Early Peristomal Skin Complications Reported by WOC Nurses

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PURPOSE: The range of peristomal skin complications reported in the literature varies from 10% to 70%. Inconsistent terminology as well as a lack of a standardized tracking tool may account for this variability. The purpose of this study was to describe peristomal skin complications seen by WOC nurses over a 1-year period using a standardized data collection tool and using the peristomal terminology developed by the WOCN Society.

METHODS: A prospective research design was used to describe peristomal skin complications of ostomy patients seen within the first 2 months of ostomy surgery by WOC Central Virginia Affiliate nurses. The WOC nurses completed a peristomal skin complication form on each ostomy patient that was seen within 2 months of the original ostomy surgery regardless of whether or not he or she had a peristomal complication. Descriptive statistics were used to summarize data.

SUBJECTS AND SETTING: Twelve WOC nurses saw a total of 89 patients over a 12-month period. Subjects had a median age of 61 years (range, 1-91 years). The sample included 46 females and 43 males. All patients were seen in the central Virginia area. Thirty-two patients were seen in hospital, 31 were seen in a home health setting, and 26 were seen in outpatient clinic.

RESULTS: Forty-two patients (47%) had peristomal complications. The types of ostomies seen were 37 colostomies, 33 ileostomies, and 15 urinary conduits. Thirty-one patients had chemical damage to the peristomal skin (irritant dermatitis), 5 had mechanical injury, and 4 had Candida infections, 1 had an allergic reaction, and another had pyoderma gangrenosum.

CONCLUSIONS: Research studies that describe peristomal skin complications over time and over multiple settings are limited. A central data repository using a standardized tool may be one way to monitor them and then begin to look at standardized evidence-based peristomal skin care.

Introduction

The range of peristomal complications reported in literature varies between 10% and 70%.
A number of factors may contribute to this variability. For example, many WOC nurses encounter comparatively small numbers of ostomy patients, and standardized reporting has been lacking. Therefore, a description of the types and numbers of peristomal complications in a region with a mixture of urban and rural communities such as central Virginia is particularly relevant. The purpose of this study was to describe peristomal skin complications seen by WOC nurses over a 1-year period using the standardized terminology for peristomal skin complications developed by researchers within the WOCN Society and a standardized data collection tool.

Literature Review

Clinical experience overwhelmingly suggests that a large percentage of persons who have ostomies will experience some form of peristomal complication. Nevertheless, the prevalence of peristomal complication is difficult to measure. No database is available that tracks data that affect patient outcomes, and standardized definitions for stomal or peristomal complications were only recently established. Specifically, Colwell and Beitz surveyed WOC nurses to establish content validation data for stomal and peristomal complication definitions, which were rated as generally valid.

Salvadalena conducted a systematic review to assess the incidence of stomal and peristomal complications and how these complications were defined. Twenty-one studies published between January 1990 and August 2007 were reviewed, but only 6 provided definitions for peristomal complications. The majority included subjects with...
colostomies and ileostomies. The most common complications were retraction, hernia, prolapse, necrosis, and peristomal skin complications. Five studies included only peristomal complications. Only 3 studies included information about the validity and reliability of the instrument used to measure peristomal skin problems.²

Tappe and colleagues³ reported on the development and use of an ostomy assessment tool by ET nurses in Europe and Asia.³ The form was used on 252 patients over 13 months. They found that most peristomal skin complications occurred within 6 weeks following surgery. Descriptors used for assessing peristomal skin included macerated, ulcerated, erythema, eroded, and irritated.

Persson and coworkers⁴ described ostomy-related complications including peristomal skin complications in 180 patients with colostomy and ileostomy over a 2-year time period. They classified peristomal skin complications as mild erythema, severe erythema, mild pseudoverrucose, and severe pseudoverrucose. Most complications occurred 2 weeks after discharge from hospital, and the most common skin complication was mild erythema. Fifty-three percent of patients with colostomies, 79% with loop ileostomies, and 70% with ileostomies experienced complications.

Bass and coinvestigators⁵ retrospectively reviewed 593 patients who underwent elective stoma construction. They identified patients who received preoperative stoma marking and education, versus a group who did not receive these services. Complications were categorized as necrosis, stenosis, retraction, prolapse, parastomal infection or hernia, skin problems, bleeding, or fistulization. Ninety-five complications (32.5%) occurred among the 292 patients who received preoperative stoma site marking and education. In contrast, 131 complications (43.5%) were reported among the 301 patients who did not receive preoperative WOC nurse services. Eighty-four patients (77%) without preoperative education and stoma site marking experienced peristomal skin complications within the first 30 days of surgery as compared to 40 (45%) of those who received these services. The authors did not elaborate on the types of skin problems, but they largely attributed them to improperly located stomas. Postoperative evaluation by the researchers found that 13 out of 292 stomas (4.5%) were improperly located in the group who received preoperative stoma site marking and education as compared to 31 out of 310 (10%) that were deemed inappropriately located in the group who did not receive preoperative education and marking.

