Mike D'Orazio, ET, BA, M.Mgt.

Peristomal (Skin) Dermatites

Dedicated to my DVET Colleagues

By Mike D'Orazio, ET

Published in UOA Ostomy Quarterly

Spring & Summer 2003

Mike D'Orazio, ET, BA, M.Mgt.

Abstract

The peristomal skin presents as a chronic management concern. Whether using adhesive based pouches or wafers or pressure based devices, the skin zone against which these agents are in contact is under constant threat from contact or irritant sensitivity. Complicating the picture is the considerable interindividual variation in susceptibility to irritant dermatitis along with the risk factors of age, race, and genetic background.[1]

The peristomal skin plane presents its own unique microclimate, influenced, in part, by the potentially occlusive and irritant properties of the ostomy pouching system. The stomal outputs threatening the skin, the physical stresses of wafer or pouch interfaces along the skin surface, the opportunistic environment for infectious overgrowth, the adverse effects of medications and treatments, such as radiation therapy, as well as the clothing normally worn to accomplish a fashionable appearance can all contribute to peristomal skin dermatites. All these variables interact to threaten a normally benign abdominal skin zone. Adding to the microclimate analogy is the issue of humidification, either excessive or lacking, as an additional skin risk factor – either extreme of skin moisture level induces skin breakdown or discomfort.

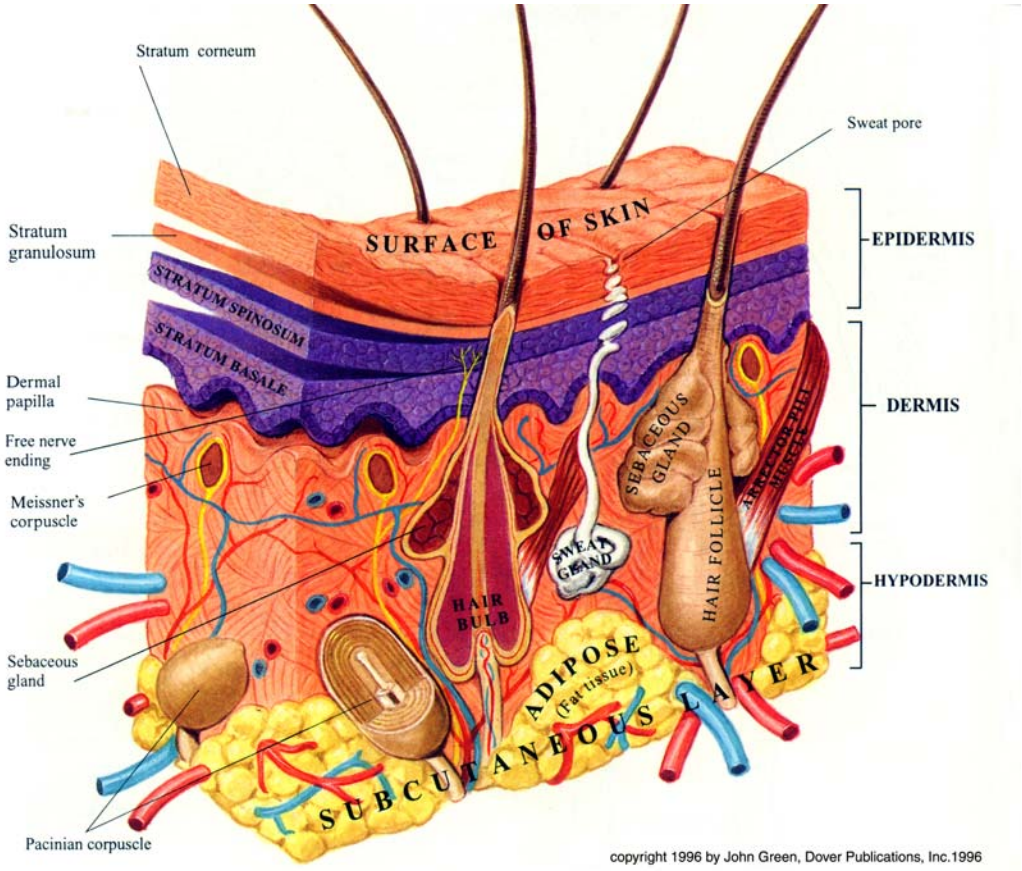
[1] Wilhelm, K. P., Maibach, H. I. 1990. "Factors predisposing to cutaneous irritation." Dermatology Clinics 8 (1): 17-22.

Mike D'Orazio, ET, BA, M.Mgt.

Introduction: ASS (Appliance Skin Stoma) - expanded

As I had written in the Spring 2001 issue of the OQ, you can not apply an appliance or pouching system without the skin upon which it rests. Nor can you have a stoma without the skin surface upon which it is placed. Given these facts, the issue of skin integrity gives rise to the current discussion of peristomal skin dermatites that threaten the well being of ostomates.

Dermatological Terms[i]



1. Skin. Organ system which covers and protects internal body organs. The skin is synonymous with the integumentary or cutaneous system. It is the largest

organ of the human organ systems, and is directly exposed to external stimuli and potential irritants. The skin has five major functions: protection, temperature regulation, sensory perception, excretion, and vitamin production.[ii] For the ostomate the skin accomplishes an additional critical function of anchor for pouching strategies. For our purposes of discussion, the skin has two main layers, epidermis, and dermis and each of these layers has their respective sublayers and critical components.

