Skin problems in stoma patients

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Abstract

Ostomy patients are dependent on the integrity of their peristomal skin to maintain a normal lifestyle. Peristomal skin problems are thought to be common and may interfere with the use of ostomy pouching systems. This is a specialist area not commonly seen by dermatologists. This article seeks to provide an overview of the topic for the general dermatologist. A systematic literature search was conducted. The articles found were reviewed and relevant articles were selected by two investigators. Loss of skin integrity may be related to chemical injury, mechanical destruction, infectious conditions, immunological reactions, disease-related conditions. Peristomal irritant dermatitis caused by skin contact with ostomy effluent is by far the most ordinary condition seen. Mechanical trauma, infection and aggravation of pre-existing skin diseases are also seen. Allergic contact dermatitis, which is often cited as the cause of peristomal skin problems, appears to be a rare condition with an estimated prevalence of only 0.6%. In spite of the importance of the integrity of peristomal skin, the topic is poorly described in the literature. The existing publications suggest that although peristomal skin disease can be diagnosed and treated, additional information on both patients and physicians is necessary to optimize patient care.

Keywords
dermatological complications, peristomal skin, review article, skin problems, stoma

Conflict of interest

Both authors received an unrestricted educational grant for the study of skin problems in 2001 and have received subsequent honoraria for speaking on skin problems from Coloplast A/S.

Intestinal stomas are produced when a section of gastrointestinal tract is opened on to the skin surface to drain the stoma effluents. Most surgically formed stomas are colostomies, ileostomies or urostomies. The most common indications for stoma formation are malignancy, IBD, vascular disease, neurological causes of incontinence or trauma. Prevalence data are scarce, but almost 100,000 people in the U.K. and Ireland and 1.5 million people in the U.S.A have a surgically induced stoma.

The peristomal skin plays an important role in the normal use of stoma appliance. Skin problems often reduce the base plates' ability to attach. This may lead to leakage, which can be socially restricting or, in some cases, even debilitating. The integrity of the peristomal skin is therefore of the outmost importance to the patients.

Peristomal skin problems are thought to be common; some studies have reported frequency of 60%, while other studies report lower frequencies. Often, a skin problem can result in a vicious circle where a skin problem causes failure of the adhesive, which in turn gives rise to leakage, which can lead to more recalcitrant skin problems.

Little has been published on the prevalence, prevention or management of stoma skin problems and even less on specifying the severity or classification of the skin problem. Many different skin problems have been described. These include faecal dermatitis, mechanical dermatitis, folliculitis, psoriasis, allergic contact dermatitis, PPG and other rather uncommon conditions. A structured review of the literature is presented. The skin conditions and treatment of these are described.

Methods

A systematic literature search was conducted in November 2007 using the PubMed database. The following key words were used: ‘skin problem AND stoma’, ‘Peristomal skin’, ‘skin problem And ostomy’, ‘abdominal stoma And skin’, ‘skin disease And stoma’ or ‘skin disease And abdominal ostomy’. The search was restricted to publications in English only. Three hundred and forty-six articles were found this way and all of these were considered for selection. Two investigators independently selected the studies for inclusion and included only studies about skin problems in the abdominal
peristomal region. Ninety eight papers were finally included and reviewed.

**Classification of peristomal skin problems**

The major functions of the skin include protection of inner tissues from injury, drying and foreign substances. Loss of skin integrity in the peristomal area may lead to skin breakdown and thereby, to skin problem. Loss of skin integrity may be related to several variables. The following classification of skin problems is suggested based on previous studies: (1) Chemical injury e.g. irritant dermatitis from the effects of effluent; (2) Mechanical destruction/truma e.g. caused by stripping, tear or pressure; (3) Infectious conditions e.g. bacterial, fungal or viral infection; (4) Immunological reactions e.g. allergic contact dermatitis; (5) Disease-related conditions e.g. pyoderma gangrenosum (PG) or psoriasis.

1. The most common peristomal skin problem is **irritant dermatitis** caused by the chemical injury from stool or urine. Improper stoma site location, improperly fitted pouching systems and consistency of effluent are the main causes of leakage.

2. Mechanical destruction is most often associated with stripping, tear or pressure. The most common is stripping. Removal of a pouching system invariably causes some level of mechanical injury to the epidermis. If the pouching system is removed 2 times a week, little consequence is seen. However, if the pouching system is removed daily or several times a day, the epidermis becomes denuded from skin stripping (mechanical injury). Mechanical injury may compound irritant dermatitis when leakage or burning results in more frequent pouch changing, which can then cause additional skin damage.

