As presented at WOCN 38th Annual Conference, June 24-28, 2006, Minneapolis, MN.
Convexity provides varying degrees of support. When the convexity is soft, it is filling an area of unsupported skin. Firm convexity provides effective support. The firm convexity is effective with the firm abdomen to fill a retraction or to support the base of the stoma. Conversely, when the firm abdomen is supporting the skin, the soft convexity is effective. The firm convexity is effective with the firm abdomen to fill a retraction or to support the base of the stoma. Conversely, when the firm abdomen is supporting the skin, the soft convexity is effective.

Convexity Demystified

Convexity is a shape with an outward curvature. Adding convexity to a pouching system will provide shape and a degree of support at the base of the stoma. The goal of adding convexity to a pouching system should be to maintain intact peristomal skin, increase comfort and satisfaction for the patient, increase wear time in comparison to non-convex pouching systems, and provide an effective management approach to irregularities in the peristomal topography, such as retraction, hernia or scarring changing as a result of normal activity. Convexity attempts to correct for these irregularities by preventing the protrusion with gentle pressure at the peristomal skin surface. A firm abdomen usually has a high degree of support. However, the soft abdomen has less support and gentle pressure. The soft convex shape provides the firm but flexible, moving more easily with changes in the abdominal surface. Shallow convexity has less than one inch deep, while moderate is less than one inch deep and convexity greater than one inch deep. Convexity can be achieved in many ways. (Refer to Table and case studies.) One of the important factors to consider is ease-of-use for the user. Some systems require more assembly and dexterity than others.

Precautions

During the immediate postoperative period, clinicians may hesitate to use a firm or rigid convex pouching system. The concerns extend because excessive pressure on the abdomen may result in reossesiveness regardless. Additionally, a pouch aperture placed too close to the stoma with firm convexity may lead to stomal ischemia if the stoma begins to heal. However, the need to prevent leakage should be weighed against these potential risks and a conservative approach to convexity may be used. Soft convexity or shallow convexity may provide the limited filling and support needed to secure the pouching system. The peristomal hernia with retracted peristomal skin may benefit from the use of convexity. However, there is a risk in using a firm convex surface with a flexible support. In order to secure the pouching system and prevent wearing time, a soft or shallow convex product may provide the necessary shape to fill the retraction.

The peristomal hernia with retracted peristomal skin may benefit from the use of convexity. However, there is a risk in using a firm convex surface with a flexible support. In order to secure the pouching system and prevent wearing time, a soft or shallow convex product may provide the necessary shape to fill the retraction. Irregularities of the peristomal skin under the convex portion of a pouching system should be evaluated for pressure ulcerations to correct for the shape of the convex product. The use of a convex product should be considered, if excessive pressure is suspected. If an ostomy belt is being used, the clinician should evaluate this belt to be limit using correctly since stomal laceration, pouch dislodgement or undue pressure may result.

Conclusion

Predictable and sustained wear time for an ostomy pouching system represents best practice in ostomy care. By providing a secure seal for a predictable period of time, leakage is minimized while the peristomal skin is protected from chemical, mechanical and, quite possibly, fungal infections. The use of convexity as a prevention and management strategy can be an effective risk reduction approach. Convexity options have new been expanded to include soft convexity and integrated skin barrier systems. These options increase skin safety and ease of use for the patient.

Understanding the relationship between the characteristics of the stoma, abdominal muscle tone and peristomal skin surface will direct critical decision making when selecting convexity. Stomal changes, such as abdominal contours and muscle tone, safe care of the ostomy patient throughout a hospice requires ongoing, routine assessment to decrease morbidity associated with peristomal skin compromise.

References

Convexity provides varying degrees of support. When the convexity is soft, it is a filling agent with firm support. Soft convexity is effective with firm abdomens. Conventional systems require assembly and dexterity than others. Some systems require more assembly and case studies. One of the important factors to consider is ease-of-use for the user. Some systems require more assembly and dexterity than others.

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Abdominal Muscle Tone
Abdominal muscle tone is the anatomic support in the pouching space. It may be firm, soft or flaccid. The pouching system selected acts as a counterforce to the changes that occur in this area. A firm abdomen usually requires no additional support. However, the soft and flaccid abdomen will require a firm level of support to stabilize the pouching system (Fig. 1, 2).
Convexity can be used to create oval openings. Provides soft convexity.