2. Epidermis. The first line of defense. This outermost or topmost layer, also called the horny layer, is the most crucial for its protective role as well as for its ability, in its unbroken state, to prevent the entrance of many disease-causing microorganisms. It also shields the underlying tissues against excessive water loss and harmful chemicals. Housed within the sublayers of the epidermis are those structures which contribute to skin color and replacement skin cells that continually migrate outward to the top horny layer, comprised of dead but still useful cells, that we see and touch and upon which rests the ostomy pouch system.
3. Dermis. Below the epidermis is this thicker layer which contains the blood vessels, nerve endings, hair shafts, sweat and sebaceous glands, muscle fibers and the assorted fibrous and elastic tissues that give our skin its toughness and elasticity.
4. Acid mantle of the skin. The normal pH environment of healthy skin is more acid than alkaline. Certain factors can alter the pH from more acidic, secondary to increased sweating, to more alkaline, secondary to cleansing and topical agents, injury or effluent contact. Changes in the pH and the organic factors influencing it appear to play a role in the pathogenesis, prevention, and treatment of irritant contact dermatitis.[iii] In general, as the pH rises the threat of adverse skin effects increase. The paradox, of course, is that acid

environments can also leach out chemicals from artifacts in contact with the skin and cause dermatites.

5. Erythema. Sheet-like redness of the skin. Erythema, due to an increased amount of blood in the cutaneous blood vessels, accompanies an inflammatory response that may arise from either an allergic or an irritant reaction, and often accompanies infectious responses.
6. Inflammation. "Inflammation is a defense reaction caused by tissue damage or injury, characterized by redness, heat, swelling, and pain. The primary objective of inflammation is to localize and eradicate the irritant and repair the surrounding tissue. For the survival of the host, inflammation is a necessary and beneficial process. The inflammatory response involves three major stages: first, dilation of capillaries to increase blood flow; second, microvascular structural changes and escape of plasma proteins from the bloodstream; and third, leukocyte transmigration through endothelium and accumulation at the site of injury." [iv]
7. Dermatitis / Eczema. A catch all word for inflammation of the skin. There are numerous types of dermatites with many causes. For our purposes here we will be focusing upon the more common dermatites occurring around the peristomal skin: enzymatic maceration, urine maceration (pseudoverrucous lesions), excoriation or physical trauma, irritant contact dermatitis (ICD), allergic contact dermatitis (ACD), microorganism infections (candida, staphylococcus, pseudomonas, impetigo), etc.
8. ICD versus ACD.[v] "Irritant contact dermatitis is caused by a chemical irritant; allergic contact dermatitis by an antigen (allergen) that elicits a type IV (cell-mediated or delayed) hypersensitivity reaction."[vi] Clinical features of chronic ICD include redness, lichenification, excoriations, scaling, and hyperkeratosis. Lichenification results in thick leathery skin arising from constant scratching and rubbing. Hyperkeratosis is a thickening of the

outermost or horny layer of the skin. Despite their different pathogenesis (development of morbid conditions or of disease), ICD and ACD, especially in their chronic forms, show a remarkable similarity with respect to clinical appearance, histology (tissue structure & function), and immunohistology (the immune response mechanism). Frequently, even their therapy is similar. The mainstay of the symptomatic treatment of chronic contact dermatitis is still topical steroids.

9. Excoriation. Mechanical trauma or pressure injury to skin surface, appearing like an abrasion or scraping. Excoriation often arises from aggressive scratching, but can arise from ostomy equipment trauma.
10. Enzymatic maceration. Synonymous with erythematous-erosive. Used to be mistakenly called excoriation. Arises from the irritant effects of stoma contents, especially fecal ileostomy drainage, bathing the skin and causing inflammation and itching or burning. The enzymes found in the liquid stool literally begin to digest the skin, which is composed of protein! The maceration component refers to the saturated condition of the skin that arises when moisture is trapped for prolonged periods against the skin surface.
11. Pseudoverrucous.[vii] Urine-logged skin lesion. A grayish wart-like skin lesion found around urostomies. Typically arises when faceplate / wafer opening is too large and permits continuous exposure of urine onto peristomal skin surface. Earlier, was mistakenly called acanthosis (thickening of the epidermis) or pseudoepitheliomatous hyperplasia (PEH).
12. Xerosis. Dry skin.
13. Miliaria.[viii] Heat rash or prickly heat. Acute inflammation of the skin associated with excessive sweating (hyperhidrosis) and blocked sweat ducts, which is often mischaracterized as an allergic or irritant reaction. The moisture of sweat, with its pH concentration ranging from 4.2 to 7.5, and the chemicals in the sweat are contributing factors in skin breakdown. Exercise

and warm weather increase the acidity of sweat thus permitting chemicals and dyes found in ostomy products to leach out onto the skin in greater quantity, contributing to irritant dermatitis.