Pearl and associates⁶ retrospectively reviewed 197 patients with intestinal stomas. They reported a 42% incidence of early peristomal skin complications occurring during initial hospitalization. They concluded that emergent stoma formation had the highest complication rate including peristomal skin complications; they also hypothesized that suboptimal stomal placement probably accounted for a significant number of these complications. They did not elaborate on the types of skin problems. Of the types of stomas, ileostomy had the highest morbidity.

Cheung⁷ reported a 66.86% incidence of complications in a series of 316 patients with 322 stomas. He found that 29% of 156 patients with colostomies and 20% of 123 patients with ileal conduits experienced excoriation of the peristomal skin. He also reported that 70% of 10 patients with ileostomies had peristomal skin excoriation. However, he did not describe the type of peristomal skin complication.

Park and associates⁸ completed a retrospective chart review of 1616 patients with intestinal stomas evaluated between 1976 and 1995. Five hundred fifty-three patients (34%) experienced complications. The most common early complication (occurring within 30 days of stoma surgery) was skin irritation, occurring in 12%. Peristomal skin complications were also the most common late complication; they were seen in 6% of patients. These researchers did not describe the characteristics of peristomal skin irritation observed in their sample.

Omura and Anazawa⁹ evaluated 344 photographs in 113 patients who used skin barriers and found that only 7.4% of the photographs reviewed were free from any skin changes. They reported an 86% incidence of inflammatory skin changes at 9 months. Sawa and colleagues¹⁰ retrospectively reviewed 192 patients who underwent ostomy surgery because of colorectal cancer in order to evaluate preoperative stoma marking, type of stoma, and complications occurring within the first postoperative month. Preoperative marking was performed in 75% of emergent operations and 65% of elective procedures. They found that 30% of the patients experienced stomal complications; stomal necrosis accounted for 34% of the total complications. Using multivariate analysis, age and preoperative marking by the WOC nurse had a significant effect on the incidence of stoma complications.¹⁰

Burt-McAliley and van Rijswijk¹¹ reported a crossover study that reviewed the effects of different skin barriers and adhesives on the incidence of peristomal skin integrity. Patients were allocated to either a Karaya or pectin-based barrier pouching system for 10 pouch changes and then switched at mid-study to wear the other barrier system for 10 pouch changes. The investigators developed a 5-point rating scale with zero being no redness and 4 being definite redness with open areas. The study included 108 patients from 14 outpatient clinics, 7 in Germany, and 7 in the United States. At baseline, 8% of the patients had erythema. The mean age was 63 years and subject ages were evenly distributed between women and men. Ninety-three percent had sigmoid colostomies and 62% irrigated their colostomies. No significant differences in peristomal skin complications were found when patients who performed irrigation were compared with patients who did not irrigate. None of the stoma-related variables (ie, shape, size, or length) were found to influence skin irritation. At the end
of the study, 26% of patients had signs of skin irritation; patients were more likely to develop skin irritation following the use of the Karaya barrier as compared to the pectin barrier.11

Bosio and coinvestigators12 conducted a prospective, observational study between December 2003 and February 2006 in 8 ostomy centers in Italy.12 A total of 656 ostomy patients were followed for 24 weeks; 70% had colostomies and 30% had ileostomies. Peristomal skin irritation was classified based on clinical presentation and location. Early complications (defined by the researchers as occurring with first year after surgery) were seen in slightly more than half of participants (51%, 194 out of 380 subjects). Late complications occurred in 145 out of 276 patients (52%). About a third of the patients in both groups were receiving adjuvant chemotherapy, which may have contributed to peristomal skin problems.12