Convexity provides varying degrees of support. When the convexity is soft, it is filling against the abdomen and offers soft convexity as effective with the firm abdomen to fill a retraction proximal to the base of the stoma. Conversely, when abdominal support is lacking, the abdomen is soft or flaccid. These situations will generally require a pouching system with firm support.

Convexity Demystified

Convexity is a shape with an outward curving. Adding convexity to a pouching system will provide shape and a degree of support at the base of the stoma. The goal of adding convexity to a pouching system would be to maintain intact peristomal skin, increase comfort and satisfaction for the patient, increase wear time in comparison to non-convex pouching systems, and provide an effective management for peristomal skin changes. The convex shape is applied toward the abdomen to fill a defect or flattened space and thus provide a continuous contact against the abdominal surface of the skin and the skin. The convex shape provides a mirror image to the abdomen surface.

Convex products are firm or soft with stature, moderate or deep surfaces. Firm convexity usually has an integrated ring that provides resistance to deformation. This helps add support and gentle pressure. The soft convex surface provides the form but is flexible, moving more easily with changes in the abdominal surface. Shallow convex is less than ⅛ inch deep, while moderate is less than ¼ inch deep and convexity greater than ½ inch.

Convexity can be achieved in many ways. (Refer to Table and case studies) One of the important factors to consider is ease-of-use for the user. Some systems require more assembly and dexterity than others.

Convexity Products

<table>
<thead>
<tr>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Sized Convex Barrier</td>
<td>Provides firm support. If the stoma is not round, need to protect exposed skin. Easy to use.</td>
</tr>
<tr>
<td>Cut-to-Fit Convex Barrier</td>
<td>Provides firm support! Useful for oval stoma or those with cutaneous holes. Requires some dexterity.</td>
</tr>
<tr>
<td>Skin Barrier Rings - Convex</td>
<td>Provides soft convexity if added to a flexible pouching system. Increases depth of convexity when added to a system with integrated convexity. Can be used to create convex and concavity.</td>
</tr>
<tr>
<td>Skin Barrier Rings - Flat</td>
<td>Provides minimal convexity when added to a pouching system. Several rings may be stacked and added to back of a pouching system to create more depth. Can be used to create concave opening.</td>
</tr>
<tr>
<td>Skin Barrier Strips</td>
<td>Provides soft convexity. Different than pastes which is a filling agent. Paste does not maintain a shape.</td>
</tr>
<tr>
<td>Convex Inserts</td>
<td>May be difficult to use with medical device issues. Provides shallow convexity.</td>
</tr>
<tr>
<td>Resovable Faceplates</td>
<td>Provides firm convexity. System requires assembly and may be difficult to use. May require addition of a barrier for skin protection.</td>
</tr>
<tr>
<td>Ostomy Bella and Brakets</td>
<td>Accessories Items</td>
</tr>
</tbody>
</table>

References:
The purpose of this paper is to discuss the concept of skin safety in the ostomy patient and risk reduction for peristomal skin compromise. It describes peristomal skin as tissue at perpetual risk for compromise and discusses the role of convexity as a prevention and management strategy.

**Background**
Skin safety is a concept used in risk assessment and prevention of pressure ulcers. It is applicable to ostomy care as well because two critical goals in skin safety are to provide skin care and to reduce the risk of complications. The peristomal skin is at perpetual risk for compromise from chemical, mechanical injury as well as fungal infection. Less common etiologies for peristomal skin compromise include bacterial infection, disease-related ulcers and allergic contact dermatitis. Because of the high potential for morbidity in these patients, risk-reduction strategies include ongoing routine assessment and early interventions throughout the lifespan.

For example, the patient who reports decreased wear time or peristomal skin compromise should be evaluated and the need for convexity considered. In the early postoperative period, a retraction at the base of the stoma merits immediate consideration which may include filling and flattening the irregularity with a convex product. This action deters the likelihood of a leaking pouch and subsequent intervention of pressure ulcers. It is applicable to ostomy care as well because two critical goals in skin safety are to provide skin care and to reduce the risk of complications.

**Purpose**
Healthy peristomal skin is achieved, in great part, by a pouching system that provides a sustained, predictable wear time. Wear times are impacted by many factors such as humidity, stoma construction and location, volume and type of discharge, skin condition, technique, and type of skin barrier used. In general, twice weekly pouch changes are considered within normal for the adult. In the younger populations, 24 to 48 hours may be acceptable in the preterm infant and neonate but should approach two to four days as the child gets bigger.