14. Pruritis / itch.[ix] Itching of the skin with or without evidence of a lesion or injury. Can arise from a physical or psychological cause. It is among the most well known and common symptoms of many skin diseases. Some people itch moreso than others even in response to minimal stimulus. This may explain the differences in the presence or lack and degree of itching in some skin disorders. Throughout the skin surface are located numerous discrete itch receptors that are separate from pain receptors. Thus, the skin contains both itch and pain receptors.
15. Macule. A flat colored lesion not raised above the skin surface and less than one centimeter in diameter. A freckle is an example of a macule.
16. Patch. Similar to a macule except it is more than a centimeter in diameter.
17. Papule. A small solid mass raised above skin level and less than a centimeter in diameter. The whitehead of a pimple is an example of a papule.
18. Plaque. A flat topped, raised lesion with or without distinct edges. Psoriasis includes plaque like characteristics.
19. Psoriasis. Can consist of papules and patches. Is a genetic skin disease that can be made worse or flare in the presence of trauma or irritants (Koebner's Phenomenon).[x] [xi] The presence of an ostomy and associated artifacts and treatment routines can cause a flare up of psoriasis around a stoma site.
20. Vesicle. Small blister. A clear fluid-filled skin lesion typically less than a centimeter in diameter. Vesicles appear after one experiences an irritant reaction to plants such as poison ivy, oak or sumac.
21. Bulla. Large blister. Similar to a vesicle but larger than a centimeter in diameter.

22. Wheals / hives / urticaria. Are raised, erythematous (reddened) plaques with associated swelling and itching.
23. Scratch.[xii] The response to an itch. The act of satisfying an itch. Itching triggers scratching which results in temporary relief.
24. Lewis Triple Response or Wheal Effect.[xiii] When the itch/scratch cycle persists, a vicious cycle of skin trauma ensues that causes further chemical irritation from injured blood vessels and histamine leakage into surrounding tissues. The subsequent inflammation further heightens the itch distress, inviting more aggressive scratching. What once may have been a small discrete itchy zone now enlarges to a widely disseminated region of "angry" skin. Often, what once started out as a local contact irritant effect will now appear as an allergic irritant effect, confusing both patient and health care provider.

About Fungal Infections (since much self diagnosis is made by patients and care givers)

Monilia, candida, and candidiasis are terms commonly used to identify yeast infections. There are many genera of fungi. Perhaps the most common species to affect human skin are the candida species, with Candida albicans or C albicans the most familiar. Under normal conditions, the yeast fungi live in peaceful harmony with the many other microorganisms that inhabit the human body. However, whenever the balance of "good and bad" microorganisms becomes distorted or tilted, then one will become opportunistic and proliferate at the expense of the other. Candidal infections are an example of this opportunistic imbalance.
So often, the diagnosis of yeast infection is made when one presents with an itchy, reddened and scaly lesion. Yeast lesions may present with erythema, cracking, and maceration with soreness and itching and typically have an irregular margin

with surrounding satellite papules and pustules. One of the problems with accurately diagnosing a peristomal skin condition is that there are times when confounding circumstances make it quite difficult to accurately diagnosis. Prickly heat rash, early stages of psoriasis or an episode of irritant contact dermatitis can mimic a topical yeast infection in appearance and symptoms. Often, one can make a summary diagnosis and then treat with topical antifungal powders, with relief and improvement. In so doing, one may become lulled into believing that repeat episodes of skin irritations are all yeast related. This practice then leads not only to overuse of antifungal medicines, and its attendant problems with microorganism resistance to the self-prescribed therapy, but also to the real threat of misdiagnosis of a completely different disorder. The definitive proof of a yeast infection is determined by appropriate lab studies such as microscopic examination of skin scrapings prepared with calcofluor white stain or use of a KOH preparation, and in concert with a careful history and physical.[xiv]
While it is true that humans do have yeast fungi throughout their intestinal tract, and not uncommonly within the vagina, the skin does not normally harbor these microorganisms.[xv] However, yeast colonies may colonize peristomal zones and fingers or body folds. Additionally, local irritation of the skin by friction, ammonia from bacterial breakdown of urea, detergents, disinfectants, and maceration predispose to yeast infections. However, it is important to realize that the organism is usually transported to these zones by either contaminated fluids or the fingers. It is not sufficient to say that wet zones, per se, cause yeast infections. Poor hygiene or other well-defined opportunistic circumstances are contributory to a yeast or fugal infection.

Case histories as teaching aids

Because skin conditions comprise visible phenomena, it may be best to discuss the various dermatites that can and do arise around ostomy sites by using case history files and associated photographs of actual ostomates. Some of the graphical slides were provided by Hollister and ConvaTec, however, all the patient slides were from the author's limited collection.

Conventional wisdom held that colostomies suffered more from mechanical trauma and ileostomies suffered more from chemical injuries and in between these extremes were other causative factors for skin irritation indigenous to each ostomy type. In general, this holds true, however, this should not be relied upon as gospel since much overlap can and does occur in real life situations.

Ileostomy	**Colostomy**
EFFLUENT	SKIN STRIPPING
Allergy / Irritant	Allergy / Irritant
Skin stripping	effluent

Figure 1. The onion is a good representation of the layered structure of the skin. The outermost layer of the skin, the stratum corneum or horny layer is the first line of defense against injury. If this layer becomes damaged problems ensue. The name of the game is to keep the skin healthy and supple and do as little as

possible to the skin to achieve ostomy success. In this setting less can truly become more. Tenderness is the approach we should employ when applying and removing ostomy products to and from the skin.

