordingly. From some of the authors' clinical experience, placing the mark more superior on the distended abdomen yields a stoma site that is easier for the clinician initially to fit a pouch and for the patient to perform self-care.

Preoperative Teaching

Preoperative education of patient and family is also a key component of the stoma care planning process. The IOG recommendation 3.1.2 states that preoperative education for both the patient and the family (when possible) should include explanation about the stoma, the surgical procedure, and an overview of postoperative stoma management. Ideally, this education takes place along with stoma site marking. Adaptations to the teaching content and presentation methods should be individualized to the patient's and family's learning style and abilities.

Prevention of Skin Complications

Prevention, early identification, and appropriate treatment of peristomal skin problems are crucial to the care of the person with an ostomy. Tools have been developed to aid the assessment of peristomal skin conditions.[17-21]

The IOG recommendation 3.2.2 states that ostomy barriers and durable containment devices (commercially available pouches,

Table.

SUMMARY OF WCET INTERNATIONAL OSTOMY GUIDELINE RECOMMENDATIONS

3.1.1 Stoma site marking on the summit of the infraumbilical mound within the rectus muscle away from abdominal scars, creases, skin folds, or belt line should be done preoperatively for both elective and nonelective (when possible) surgery by an enterostomal therapy nurse or clinician educated in ostomy care.

Strength of evidence = B+

3.1.2 Preoperative education for both the patient and the family (when possible) should include stoma explanation and site marking, the surgical procedure, and postoperative stoma management.

Strength of evidence = B+

3.2.1 Use of a validated peristomal skin assessment tool may assist in standardizing communication of peristomal skin status.

Strength of evidence = B

3.2.2 Ostomy barriers and durable containment devices (either commercially available pouches, improvised equipment, or ostomy receptacle made from indigenous materials) should be fitted to each patient. There should be a secure seal to protect the stoma and maintain peristomal skin protection while containing effluent. Tools exist to assist nurses in ostomy barrier and pouch selection.

Strength of evidence = B

3.2.3 Patients, families, and ostomy nurses/clinicians need to recognize and identify the etiology of common peristomal and stomal complications.

Strength of evidence = B

3.2.4 Patients, families, and ostomy nurses/clinicians need to implement prevention and management plans of care to address potential or actual peristomal and stomal complications.

Strength of evidence = B

3.3.1 Quality of life, body image, and sexuality may all be negatively impacted by creation of an ostomy. These issues should be assessed preoperatively and postoperatively for appropriate care planning.

Strength of evidence = B+

3.3.2 The ostomy nurse needs to consider the impact caring for a person with an ostomy has on caregiver/family quality of life.

Strength of evidence = B

3.4.1 Examine any patient stoma concerns with the awareness that concerns may vary by country and culture. Confounding factors include differences in medical care, available stoma products, economic factors, gender roles, religion, and beliefs about disease, illness, and injury.

Strength of evidence = B-

Figure 2.
ASSESSING THE ABDOMEN FOR STOMA SITE MARKING

The same patient is shown in 3 different positions to best assess the skin for stoma site marking.
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improvised equipment, or ostomy receptacles made from indigenous materials) should be fitted to each patient. There should be a secure seal to protect the stoma and to maintain peristomal skin protection while containing effluent. Tools exist to assist nurses in the selection of ostomy barrier and pouch selection.[22,23] Selection of ostomy equipment that is appropriate for the type of stoma, volume, and consistency of the effluent and the self-care skill level and activities of the patient is important. Proper pouch fitting can lead to better adherence of the pouch and less chance for leakage and skin irritation. Maintenance of the pouch system, including appropriate pouch application, timely emptying, and pouch changes, contributes to prevention of skin complications.