Herlufsen and associates13 surveyed 202 individuals with permanent stomas living in a Danish community. One hundred (49%) of the participants had a colostomy, 82 (41%) had an ileostomy, and 19 (9%) had a urostomy. The mean time since ostomy surgery was 8 years; 61% used a 2-piece pouching system and 39% used a 1-piece pouching system. Forty-five percent were found to have peristomal skin problem. These problems were classified as mild in 57%, moderate in 33%, and severe in 10% of participants. The most common causes of the skin problem were described as feces-induced skin erosion (33%), maceration (20%), erythema (16%), and contact dermatitis (8.5%). The authors felt that these could all be related to contact with stoma effluent. The frequency of skin problems was highest in those with an ileostomy (57%) or urostomy (48%) and lowest in those with a colostomy (35%). Peristomal skin disorders persisted for more than 3 months in 76% of the patients. One reason for that problem may have been because more than 80% of those with a peristomal skin problem did not seek professional health care. The delay in seeking health care may be partially explained from the fact that only 38% of individuals with a diagnosed peristomal skin complications recognized that they had a problem.13

None of these studies described the types of peristomal skin complications using the classification system described by the WOCN Society.14 In addition, it is unclear if WOC nurses followed patients in many of the studies.

Methods

We used a prospective observational design to describe peristomal skin complications of ostomy patients seen within the first 2 months of ostomy surgery by WOC nurses practicing in the central Virginia area. Inclusion criteria included women and men, persons of all ages, and all ethnic or racial backgrounds. The WOC nurse completed peristomal skin complication form on each ostomy patient, regardless of whether or not he or she had a peristomal complication, and forwarded it to the University of Virginia Health System via facsimile. Patients were entered only once in the study. Patients were followed over a 1-year time period.

Instrument

A peristomal complication form (Table 1) was developed by the investigator using the categories developed from WOCN Guidelines.14 Interrater reliability of the tool was established between the WOC nurses in the central Virginia affiliate at one of the quarterly meetings by having them rate 5 patients with peristomal complications and then compare the results. There was a 100% agreement with the type of peristomal complication. The study was approved by the IRB at the University of Virginia Health System. Since no interventions were being performed, written consent was not required.

Results

Twelve WOC nurses saw a total of 89 ostomy patients over 1 year. Forty-two patients (47%) had peristomal complications. The median age of the patients was 61 years (range, 1-91 years); 46 were females and 43 were males. Thirty-two encounters (36%) occurred in hospital. These patients had been readmitted to hospital after their original ostomy surgery. Thirty-one encounters (35%) occurred in the home health care setting, and 26 encounters (29%) occurred in an ambulatory care setting. Cancer was the most common diagnosis leading to ostomy surgery (n = 47), followed by inflammatory bowel disease (n = 19) and diverticulitis (n = 9).

Thirty-seven subjects (42%) had colostomies, 33 (37%) had ileostomies, and 15 had urostomies (17%). Twenty-five of the 37 colostomies were sigmoid, 5 were transverse, and 1 was ascending. In addition, 2 patients had ileovesicostomies, 1 had a jejunostomy, and the ostomy type was not recorded in 1 participant.

Thirty-one patients had chemical damage of the peristomal skin (irritant dermatitis), 5 had mechanical injury, and 4 had cutaneous Candida infection. One had an allergic reaction, and another had pyoderma gangrenosum. Of the 42 patients with peristomal complications, 19 patients (45%) with an ileostomy had a peristomal complication. Fourteen (74%) of the 19 ileostomy patients had chemical irritant dermatitis listed as the cause of the peristomal complication. Fifteen (36%) of the colostomy patients had a peristomal complication and 12 (80%) were classified as chemical irritant dermatitis. Four (10%) of urinary conduit patients had a peristomal complication including 2 (50%) with chemical irritant dermatitis. Of the 5 patients with mechanical injury, 2 were ileostomy patients, 1 was a colostomy, 1 a urinary conduit, and one the ostomy type was not marked. Of the 4 patients with Candida infections, 2 were ileostomy patients, 1 colostomy, and 1 urinary conduit (Table 2).

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Thirty-five (84%) of the patients with complications had an intact mucocutaneous junction. Six (14%) patients had partial separation of the mucocutaneous junction. Three of these 6 were ileostomy patients, and 2 of the 6 were colostomy patients. For the other patient with mucocutaneous separation, the ostomy type was not identified. Only one ileostomy patient had complete separation of the mucocutaneous junction.

Forty-five (96%) of patients without peristomal complications had an intact mucocutaneous junction. In the group without complications, there were 24 pink round stomas and 19 pink oval stomas. In the group with peristomal complications, 21 were described as pink round stomas and 10 as pink oval stomas. Stoma size of both groups ranged from 5/8 to 3 in with a mean diameter of 1.4 in.