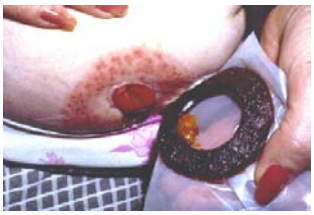
Figure 2. Healthy stoma and surrounding skin. This picture says it all. Now all we have to do is maintain this appearance. Easier said than done for a fair number of ostomates. Just as physicians adhere to an oath to do no harm, the ostomate should adhere to an oath to **keep skin supple and be gentle with ostomy skin care routines**.

Figure 3. Tape stripping test. Each time an adherent item is removed from the skin surface the topmost layer of protective skin cells is removed. Do this repeatedly or too aggressively and the protective mantle of the horny layer of skin is lost and injury is threatened. The depth of this topmost layer of skin cells ranges from very thin (scalp) to thick (palm of hand and sole of foot). The abdominal skin, in spite of the generous fat layers that can arise from within the subcutaneous layer and the viscera, is reasonably thin and readily injured if too much stripping occurs. There is a beautiful balance regarding the horny layer of dead skin cells and its normal rate of turnover. Within a 30-day period, thousands of dead cells slough off the skin surface each day, only to be replaced by new ones from the deeper layers of the epidermis.[xvi] Preserve this normal cycle and all is well. Pervert it and all hell breaks loose.

Figures 4 – 6. Skin stripping with ostomy pouches. There are strategies to minimize adhesive stripping. The most useful one is to gently push against the skin as you ease the wafer off or, better yet, push the skin away from the wafer or pouch. Clearly, you do **not** want to pull the wafer or pouch from the skin as the photos show. Alternatively, you could use a solvent to help loosen the adhesive bond, however, you should avoid excess use of solvents since they will defat the skin, contributing to dryness and increase risks for chemical irritation. Traumatic removal and subsequent skin trauma often sets the stage for skin irritation, redness and inflammation and sets the skin up for injury from other causes or agents that normally would not occur if the skin were not injured because of this trauma. Remember, keep skin supple, and be gentle.

Figure 7. Tape induced skin pigment loss. The skin pigment (melanin) responsible for our color is located in the epidermal layer. This photo clearly shows the effect of skin stripping. The ostomate has lost his normal coloring because of improper use and removal of tape around his ostomy wafer. If anything, this evidence should serve as a signal that a kinder approach to ostomy care is warranted before worsening problems occur. Using less aggressive adhesive products, gently removing the tape or avoiding additional tape frame altogether would be the initial recommendations for this ostomate.


Figures 8 & 9. Traumatic folliculitis. To some folks this may appear to be a fungal infection, however such is not the case. It is representative of a problem encountered by hairy bellies and adhesive trauma when removing the pouch or wafer. The patient's used pouch showed numerous hairs ripped out and stuck to the adhesive backing. Treating the skin with kindness is not a sign of weakness or lacking bravado. Ripping the pouch off in one fell swoop is neanderthal and foolish and only invites pain, embarrassment from leaks, risk of secondary skin problems and needless visits to the physician or ET. Keeping the peristomal hairs short through careful shaving or trimming, and gently easing the wafer off the skin minimizes the risk for hair follicle trauma. By causing hair follicles to become inflamed, the potential for secondary skin trauma or infections increases while the skin becomes weepy and interferes with adequate adhesion of the replacement wafer or pouch.



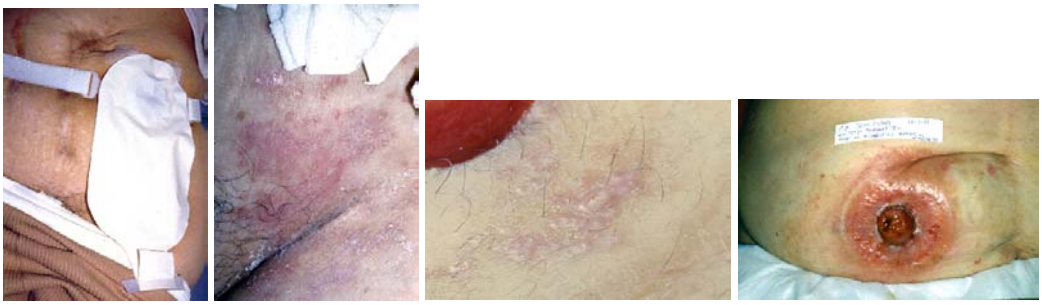

Figures 10 & 11. Karaya ring dermatitis. These photos represent the classic case of an irritant contact dermatitis (ICD). "In irritant contact dermatitis the chemical, the concentration, and the contact time are crucial. Every person, however, reacts differently to irritants."[xvii] The well-defined area of inflammation mirrors the contact zone that the karaya ring occupies when placed against the skin.[xviii xix xx] Along with the reddened skin is the itching or pruritis that typically accompanies

this type of dermatitis. The ultimate solution here is to avoid the offending material, in this case karaya, and use a non-karaya pouching alternative. Fortunately, there are adequate substitutes available. To help reduce the inflammation and itching, topical steroid spray applications are most effective and will not interfere with pouch or wafer adherence.