Assessment of Peristomal Skin Problems

Peristomal skin problems include but are not limited to conditions such as irritant contact dermatitis, folliculitis, fungal rash, allergic dermatitis, pseudoveruccus lesions, peristomal maceration, uric acid crystal deposition, bleeding related to caput medusa, and pain related to pyoderma gangrenosum (PG) lesions.[24–32]

Acute Irritant Contact Dermatitis

Irritant contact dermatitis is the most common peristomal skin complication.[32] When the ostomy effluent is in contact with the skin, the skin becomes inflamed (Figure 3). At first, the skin appears reddened. With continued effluent contact, the skin may blister and become denuded (Figure 4). An appropriate pouch skin barrier selection and fitting, initially after surgery and with adjustments made to the pouch systems as the stoma reduces in size and contour in the weeks after surgery, is a key process in the prevention of irritant dermatitis.[32] Selection of skin barriers is important. When the effluent is higher in volume and liquid, an extended wear type of barrier may be helpful to contain the effluent rather than a standard wear barrier. The pouch system that fits the stoma well while the abdomen is distended immediately after surgery may not fit appropriately several weeks later when the abdomen is more flat and soft. In addition, reevaluating and making adjustments to the pouch system should be done to meet the changing needs of the specific patient over time. Even if the barrier type is correct for the stoma and applied correctly, the skin may be exposed to effluent if the pouch is not emptied and changed often enough. Management of irritant dermatitis includes use of protective ostomy pectin-based powder applied to the erythematous skin with each pouch change until resolved.

Chronic Irritant Dermatitis

When the skin has been in repeated contact with the effluent over a long period, the skin will show areas of denudation, as well as areas that have scarred from repeated breakdown and healing. Over time, this scarred tissue can become very toughened and ''bumpy.'' This changes the peristomal landscape and makes it

Figure 3.
IRRITANT DERMATITIS

Photo courtesy WOCN Image Library.

Figure 4.
DENUDED SKIN

Photo courtesy WOCN Image Library.

difficult to keep a pouch adherent. It is important to address irritant dermatitis when it is in the acute phase to prevent permanent skin damage. Often, in addition to the topical skin management with topical protective pectin-based powder applied to the erythematous skin, the person with peristomal chronic irritant dermatitis requires pouch refitting with an alternate size and/or style pouch system.

Mechanical Injury (Skin Stripping)

Skin stripping is a peristomal skin problem in which the skin is damaged when adhesive portions of the pouch system skin barrier are removed (Figure 5). The adhesive sticks to the epidermis and, when the tape is pulled away from the skin, separates the epidermis from the dermis, causing the skin to be open. Use of skin barrier wipes or sprays to protect the skin used before pouch application and/or adhesive remover wipes or sprays to assist pouch removal can prevent this peristomal skin problem. The addition of aggressively sticky adhesive tape around the pouch system to help keep the pouch in place is not recommended because this could cause more skin stripping. Skin-stripped areas that will be covered by pouch components may be treated with ostomy protective powder with each pouch change until resolved.

Folliculitis

Folliculitis is a peristomal condition that involves inflammation of hair follicles (Figure 6). It appears as a small pustule located around a hair follicle. Folliculitis results from chronic pulling of the hair with removal of adhesive appliances or from shaving the peristomal skin. Folliculitis is more common in men than women because of increased hair distribution on the male

Figure 5.
MECHANICAL INJURY

Photo courtesy WOCN Image Library.

abdomen. This problem can be prevented through appropriate peristomal hair removal, such as clipping or plucking, and pouch maintenance.

Fungal Rash

Fungal rash presents as papules or pustules or areas of red shiny skin that characteristically itch or burn. These pustules and papules are often found in what is called a ''satellite pattern'' or speckled distribution on the skin (Figure 7). The microorganism responsible is typically a *Candida* species or a related organism. Peristomal skin provides an optimal environment for fungal overgrowth because it tends to be warm and moist. Cleaning the skin with soaps can interfere with the protective acid mantle of the skin by

Figure 6.
FOLLICULITIS

Photo courtesy WOCN Image Library.