3. Infection of the peristomal skin can be bacterial, fungal or viral in nature. Lyon and Smith found that 7% of peristomal skin problems are caused by infection. This may be caused by a combination of factors. Local resistance may be lowered because of breaks in the integrity of the peristomal skin; while systemic resistance may be reduced because of general ill health, diabetes or immunosuppressive therapy for malignancies or inflammatory bowel disease. Heavy colonization by enteric flora is also common on the peristomal skin, but does not indicate infection until clinical signs of infection become evident. For all infections, a correct diagnosis is essential. Inappropriately diagnosed infections treated with topical corticosteroids may spread rapidly.

4. Allergic contact dermatitis can arise from pouches, skin barriers, clamps, belts and adhesives. Allergic contact dermatitis is rare although the appliance is worn close to the skin for long periods; skin is repeatedly stripped and a humid environment may be speculated to eluted potential allergens. In addition, the skin barrier may be disrupted by the humidity to aid penetration further and thereby facilitate sensitization.

5. Disease-related conditions. Pre-existing skin diseases includes atopic dermatitis, seborrheic dermatitis, psoriasis and pyoderma gangrenosum, which often tend to appear on the peristomal skin. The peristomal skin seems to be predisposed to psoriasis (Koebner’s phenomenon), but psoriasis can also appear solely on the peristomal skin. This also seems to be true for Pyoderma gangrenosum.

**Review of literature**

Information on the type and prevalence of peristomal skin problems was retrieved from the literature and reviewed critically. The quality of the studies was found to be highly variable, with some studies containing detailed descriptions on type of lesion, aetiology and treatment, while others are less specific and only report finding a skin problem without specifying details of aetiology and/or treatment. A lack of high quality studies was noted.

Peristomal skin problem assessment is a difficult area. Many types have been described, but a unique, universally recognized tool to classify peristomal skin disorders is not available making direct comparisons difficult. The peristomal skin disorder can be classified according to the clinical appearance e.g. inflammatory skin disorders related to mechanical, chemical, infectious or allergic factors.

Disease severity assessment is an important and necessary component of clinical studies. The severity of peristomal lesions can be described using the Classification of Peristomal Skin (CPS) model. It consist of ratings of erythema or erosive lesions (E0, E+, E++) and pseudo verrucous lesions (P0, P+, P++) on a three point scale from none (0) to severe (+++). A more recently published paper by Bosio G et al. describes another method for severity assessment of peristomal skin disorders. This method rates the lesion according to degree of ulceration or hyperplasia, with L1: redness without loss of substance, L2: Erosive lesion not beyond the dermis, L3: ulcerative lesion beyond the dermis and L4: ulcer with fibrin/necrosis and LX proliferative lesions. This approach still lacks the opportunity to describe other lesions than erythema, erosions and ulcers, and has not been validated. Both the proposed systems lack the option to describe aetiology and localization.

**Irritant reactions**

Dermal irritation is by far the most common reason for peristomal skin problems. The condition derives when a peristomal skin area is exposed to a chemical irritant. The chemical irritant is often urine or stool from the stoma. However, also components in the ostomates appliances can lead to an chemical irritant dermatitis. Symptoms such as erythema, maceration, erosion and hypergranulation can be seen. This rash cannot clinically be distinguished from that of allergic contact dermatitis; therefore, it is crucial to find evidence to support the theory of a chemical irritant e.g. evidence of leakage on to the skin, or on the pouching system, as well as to rule out allergic contact dermatitis (Fig. 1).

Most frequently, the chemical irritant is urine or stool from the stoma. Consequently, the investigator has to look for causes of leakage e.g. poorly fitted stoma, fistulae, irregular stoma as a result...
of scarring, postsurgical weight gain or 'hidden leak' (which refers
to an unrecognized leak from what appears to be an intact pouch).
Leakage may also occur as a result of wound healing following sur-
gery. Stomas remodel (after 6 months of stoma formation, the
stoma can remodel usually becoming smaller) exposing skin to
stoma effluent.

Treatment: The first step is to reduce leakage. To do so, one must
find the underlying aetiology of the particular leakage. If the stoma
is reduced in circumference, smaller aperture is selected. If the
stoma is short or receding into the subcutaneous fat, convex appli-
cances or hydrocolloid washers can be used to expose it more. If the
stoma is poorly sited, if the skin has a distorting scar or if there is a
hernia, the goal is to achieve a flat surface for bag application by
e.g. using filler pastes or hydrocolloid dressings. Severe or painful
dermal irritation can be treated with a short course of topical corti-
costeroid.1,3,8–23 A lotion or a cream will usually allow the baseplate
to adhere to the skin, if left to dry in open air for a few minutes,
while ointments and gels are less suitable because they leave residue
on the skin surface, which interferes with adhesion.