Figures 12 – 15. Irritant or allergic dermatitis from Stomahesive® and its offspring DuoDerm E® are not common, yet it has been reported in the professional medical literature.[xxi] [xxii] Note, however, that not all Stomahesive-type (hydrocolloid) barriers are the same, even if they do look remarkably similar. In the case of Stomahesive® paste, one of the suspected ingredients has been identified as Gantrez.[xxiii] [xxiv] In addition, for the solid barrier the suspect agent was a derivative of adhesive rosin (colophony).

In an attempt to accurately assess the risk factors presenting whenever one suspects an allergic or irritant reaction to a product one must rule out other culprits, especially those techniques or agents used to prepare the ostomy site. It is tempting to jump to conclusions, especially when the visual evidence seems so clear cut, but a careful history of pouching behaviors is always in order. For example, adhesive remover wipes[xxv] have been implicated in topical irritations, as have other cleansing and moisturizing agents. "Soaps, detergents and solvents are examples of mild irritants which produce dryness, fissuring and dermatitis in most individuals sufficiently exposed. After an erythematous eruption, the pH of the skin tends to shift to the alkaline side with resulting impairment of alkali neutralization, which in turn, enhances the damaging effect of acanthosis (skin thickening) which increases skin susceptibility to primary irritants."[xxvi]

As in the case of karaya irritations, the most useful approach to treatment is to avoid repeat contact or use of Stomahesive and replace with other barriers and topical steroid spray to help resolve the acute inflammation.



Figures 16 – 19. The yeast series, but with a wrinkle in photo 19. Photos 16 & 17-show pouch induced yeast infection of the groin area. Sweat buildup and poor pouch hygiene have contributed to an opportunistic environment for fungal overgrowth. A straightforward treatment recommendation consists of using a pouch cover to keep the plastic pouch off the skin, thereby eliminating the sweat problem. Improving overall pouch emptying and closure hygiene, to avoid undue contamination of skin with pouch contents, will further aid recovery. Use of a short-term course of topical anti-fungal nystatin powder or absorbable azole or imidazole cream until the lesion heals fully and drying the skin well after showering or bathing are the final recommendations here. Tinactin® (Tolnaftate) is **not** effective for candidal infections!

Photo 18 reveals a yeast infection close to the stoma edge. Often times, and in this case, stool leakage onto the skin will inoculate the skin with the offending organism. Add to this the occlusive nature of the wafer against the skin and the yeast organisms now have a happy environment in which to grow and romp

about. Of course, one needs to rule out other systemic or internal factors that may predispose one to a yeast overgrowth, such as antibiotics, chemotherapy or an immunocompromised condition, etc. Straightforward treatment recommendations, after culturing the lesion, are to treat with topical antifungal powder, improve skin–wafer interface to avoid repeat soiling, readjust wear time to permit more frequent monitoring of skin while treating and gradually reestablish "normal" wear time that avoids reinfection.

Photo 19 is of mixed dermatites in an elderly gentleman whose ileostomy is of longstanding. Around the bellybutton is a yeast infection, confirmed by culture. What prompted this occurrence was improper drying off around the creased periumbilical area after daily swimming sessions and the likely contamination of the chronically wet zone by either soiled fingers or occasional leaks from the adjacent ostomy site.

The immediate peristomal skin, which is quite red, weepy and well delineated appears to be of a local irritant effect from washer or ring contact. One can not also rule out pressure injury from the pouch system because of his reduced skin turgor or integrity secondary to age and ostomy history. His ostomy history dates back to the 1950s. Topical antifungal powder for the yeast infection and steroid spray with replacement of the washer or ring with a different composition for the remainder of the skin irritation are recommended. A review of his self care ostomy routines are also in order to make sure he is treating his skin with an extra dose of kindness and that he remains fully competent with manual dexterity, mental acuity and eyesight to continue with independent care.

Figure 20. Deep peristomal ulcerations of unknown origin. This retired pharmacist had been treating his ileostomy site with his own concoctions for sometime before he sought professional intervention. It is surprising how much some patients are willing to tolerate before they throw in the towel and seek help. Careful history and exam revealed a cycle of recurrence with periods of slight improvement but never completely healed states. The initial suspicion was pyoderma gangrenosum since he had a history of ulcerative colitis and had a subtotal colectomy at the time of his ileostomy many years ago. This undiagnosed peristomal lesion was referred to a dermatologist for definitive diagnosis and treatment. Unfortunately, he was lost to follow up by distance and eventual death, and his dermatitis and its resolution remained unknown.

Figure 21. Blenderm® tape reaction and Crohn's disease at skin level. This elderly gentleman with a loop colostomy presents with a classic reaction to a plastic-backed or occlusive adhesive tape frame attached to his ostomy pouch. This particular tape is not so common today but it was on the market for many years throughout the 60s through the 80s. The easiest solution for the plastic-backed tape irritation of the skin was to treat topically with steroid spray and use the same manufacturer's paper-backed alternative pouch system as a substitute. The small fistula at the top edge of the stoma fortunately did not actively drain

and only needed the tape frame to be cut away and an absorbent dressing placed over it until it finally closed.