Figure 7.
FUNGAL RASH

Used with permission from J. L. Homsted.

changing the pH of the skin. Antibacterial soaps can remove the normal skin flora and can enhance fungal overgrowth. Furthermore, recent systemic broad-spectrum antibiotic therapy can precipitate the development of peristomal rash. Cleaning the peristomal skin with no soap and pouch changes at an appropriate interval can prevent this problem. Minor peristomal fungal rash can be managed with application of very small amounts of antifungal powder or cream rubbed thoroughly into the peristomal skin until dry with every pouch change until resolved.

Allergic Dermatitis

Allergic dermatitis is an allergic response of the skin to some portion of the pouching system. Fortunately, most pouch materials are well tolerated, and allergic dermatitis is not a frequent occurrence. Allergic dermatitis can manifest itself as skin that is erythematous, edematous, blistered, weeping serous fluid, or bleeding (Figure 8). The peristomal skin involved is often an area where an adhesive portion of the pouching system contacts the skin. Use of an alternative pouch system with different chemical properties may alleviate this problem. If necessary, ''patch testing'' of the patient's skin with small patches of various pouch materials may be helpful in selecting another type of skin barrier or pouch system.

Pseudoveruccus Lesions

Pseudoveruccus lesions are hypertrophic ''wart-like'' skin lesions adjacent to the stoma (Figure 9). These lesions occur in peristomal sites that have been repeatedly exposed to effluent over a long period. The body attempts to heal these inflamed areas through re-epithelialization. Over time, this produces hypertrophic tissue that becomes toughened. To prevent this hypertrophic tissue from forming, it is helpful to fit the pouch so that a minimum of peristomal skin is exposed, to manage effluent leakage promptly,

Figure 8.
ALLERGY TO POUCH ADHESIVE

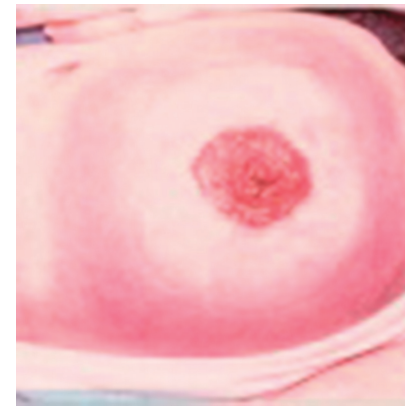

Photo courtesy WOCN Image Library.

and to refit the stoma with a pouch system that will better contain the effluent as necessary. Recently developed pseudoveruccus lesions may be managed with silver nitrate application and pouch refitting. Lesions that have been present for a long period tend to be tough and dry and may not respond to silver nitrate application. These lesions may require surgical removal. After the lesions are removed, the pouch should be refitted to better protect the skin and prevent reoccurrence.

Peristomal Maceration

Maceration is a skin condition experienced by some patients with incontinent urostomy (eg, ileal conduit).[33] The peristomal skin

Figure 9.
PERISTOMAL HYPERPLASIA

Photo courtesy WOCN Image Library.

may be pale, wrinkled, and "soggy" looking from exposure to liquid (Figure 10). Macerated skin is more at risk for breakdown than intact peristomal skin. This can be managed by remeasuring the stoma and refitting the pouch system to ensure that the skin is well protected and urine is not in constant contact with the peristomal skin.

Uric Acid Crystal Deposition

When urine from an ileal conduit stays in contact with peristomal skin for a time, uric acid crystals from the urine can be deposited immediately around the stoma.[33] This deposition appears as a grayish slimy film coating on the skin adjacent to the stoma (Figure 10). Pouch adherence can be impaired by this deposited material. The crystals can be removed at the time of a pouch change by applying dilute acetic acid solution to the skin followed by gentle cleansing. After crystal removal, the stoma should be remeasured and the pouch system refitted.