Mechanical trauma/physical irritation
Mechanical trauma is defined as injury to the peristomal skin
caused by pressure, friction, rubbing, stripping or tearing.
Friction or rubbing may be exerted from clothing or hard plastic
components of appliances.
Stripping done for repeated appliance removal will damage the
skin by stripping the top layers of the epidermis.
Skin tears can occur in the peristomal area due to improper
changing techniques or frail skin. Especially, elders can have problems
with frail skin.
At first, the skin can appear erythematous, but prolonged irrita-
tion can result in erosions, scales, patches, crusts and/or ulcer-
tion. Treatment for mechanical injuries is pouch refitting (to
insure a longer wear period). In addition to this, the patients
should be taught proper changing technique, the use of skin barri-
ers and reduction in irritant exposure.1,9,11,13,16,17,19,21,22,24

Infection
Bacterial infection may be primary or secondary. Primary peristo-
mal skin infections include folliculitis and impetigo. Folliculitis is
an infection of the hair follicle by *staphylococcus aureus* or strepto-
cocci and commonly results from shaving or if pulling of hair
when the pouches are changed. The principal lesions are small cir-
cular ulcers or pustules.

Treatment often, the condition can often be resolved with
proper hair removal/trimming technique alone, but specific oral
or topical antibiotic can be used, if needed. Peristomal impetigo
is caused by *Staph. aureus* or streptococcus species. The characteristic
appearance with blisters and yellow crusting is not seen as it is
removed with the appliances. So, the clinical features are usually
limited to erythema, denuded areas and occasional pustules. Treatment
with specific oral antibiotics is recommended.

Secondary infection is infection of an existing skin problem
such as eczema or otherwise damaged skin. The typical clinical fea-
tures are yellow, crusted inflammation, which worsen the existing
skin problem. Treatment involves identification of pathogens and
their possible antibiotic resistance patterns and subsequent use of
appropriate oral antibiotics.

Fungal skin infections, most commonly *Candida albicans*, thrive
in warm humid conditions and are commonly found in the
mouth, gut and vagina. The clinical features for fungal infection
include itchy bright erythema. Satellite vesicles are common. As
the infection progresses, scaling and crusting can be seen. The
diagnosis can usually be made by visual inspection and/or by skin
scrapings. The treatment is first to provide a dry environment
using antifungal powders such as mycostatin powder.1,9,11,13,14,16–
18,21,22,25–28

Pre-existing skin diseases
Any generalized skin disease may affect the skin around a stoma.
The diagnoses are usually made by an appreciation of the symp-
toms and clinical signs at sites other than the peristomal skin. Psori-
asis, seborrhoic dermatitis and eczema are the most common
pre-existing skin disorders seen in the peristomal region and these
three together account for 20% of all the peristomal skin problems
seen.

Psoriasis. The diagnosis of psoriasis is based on the typical clinical
features of erythematous plaques and scaling in a characteristic
pattern. Psoriasis can, however, be localized exclusively to the

Figure 1 Example of faecal dermatitis A evidence of leakage on to the skin, and B evidence of leakage on the pouching system.
peristomal area. Treatment of psoriasis under the pouching system is subject to three constraints; (1) Ointments cause the bag to lift off, (2) Potentially irritant preparations such as tars cannot be used and (3) Phototherapy is unacceptable to most patients, although ultraviolet phototherapy and Grenz ray treatment can be used with excellent results.

Peristomal psoriasis can commonly be treated with betamethasone valerate (0.1%) aqueous lotion until it settles and thereafter controlled with betamethasone valerate (0.1%) aqueous lotion applied every 3–4 weeks. On occasions, the severity of peristomal psoriasis, however, requires systemic therapy for control, although the overall severity of the disease elsewhere on the body may not indicate this.

Seborrhoeic dermatitis. Patients with peristomal seborrhoeic dermatitis exhibit the typical scaling eczematous rash affecting the scalp, eyebrows, head, neck and/or chest. Seborrhoeic dermatitis found solely at the peristomal site has not been reported. Standard treatment is directed at reducing the population of Pityrosporum ovale and reducing inflammation, most often through the use of topical antifungals and low potency steroids or calcineurin inhibitors.

Eczema/atopic dermatitis. Patients with eczema located on the peristomal skin often have involvement elsewhere. The treatment is e.g. betamethasone valerate (0.1%) aqueous lotion for 2 weeks applied when pouching system is changed.1,4,9,11,13,16,17,21 Here, patients may also require systemic therapy at an earlier stage, if the peristomal skin warrants this.