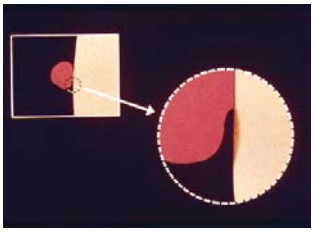
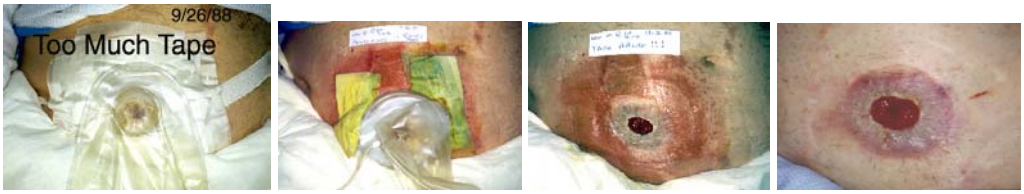


Figure 22 –24. These photos represent the maceration problem when a wet surface is allowed to contact the skin; in this case, a long stoma lies partly against the skin close to the stoma edge. The mucous secretions of a stoma can be quite irritating to the skin, even with out the stool component, and cause enzymatic maceration. Bulbous, mushroom shaped or long stomas are more difficult to position into the wafer opening. Often, some of the slippery mucous film from the surface will slip behind the wafer as it is being guided over the stoma and become trapped between the skin and wafer. Mucous drainage may also become trapped if the skin planes at the stoma junction are not even or recessed. In this case using protective caulks or powders may be sufficient to protect the skin from any gaposis that allows mucus to pool between skin and wafer. Differing tricks of the trade can be employed to prevent soiling of the wafer surface as it is being slipped over the stoma.


Figures 25 & 26. Rubber allergy affecting stoma. These two photos are of historical importance if for no other reason than they clearly reveal the effect of rubber upon the stoma. While rubber pouches are no longer in vogue, some folks still use them. In this case, the rubber pouch was of the Davol vintage, circa

1960s. Today's plastic pouches can cause similar irritant responses to stomas and adjacent skin planes as reported in the medical literature.[xxvii] Remedies in these situations require non-irritating substitutes.



Figures 27 – 30. Tape occlusion abuse, pseudomonas infection, and pseudoverrucous lesion combined. This series of photos reveals several shortcomings for this gentleman with an ileal conduit. His initial comments and reasons for seeing the ET were that his skin was red and itchy. We note too much tape framing his reusable faceplate. Unwrapping the ostomy site produced a stinky aroma and green color hue that the experienced investigator could identify as a serious skin infection called pseudomonas. Removing the tape and soiled gauze dressings and cleansing the skin now reveals the consequences of the tape insult – macerated, infected, pruritic (itchy) and reddened skin. Coincidentally, the immediate peristomal skin shows evidence of chronic warty-looking urine-logged skin revealing a pseudoverrucous lesion. Along with tape abuse, the stoma faceplate opening was too large, thereby exposing skin to urine insult. The stoma, itself, is quite healthy.

Reeducating the ostomate about simple and appropriate pouching strategies was clearly in order. His anxiety about additional security against leaks with the extra tape frame was counterproductive. He was fitted with a simplified disposable pouching routine – in this instance a SurFit® Durahesive® with convexity system - and was seen on follow up several weeks later as noted in photo # 30. The tape irritation has resolved and the pseudoverrucous lesion around the stoma shows slight improvement. A classic case of more is less (effective) and the solution is

less is more (effective)! There is ample evidence about the effect of prolonged occlusion on the microbial flora, pH, and moisture loss on the skin.[xxviii]

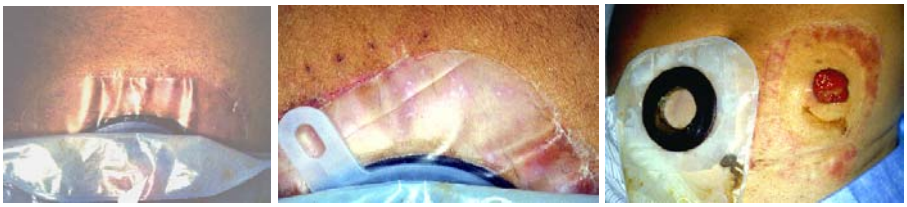
Figures 31 & 32. Psoriasis involving the peristomal planes. This elderly lady had an emergency temporary colostomy for diverticulitis. She also had a seven-year history of psoriasis prior to surgery that also involved her hands and groin zones, and unfortunately, developed a psoriatic flare (Koebner Phenomenon) around her stoma site. Management of her psoriasis required a simple, non-traumatic pouching strategy that would allow easy daily pouch removal to permit skin treatments. This was accomplished using karaya seal pouches and belt without any additional tapeframe.

Figures 33 & 34. Tape frame induced contact dermatitis. Young man with a staging temporary loop ileostomy for eventual J-pouch presents with a classic case of tape-induced irritant contact dermatitis; severe itching complaint, and aggressive scratching response; pouch-induced maceration or sweating and secondary yeast infection. Finally, throw in the use of a Skin Prep® film wipe, as recommended by his well-intentioned health care provider and you have a vicious cycle of unrelenting skin trauma.

Let me sketch this out: tape > irritant dermatitis > severe itching > aggressive scratching + pouch > maceration > contributes to yeast overgrowth + Skin Prep®

wipes > increased chemical sensitization > vicious cycle of trauma and insult (Lewis Wheal effect)!!!