A well-sited and constructed stoma is key to the maintenance of intact skin and is directly related to the adherence of a pouching system. A well-sited stoma is located away from boney prominences, creases and scars. It is placed through the rectus muscle and at the superior aspect of the umbilical bulge. Ideally, there is a 3-inch peristomal skin surface that is flat with intact skin surrounding the site for a new stoma. This placement allows for aesthetic support and unimpeded application of a pouching system. The stoma is constructed with approximately 2.5 cm protrusion with the opening at the apex.

Case 1 #1 Patient in supine position. Soft, flat peristomal skin surface. Stoma minimally visible when patient is sitting. Firm abdomen.

Case 1 #2 Patient sitting. Note stoma protrusion, moderate retraction, soft abdomen. Stoma protruding. Note retraction at base of stoma and creases at 3 and 9 o'clock that becomes evident when patient is sitting. Firm abdomen.

Case 1 #3 Application of soft, convex skin barrier to the flexible pouching system. Application of the moldable skin barrier to provide shallow filling of the flexible pouching system. Firm to moderate retraction, yet very little support.

Case 1 #4 Soft, convexity with one-piece pouching system. A well-sited, tone stoma protrusion, moderate retraction, soft abdomen. Note retractions at base of stoma and skin surface. Stoma minimally visible when patient is sitting.

Case 2 #1 Complex abdomen with patient reclining on exam table. Protruding stoma with moderate retraction, soft abdomen.

Case 2 #2 Patient sitting. Note stoma protrusion, moderate retraction, soft abdomen. Firm abdomen. Visible when patient is sitting.

Case 2 #3 Moderate retractions, soft abdomen with convexity. Fitting the oval stoma, moderate retraction, yet very little support.

Case 2 #4 Soft convexity with one-piece pouching system. An integrated one-piece pouching system was then applied. Trace and cut oval shape in an attempt to flatten the irregularity with a convex product. This action increases self-esteem and decreased skin compromise.

Case 2 #5 Firm abdomen. Note retraction at base of stoma and creases at 3 and 9 o'clock that becomes evident when patient is sitting. Firm abdomen.
Soft abdomen with convexity.

Fitting the oval stoma, moderate retraction, yet very little support.

Case 1 #4

Application of the moldable skin barrier piece pouching system was then applied.

Case 2 #4

Apply to skin.

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Case 2 #6

Filing the real atoms, moderate retraction, soft abdomen with convexity.

Case 2 #5

Application of the moldable skin barrier ring to build convexity. An integrated one-piece pouching system was then applied.

Case 1 #3

Application of soft, convex skin barrier to the flexible pouching system.

Case 1 #2

Patient sitting. Note stoma protrusion, moderate retraction, soft abdomen.

Case 1 #1


Case 1 #3

Firm abdomen.

Case 1 #4

Protruding.

Note retraction at base of stoma and creases at 3 and 9 o'clock that becomes more pronounced in the peristomal skin surface, soft abdomen.

Case 2 #1

Complex abdomen with patient reclining on exam table. Protruding stoma with depression in the peristomal skin under the rectus muscle and at the superior aspect of the umbilical bulge. Ideally, there is a 3-inch peristomal skin surface that is flat with intact skin surrounding the site for a new stoma. This placement allows for aesthetic support and unimpeded application of a pouching system. The stoma is constructed with approximately 2.5 cm protrusion with the opening at the apex.

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Case 1 #2

Pelvic stitting, note stoma protrusion, moderate retraction, soft abdomen.

Case 2 #2

Patient sitting. Note stoma protrusion, moderate retraction, soft abdomen.

Case 1 #1

Pelvic stitting, note stoma protrusion, moderate retraction, soft abdomen.

Case 1 #2

Complex abdomen with patient reclining on exam table. Protruding stoma with depression in the peristomal skin surface, soft abdomen.

Case 1 #3

Application of soft, convex skin barrier to the flexible pouching system.

Case 2 #1

Firm abdomen.

Case 2 #2

Patient sitting. Note stoma protrusion, moderate retraction, soft abdomen.

Case 1 #1


Case 1 #3

Application of soft, convex skin barrier to the flexible pouching system.

Case 1 #2

Pelvic stitting, note stoma protrusion, moderate retraction, soft abdomen.

Case 2 #2

Patient sitting. Note stoma protrusion, moderate retraction, soft abdomen.

Case 1 #1


Case 1 #3

Application of soft, convex skin barrier to the flexible pouching system.

Case 2 #1

Firm abdomen.

Case 2 #2

Patient sitting. Note stoma protrusion, moderate retraction, soft abdomen.

Case 1 #1