Allergic contact dermatitis
Allergic contact dermatitis is a type IV hypersensitivity reaction to a particular substance. Sensitivities have been reported to skin barriers, powders, pouches, clamps, belts and adhesives. A true peristomal contact dermatitis is rare and it is estimated that only 0.6% of peristomal skin problems are the results of allergy.5 The symptoms of Allergic contact dermatitis are indistinguishable from those of any irritant reaction of the skin. The skin may appear erythematous, oedematous, eroded, or bleeding and papules and vesicles may occur. On the sub-clinical level, the patients can experience itching, stinging or burning. For the most part, the entire area in contact with the allergen will be affected.2,19

Treatment: if contact allergy is suspected, specific patch testing and usage tests are indicated. Patch test series are provided by all major producers of ostomy bags and can be requested, when needed. Use testing involves the patient placing pouching system and all material used on the normal side of the abdomen. If the patient has an allergy for the products used, an allergic contact will develop. An allergic dermatitis will resolve when the patient is no longer exposed to the allergen. The acute rash may be treated with topical steroids.1,11,13,14,16,17,21,29–33

Peristomal Pyoderma Gangrenosum
Like contact dermatitis, Peristomal Pyoderma Gangrenosum (PPG) is a rare disease with an estimated prevalence of only 0.7%.8 PPG is diagnosed clinically by the characteristic features of a rapidly growing painful peristomal ulcer with a well-defined erythematous or violaceous border, possibly having an overhanging edge of epidermis. PPG does not respond to conventional wound

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**Table 1 Diagnostic and treatment guide**

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<th>Diagnoses</th>
<th>Clinical features</th>
<th>Aetiology</th>
<th>Interventions</th>
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</thead>
<tbody>
<tr>
<td>Dermal irritation/Faecal dermatitis</td>
<td>Erythema, maceration, erosion, overgranulation</td>
<td>Impaired skin integrity from leakage</td>
<td>Adapt equipment, Frequently change</td>
</tr>
<tr>
<td>Dermal irritation/Mechanical</td>
<td>Denuded skin, ulceration of the skin. Lesion with irregular borders</td>
<td>Improper use of equipment, fragile skin</td>
<td>Learn proper pouching technique. Skin barriers</td>
</tr>
<tr>
<td>Peristomal Pyoderma Gangrenosum</td>
<td>Rapidly growing painful peristomal ulcer with a violaceous border</td>
<td>Unknown</td>
<td>Topical steroids. Or systemically steroids if not responding</td>
</tr>
<tr>
<td>Contact dermatitis</td>
<td>Erythematous, edematous, eroded or bleeding, present only under the tape or adhesives</td>
<td>Immunologic reactions</td>
<td>Patch test to verify allergen. Avoid use of the irritant</td>
</tr>
<tr>
<td>Infection: Candida Bacterial</td>
<td>Erythema Extrafollicular lesions, papules and or pustules. Satellite lesions. Itch or burn</td>
<td>Moisture around or under appliance, systemic antibiotic therapy which alters the flora, immunosuppressive medications, chemotherapy</td>
<td>Antifungal powders. Antibiotic therapy</td>
</tr>
<tr>
<td>Folliculitis</td>
<td>Pinpoint pustules arising from hair follicles</td>
<td>Infected hair follicle, traumatic hair removal/shaving</td>
<td>Antibiotic. Proper hair removal/trimming, non-occlusive adhesive</td>
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<td>Other skin diseases also located on peristomal area: e.g. Psoriasis Atopic dermatitis</td>
<td>Features as if located elsewhere</td>
<td>Pre-existing skin diseases. Often the peristomal area is predisposed to</td>
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treatment, and exhibits pathergy. A biopsy from the ulcer edge can be taken to rule out infection, malignancy and primary vasculitis, but is not positively diagnostic of the disease. Blood samples for cytoplasmic antibody, full blood count, rheumatoid factor, antinuclear antibody, fluorescent treponemal antigen, plasma proteins and complement estimations should be considered, as PPG is associated with autoimmune diseases. Treatment: Most cases of PPG can be managed with topical corticosteroids alone.

Some physicians prefer to use topical tacrolimus and some treatment with infliximab. Cyclosporine or prednisolone should be used in the cases where either topical therapy has failed or the wound is progressing.1,5,13,16,17,34–51

Ulc

Non-specific peristomal ulcers (not mechanical induced) can be induced by an infinite number of things. However, few have been described in the literature. One known course or peristomal ulcer is cutaneous manifestations of Crohn’s disease. This includes the distinctive mucocutaneous manifestations as well as the peristomal ulcer and the granulomatous cutaneous inflammation.