Effective intervention for this poor chap included the following: stop use of tape framed wafer and Skin Prep® wipes; short-term use of topical steroid spray to treat acute inflammation of skin and reduce itch stress; short-term use of topical nystatin anti-fungal powder; pouch cover or cloth baby bib between skin and pouch to minimize occlusive[xxix] effects of maceration or sweating. No wonder this chap was anxious to have the stoma reversed ASAP!



Figures 35 – 37. Tape occlusion and mechanical trauma. Occlusion, as seen in previous photos, increases the penetration of chemicals and antigens (irritants), exacerbates sweat phenomena, and tends to exacerbate irritant and allergic contact dermatitis.[xxx] Tape trauma caused by distortion of the skin surface under the tape also contributes to irritant dermatitis[xxxi] and leaves a well-delineated imprint on the skin localized to the site of contact, unlike allergic reactions which tend to spread beyond the areas of actual contact.

Not only is this ostomate suffering from tape occlusion caused by the relatively stiff plastic-backed tape but as photos #35 & #36 show his skin is wrinkled up under the tape. This sets up a mechanical shear force that literally disrupts the cells of the skin from their anchor and induces a traumatic result with inflammation and discomfort. Simple solution offered here was to replace the pouch with the stiff plastic-backed tape with one that had a more conformable porous, paper-backed one. The other important recommendation was to instruct the patient to not allow his skin to be wrinkled or unduly stretched when he applied his pouch.

Figures 38 & 39. Tape dermatitis around a hernia. As the skin attempts to stretch secondary to the hernia, the tape frame of the pouch impedes the skin's ability to comply accordingly. This sets up a significant tension along the skin-tape interface and causes a severe mechanical irritation, especially at the tape edges. A straightforward solution to this special situation is to avoid any tape around a herniated ostomy. Alternative solutions, if additional tape is desired or warranted, are to use very flexible or conformable pouches and tapes or to cut relaxation slits into the tape frame so that the tape is permitted to wrinkle without undue tension as the skin distends or distorts. Of course, attempting to stabilize the herniated site with a hernia belt should be considered, especially if surgical repair is not an option.

Concluding Remarks

There is great variability among persons and their reactions to topical agents. Having an ostomy that is reliant upon the skin for its management does present a unique set of challenges. While some ostomates may succeed with ongoing use of adhesives and solvents as part of their ostomy ritual, others may experience a profound adverse reaction to only a single exposure. Many ostomates tolerate the tape frames around ostomy wafers while others struggle with the tension effects and dyes in some brands. Some brands of pouching systems are likely to irritate some ostomates while others can tolerate their use with relative impunity. Some folks sweat more than others do. Some can tolerate the additional burden of a plastic pouch against their skin quite well while others can not. There are

ostomates who never experience a yeast infection while others will flare after minimal provocation or a single predisposing event. Many ostomates scrub the hell out of their skin with any soap or detergent at hand as part of their preparation ritual while others can tolerate only the mildest formulations. Some ostomates can wear a wafer or pouch for very long periods while others are lucky to get a day or two before they experience skin discomfort. Some folks are itchers and others are practically immune to any itch provocation. Some folks are susceptible to dry skin while others are susceptible to hyperhidrosis (increased sweating). Some folks subscribe to the belief that they have or should strive for tough skin while others pamper their skin at every turn.

In spite of all these apparent differences and contradictions there are some very basic facts that all should note. The skin is an enormously complex organ subject to many internal and external threats throughout its lifespan. It does not remain in a static state. As Fisher so elegantly stated in 1967: "Excessive humidity, friction, pressure, hyperhidrosis, and maceration may allow many non-irritating substances to produce inflammation. Repeat exposures to irritants may be cumulative resulting in a state of skin fatigue characterized by hyperirritability or, on the other hand, to thickening and a state of hardening. The greatest number of skin reactions which are observed in relation to the wearing of adhesive tape [or adhesive products] are of a mechanical nature."[xxxii]

The accumulating medical evidence informs us that the skin should not be taken for granted or abused out of ignorance, arrogance, or neglect.

Recommended Readings

The following book is highly recommended reading, especially for ET nurses, in spite of its 1983 publication date. It is chock full of excellent photographs and illustrations that reinforce the dictum that a picture is truly worth a thousand words.

Franchini, A., B. Cola and P. J. D'E. Stevens. 1983. Atlas of Stomal Pathology. New York: Raven Press

Another and newer book on peristomal skin problems is the following:

Lyon, Calum C and Smith, Amanda J. 2001. Abdominal Stomas and their Skin Disorders. London: Martin Dunitz

References

[i] Steigleder, G. K., and H.I. Maibach. 1984. Pocket Atlas of Dermatology. New York: George Thieme Verlag.

[ii] The Skin: Anatomy and Physiology. http://www.caretechlabs.com/skin1.htm

[iii] Rippke, F., Schreiner, V., Schwanitz, H. J. 2002. "The acidic milieu of the horny layer: new findings on the physiology and pathophysiology of skin pH." American Journal of Clinical Dermatology 3 (4): 261-72.

[iv] Inflammation: The Leukocyte Adhesion Cascade. http://hsc.virginia.edu/medicine/basic-sci/biomed/ley/ last updated June 22, 2000.

[v] Gebhardt, M., P. Elsner, and J. G. Marks, Jr. 2000. Handbook of Contact Dermatitis. London: Martin Dunitz.