Bleeding Related to Caput Medusa

Persons with liver pathology may present with pronounced venous patterns visible on the abdominal skin. When such patients have a stoma, it is common to observe a ring of purple blood vessels around the stoma (Figure 11). The pattern of superficial vessels may appear like a purple "sunburst" around the stoma. This is called caput medusa. Caput medusa is not a condition that can be prevented by pouch fitting and maintenance. It is important for stoma care clinicians to recognize when caput medusa is present and adjust pouch application and removal techniques accordingly. When these vessels are extremely superficial, or the peristomal skin is very fragile, they can be a source of significant bleeding during pouch changes. Fitting the pouch well to protect the peristomal skin, changing pouches less frequently with extremely gentle cleansing with minimal friction, can prevent this bleeding. In the event that bleeding occurs during a pouch change, apply firm pressure to the bleeding area. Continued bleeding may respond to application of a cool pack over the stoma or application of silver nitrate.

Figure 10.
MACERATION AND URIC ACID DEPOSITION

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Figure 11.
CAPUT MEDUSA

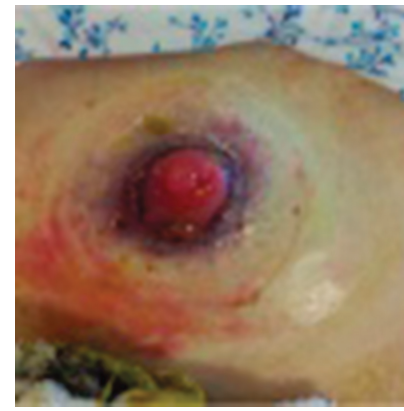

Photo courtesy WOCN Image Library.

Pain from Pyoderma Gangrenosum

Pyoderma gangrenosum is a rare skin condition in which ulcerations form on various locations on the body. In the person with an ostomy, these ulcerations can develop on the peristomal skin. These lesions are deep, necrotic, and undermined; have a bluish tint at the wound edges; and are very painful as reported by patients (Figure 12). Unlike other peristomal skin problems previously described, PG cannot be prevented. Pyoderma lesions are actually symptoms associated with exacerbations of such chronic

Figure 12.
PYODERMA GANGRENOSUM

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systemic physical conditions as inflammatory bowel disease, Crohn disease and ulcerative colitis, rheumatoid arthritis, or lupus. It is estimated that 2% of patients with stomas who have inflammatory bowel disease develop PG.[33] It is seen more often in patients with Crohn disease than in those with ulcerative colitis.[34] Although PG lesions are not a result of improper skin cleansing, pouch fitting, or exposure to effluent, this article includes them because it is important for the stoma care clinician to be able to recognize and manage this unusual skin problem. Pyoderma gangrenosum cannot be managed by local treatment alone like many of the other conditions mentioned in this article. Management of PG requires a 2-pronged approach with the collaboration of an ostomy nurse and physician. Topical management of the peristomal skin should include steroid creme and ostomy powder administered by the ostomy nurse. In addition, the physician should provide systemic management with oral steroids for exacerbations of chronic underlying conditions.

SUMMARY

Anyone with a stoma is at risk for peristomal skin problems. This article has given examples of some common peristomal skin problems, their causes, their prevention, assessment, and management. The WCET IOG is cited as a useful tool to guide stoma care practice. The IOG describes the importance of appropriate stoma site marking, individualized pouch fitting, proper pouch application technique, and pouch change at intervals appropriate to the type of equipment and the skin condition.

PRACTICE PEARLS

- Assessing patients' abdomens preoperatively for unique contours, skin folds, and any other variations is important for appropriate stoma site marking as it decreases the chance for postoperative peristomal skin problems.
- Selection of pouching materials that are appropriate for the type of stoma, the size and contour of the stoma, and type and volume of effluent is important to prevent skin problems related to pouch selection.
- Skin barriers with precut or cut-to-fit appertures no larger than 1/8 inch larger than the diameter of the stoma protect peristomal skin from exposure to effluent.
- Pouches may need to be refitted in the recovery period after surgery or when the body weight has significant increases or decreases.
- Skin cleansing that maintains the acid mantle and the normal flora of the peristomal skin helps to prevent peristomal skin problems.
- Early recognition of peristomal skin conditions can prevent discomfort for the patient and serious damage to the skin.
- A leaking pouch is not just an inconvenience but can be socially and psychologically distressing for a patient.

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