### TABLE 1. Peristomal Skin Complication Tool

<table>
<thead>
<tr>
<th>Setting of Encounter (Please check one)</th>
<th>WOC Nurse Initials</th>
<th>Date of Encounter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long term Care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Age: _______  2. Sex: Male _______ Female _______
3. Disease process that necessitated ostomy
   Cancer _______  IBD (Crohn’s/UC) _______  Diverticulitis _______
   Other _______

4. Type of ostomy
   Urinary conduit _______  Ileostomy _______  Jejunostomy _______
   Colostomy _______  Other _______
   Ascending _______  Transverse _______  Sigmoid _______

5. Date of surgery _______

6. Stoma: Size _______  □ pink □ other (explain) _______
   shape: □ round □ oval □ other (explain) _______
   Rod: _______ present _______ date removed
   Stents: _______ present _______ date removed

Mucocutaneous junction: □ intact □ separated from _______ to _______ o’clock

7. Pouching System: product/size/#: ____________________________
   One Piece _______  Two Piece _______  Drainable _______
   Spout _______  Convexity _______

8. Is peristomal skin free of complications? Yes _______ No _______

9. Complications (Please check):
   • Mechanical Injury _______
   • Chemical Damage _______
     1. Irritant Dermatitis _______
     2. Pseudoverrucous Lesions (Hyperplasia) _______
   • Infection
     1. Candida _______
     2. Bacterial _______
     3. Folliculitis _______
   • Allergic Response _______

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Twenty-six (62%) of the 42 patients wore a 1-piece pouch when they were seen by the WOC nurse for the peristomal complication. However, 32 (68%) of the 47 patients without complications also wore a 1-piece pouching system. Of the 42 patients with peristomal complications, 11 (26%) were wearing convexity as compared to 17% of patients who remained free of peristomal complications.

### Discussion
Peristomal complications have been characterized in the literature as skin problems, parastomal problems (infection, mucocutaneous separation), retraction, stenosis, necrosis, prolapse, and herniation. In the present study, peristomal skin complications were evaluated using the WOCN Society’s classification system. We specifically assessed for breaks in the integrity of the peristomal skin and did not address problems with the stoma unless it affected the peristomal skin, with the exception of mucocutaneous separation.

Peristomal skin complications are a problem for persons with a newly created ostomy. In 2 previous studies conducted by WOC nurses at the same institution, peristomal complications seen in the first 2 months occurred in 6% (n = 10 out of 161) and 16% (n = 35 out of 220), respectively. In this study, 47% experienced peristomal complications within the first 2 months of surgery. Persson’s group also reported that most ostomy complications occurred 2 weeks after discharge from the hospital. Tappe and colleagues found that most peristomal skin complications occurred within 6 weeks following surgery.

The most common type of peristomal skin complication we observed was chemical irritant dermatitis. This is consistent with the findings of other researchers. We also found that nearly half of patients (45%) with peristomal complications had an ileostomy, which is also consistent with the reports of others.

Thirty-five (84%) of our patients who experienced peristomal skin complications had an intact mucocutaneous junction. This finding was somewhat surprising because clinical experience suggests that problems with mucocutaneous separation impairs the patient’s ability to maintain an effective pouch seal.

Twenty-six of the 42 patients (62%) were wearing a 1-piece pouch when they were seen by the WOC nurse for the peristomal complication. Apparent differences were not seen when patients using 1-piece or 2-piece pouching systems were evaluated (62% vs 68%). Similarly, apparent differences were not observed when the use of convexity was compared based on the presence of peristomal complications (26% vs 17%). Further research is needed to determine the influence of 1-piece versus 2-piece pouching system and use of convexity on the incidence of peristomal skin complications.

### Conclusion
Research studies that describe peristomal skin complications over time and over multiple settings are limited. This study demonstrated that a central data repository using a standardized tool is a feasible method for monitoring the incidence of these complications, identifying risk and associated factors, and designing effective preventive interventions.

### ACKNOWLEDGMENT
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### References

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**Call for Authors: Ostomy Care**

- Original research reports comparing surgical outcomes for patients who undergo preoperative stoma site marking by a WOC nurse compared to patients who do not.
- Case studies, case series or original research reports focusing on stomal or peristomal complications.
- Case studies, case series or original research reports focusing on other potential sequelae of ostomy surgery including physical manifestations such as low back pain or psychosocial manifestations such as depression, altered sexual function or embarrassment.
- Original research reports confirming or challenging the assertions of the ongoing WOCN Ostomy Consensus Session including ostomy pouch wear time and minimum standards for immediate postoperative education of patient and family.