[vi] Fitzpatrick, T. B., R. A. Johnson, K. Wolff, and D. Suurmond. 2001. Color Atlas and Synopsis of Clinical Dermatology. New York: McGraw-Hill.

[vii] Borglund, E., Nordstrom, G., Nyman, C. R.. 1988. "Classification of peristomal skin changes in patients with urostomy." Journal American Academy of Dermatology 19 (4): 623-8.

[viii] Fisher, A. A. 1968. Contact Dermatitis. Philadelphia: Lea & Febiger.

[ix] Panconesi, E., ed. 1984. Clinics in Dermatology: Stress and Skin Diseases. Philadelphia: Lippincott.

[x] Broadwell, D. C. and B. S. Jackson, ed. 1982. Principles of Ostomy Care. St. Louis: C. V. Mosby.

[xi] Steigleder, G. K., and H.I. Maibach (ibid.)

[xii] IASP Newsletter Technical Corner: Neural Mechanisms of Itch Sensation. http://www.halcyon.com/iasp/TC96SeptOct.html

[xiii] Changes in Vessel Calibre. http://medweb.bham.ac.uk/http/mod/3/1/a/calibre.html

[xiv] Fitzpatrick, T. B., R. A. Johnson, K. Wolff, and D. Suurmond. (ibid.)

[xv] Candidiasis, Cutaneous. http://www.emedicine.com/DERM/topic67.htm. Last Updated: January 18, 2002

[xvi] Solomon, E. P., Schmidt, R. R., and Adragna, P. J. 1990. Human Anatomy & Physiology, Second Edition. Philadelphia: Saunders College Publishing.

[xvii] Steigleder, G. K., and H.I. Maibach (ibid.)

[xviii] Burt-McAliley, D., Eberhardt, D, van Rijswijk, L. 1994. "Clinical study: peristomal skin irritation in colostomy patients." Ostomy Wound Management 40 (6): 28-30, 32-4, and 36-7.

[xix] Ronnen, M., Suster, S., Kahana, M., Schewach-Millet, M. 1986. "Contact dermatitis due to karaya gum and induced by the application of electrodes." International Journal of Dermatology 25 (3): 189-90.

[xx] Camarasa, J., M., Alomar, A. 1980. "Contact dermatitis from a karaya seal ring." Contact Dermatitis 6 (2): 139-40.

[xxi] Sasseville, D., Tennstedt, D., Lachapelle, J. M. 1997. "Allergic contact dermatitis from hydrocolloid dressings." American Journal of Contact Dermatitis 8 (4): 236-8.

[xxii] Schliz, M., Rauterberg, A., Weiss, J. 1996. "Allergic contact dermatitis from hydrocolloid dressings." Contact Dermatitis 34 (2): 146-7.

[xxiii] Heskel, N. S. 1987. "Allergic contact dermatitis from Stomahesive paste." Contact Dermatitis 16 (3): 119-21.

[xxiv] Scalf, L. A., Fowler, J.F., Jr. 2000. "Peristomal allergic contact dermatitis due to Gantrez in Stomahesive paste." Journal American Academy of Dermatology 42 (2 Pt 2): 355-6.

[xxv] Lazarov, A., Trattner, A. 1998. "Allergic contact dermatitis from the adhesive remover wipe of stoma bags." Contact Dermatitis 39 (1): 48-9.

[xxvi] Fisher, A. A. 1968 (ibid.)

[xxvii] van Ketel, W. G., van de Burg, C. K., de Haan, P. 1983. "Sensitization to epoxy resin from an ileostomy bag." Contact Dermatitis 9 (6): 516

Beck, M. H., Burrows, D., Fregert, S., Mendelsohn, S. 1985. "Allergic contact dermatitis to epoxy resin in ostomy bag." British Journal of Surgery 72 (3): 202-3.

Van Hecke, E., Vossaert, K. 1988. "Allergic contact dermatitis from an ostomy bag." Contact Dermatitis 18 (2): 121-2.

de Pablo, P., Ortiz, J., Borrego, L., Romero, G., Iglesias, L. 1992. "Allergic contact dermatitis from diaminodiphenylmethane in an ostomy bag." Contact Dermatitis 27 (4): 260-1.

Parslew, R., Evans, S., King, C. M. 1996. "Allergic contact dermatitis from polyisobutylene in stoma bags." Contact Dermatitis 35 (3): 178-9.

[xxviii] Aly, R., Shirley, C., Cunico, B., Maibach, H. I. 1978. "Effect of prolonged occlusion on the microbial flora, pH, carbon dioxide and transepidermal water loss on human skin." Journal of Investigative Dermatology 71 (6): 378-81.

[xxix] Matsumura H, Oka K, Umekage K, Akita H, Kawai J, Kitazawa Y, Suda S, Tsubota K, Ninomiya Y, Hirai H, et al. 1995. "Effect of occlusion on human skin." Contact Dermatitis 33 (4): 231-5.

[xxx] Zhai H, Maibach H I. 2001. "Skin occlusion and irritant and allergic contact dermatitis." Contact Dermatitis 44 (4): 201-6.

[xxxi] Tokumura F, Ohyama K, Fujisawa H, Matsuda T, Kitazaki Y. 1997. "Conformability and irritancy of adhesive tapes on the ski." Contact dermatitis 37 (4): 193-8.

[xxxii] Fisher, A. A. 1968 (ibid.)


MLD, ET