Also, reports of Nicorandil-induced peristomal ulcers have been described. Nicorandil is used in antianginal therapy and reports of Nicorandil-induced ulcers in various places have recently been published.52–58

Other peristomal diseases described

These include Degos’ disease, hyperpigmentation (from previous irritant dermatitis), lichen sclerosus, benign and malignant tumours and bullous pemphigoid.59–71

Discussion

Peristomal skin problems are common and of potentially great importance to the patients. Specific interventions are available for most peristomal skin problems; see Table 1 for general guidelines for diagnosis and treatment of peristomal skin problems. The appropriate intervention, however, presupposes a specific diagnosis, which is often not reported in the literature. In many of the articles reviewed, the skin problem is described in unspecific terms e.g. dermal irritation, excoriation and dermatosis.20,23,72–84

The skin reacts in a limited number of ways to a wide range of pathological insults and all the peristomal irritant reactions share common clinical features such as erythema and oedema. Nevertheless, the individual patient’s lesional features are distinctive and it is important to appreciate both the distribution and the morphology of the inflammation, if one is to identify the source of irritation and prevent it.

Although allergy often is cited as the cause of peristomal skin problems and 89% of patients think that their skin disorder is a result of an allergy to their equipment,17 it is important to bear in mind that allergic contact dermatitis is a rare cause of peristomal skin problems with an estimated prevalence of only 0.6%. Only 24 cases have been described in the literature.1,29 In contrast, irritant reactions secondary to faecal or urine leakage causes most peristomal skin problems. Faecal irritant dermatitis, other irritant reaction and allergic contact dermatitis may be impossible to tell apart on clinical examination. It is therefore imperative to diagnose the true allergic reactions because an undetected allergy can give rise to many problems and false allergy diagnosis limits the patient’s choice of equipment. In contrast, Peristomal Pyoderma Gangrenosum (PPG) is a rare skin disease, but it is one of the most published peristomal skin diseases. In this study of the 98 articles chosen for review, 24 articles dealt with PPG.

The pre-existing skin disorders such as psoriasis, eczema and seborrheic dermatitis account for 20% of the peristomal skin problems seen.1 It is therefore obviously important not only to examine the peristomal skin of the patient but also to view the whole patient and to get a thorough general history and physical examination. If focus is only on the peristomal skin, some key clues to the diagnosis may be overlooked to the detriment of the patients.

Questions and multiple choices

1. What are the most common ostomies?
   a. Ileostomy
   b. Colostomy
   c. Urostomy
   d. Nephrostomy
   e. Other

2. Which of these can cause mechanical destruction?
   a. Stripping
   b. Urine
   c. Pressure
   d. a and c
   e. a and b

3. Which peristomal skin problem is the most common?
   a. Mechanical destruction
   b. Infection with Candida albicans
   c. Folliculitis
   d. Chemical injury
   e. Allergic contact dermatitis

4. What is the first step of action in the treatment of peristomal irritant dermatitis?
   a. Do nothing
   b. Change ostomy nurse
   c. Increase changing frequency
   d. Stop smoking
   e. To reduce leakage

5. How common is a peristomal allergic contact dermatitis?
   a. 1%
   b. 20%
6. How many of the ostomates think that their skin disorders are a result of an allergy?
   a. 1%
   b. 20%
   c. 40%
   d. 60%
   e. 90%

7. What is the most common fungal skin infection?
   a. Tinea versicolor
   b. Candida albicans
   c. Malassezia furfur
   d. Trichophyton
   e. Aspergillosis.

8. What are the three major pre-existing skin diseases often seen on the peristomal skin?
   a. IBM, cold, and psoriasis
   b. Psoriasis, eczema, and cold
   c. Psoriasis, eczema, and hypertension
   d. Psoriasis, eczema, and seborrhoeic dermatitis
   e. Seborrhoeic dermatitis, allergy, and IBM

9. How many patients present with a peristomal pyoderma gangrenosum?
   a. 1%
   b. 2%
   c. 5%
   d. 10%
   e. 15%

10. How frequently can a pouching system normally be removed without epidermal injury?
    a. 5 times a day
    b. 3 times a day
    c. Twice a day
    d. Daily
    e. Twice a week

Correct answers
1. a 5. a 9. a
2. d 6. e 10. e
3. d 7. b
4. e 8. d

References


Information on author

Hanne Nybaek, MD; Following general medical training, Dr Nybaek has been conducting clinical research in the field of peristomal skin complications since 2002 with the aim of providing data and analysis which may help optimize the dermatological service to the community of ostomates in Denmark.