



WOCN[®] Wound, Ostomy, and
Continence Nurses Society[®]

CONVEX POUCHING SYSTEMS

BEST PRACTICE FOR CLINICIANS



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Convex Pouching Systems: Best Practice for Clinicians

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Convex Pouching Systems: Best Practice for Clinicians

Introduction

There are many pouching systems available for ostomy management. The proper pouching system must contain effluent from the stoma, fit well, and be easy for the patient or their care provider to manage. Helping individuals with an ostomy select the right pouching system is an essential part of their care. The pouching system has an important impact on a patient's concerns and quality of life (Claessens et al., 2015; Pittman et al., 2008). The guiding principles for selecting a pouching system include protection of the peristomal skin and provision of a consistent wear time that is free of leakage (Colwell, 2016; Gray et al., 2013). Convex pouching systems can help obtain an optimum fit of the products.

Background and Purpose

This document was originally developed by the Wound, Ostomy and Continence Nurses Society™ (WOCN®) as a best practice document for clinicians (WOCN, 2007). The purpose of this updated document is to provide recommendations to clinicians who provide ostomy care regarding the use of convex pouching systems. To prepare the document, the task force searched for literature and relevant clinical guidelines published from 2010 to 2015 in CINAHL and PubMed databases, the *Journal of Wound, Ostomy and Continence Nursing* and its archives, and the WOCN Society's website. The search terms included the following: assessment, assess, convex, convexity, guidelines, fecal containment, ostomy surgery, mucocutaneous separation, stomal level, peristomal complications, ostomy postoperative complications, ostomy evidence-based research, ostomy practice, product innovation, convex product systems, pediatric ostomy surgery, and pediatric peristomal complications. The literature was reviewed, and the document was developed by experts who are certified in ostomy nursing.

Robust evidence is lacking about convex products and their use. Therefore, the recommendations in this document are based primarily on published review articles, consensus documents, and expert opinion. The document includes a definition of convexity, an overview of the purpose of convexity, recommendations for practice and future research, and a list of resources if additional information is needed.

Definition of Convexity

A convex ostomy product has a skin barrier that is curved or rounded in shape where it contacts the skin (Colwell, 2016; Rolstad & Boarini, 1996; WOCN, 2013, 2014a). The convexity may be located near the opening in the skin barrier, or it may extend outward onto a greater area of the skin barrier (Colwell, 2016). Convexity levels vary from shallow to deep (Colwell, 2016; WOCN, 2007).

Purpose of Convexity

The aim of convexity is to achieve a leak-free seal to provide the highest quality of life possible to the individual with an ostomy (Cronin, 2005; Pittman et al., 2008). Leakage of effluent from the stoma is more likely to occur when there is a poor match between the contours of the abdomen and

the shape of the skin barrier of the ostomy pouching system. The leakage can contribute to peristomal moisture-associated skin damage (MASD), which is the most common form of peristomal skin damage (Gray et al., 2013). Peristomal MASD is characterized by erythema with or without a loss of the epidermis and serous exudate; and, in some cases, other symptoms may occur such as edema, blisters, maceration, hypergranulation, coalesced papules, hardened or leathery skin, and wart-like lesions (Gray et al., 2013).

Successful use of convex products helps prevent stoma effluent from leaking beneath the skin barrier, resulting in a predictable, leak-free seal of the pouching system to the skin. Convex products are thought to work by helping provide tension to the skin around the stoma, by pressing on peristomal skin contours, and in some cases by causing the stoma to protrude more than can be achieved with flat products (Hoeflok, Kittscha, & Purnell, 2013).

Recommendations for Practice

1. Assess the stoma, peristomal skin, and pouching system to determine the need for convexity.
 - Parameters to include in stomal assessment (Colwell, 2016; Hoeflok et al., 2013):
 - Color and texture of the stoma and presence of edema.
 - Size, shape, length, level of protrusion (i.e., retracted, flush, or recessed), location of the lumen, alterations in the stoma due to positional changes, and condition of the mucocutaneous junction.
 - Type and consistency of output.
 - Parameters to include in peristomal assessment:
 - Skin integrity (Colwell, 2016; Hoeflok et al., 2013; Rolstad & Boarini, 1996).
 - Peristomal skin plane and abdominal contours.
 - Examine the abdominal shape and contours with the patient in various positions: lying; side-lying, sitting, standing, bending, and turning side to side (Colwell, 2016; Hoeflok et al., 2013).
 - Firmness of the abdomen (Hoeflok et al., 2013).
 - Type, location, and depth of creases and skin folds; muscle tone; and skin turgor (Colwell, 2016; Hoeflok et al., 2013; Rolstad & Boarini, 1996).
 - Parameters to include in assessment of the pouching system: Leakage, seal, and wear time of the skin barrier (Colwell, 2016; Hoeflok et al., 2013).
2. Monitor and reassess the pouching system on a regular basis (Colwell, 2016):
 - Determine wear time and product usage.
 - Observe for changes in the abdomen and abdominal contours due to weight gain or loss, surgeries, and/or aging.
 - Observe for changes in the stoma and surrounding tissue, which can alter the individual's pouching needs.
 - *Note:* Information is lacking on the specific frequency for re-evaluating the pouching system after convexity is incorporated. Some experts have suggested daily assessment during the immediate postoperative period and, thereafter, on a routine basis; however, the optimum frequency has not been determined (Hoeflok et al., 2013).
3. Consider using convexity for the following situations/indications:

- Uneven peristomal contours such as creases, scars, or folds near the stoma (Colwell, 2016; Hoeflok et al., 2013).
 - A flush or retracted stoma that does not protrude above the skin surface or above the skin barrier (Colwell, 2016; Hoeflok et al., 2013; Pittman, 2016; WOCN, 2010, 2013, 2014a).
 - An unacceptable wear time (e.g., too short, unpredictable) with the current pouching system that has a flat skin barrier.
4. Determine the presence of pre-existing conditions, which should be considered when deciding about the use of convex products (see Table 1). *Note:* Various precautions and contraindications are mentioned in the literature for the use of convexity, but research is lacking to support the concerns (Hoeflok et al., 2013).

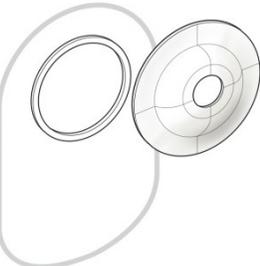
Table 1. Pre-existing Conditions to Consider With the Use of Convex Products.

Condition	Rationale
Peristomal wounds (e.g., pressure ulcer/injury, pyoderma gangrenosum, Crohn’s disease, mucocutaneous separation)	Depth and pressure from convexity may interfere with healing (Hoeflok et al., 2013; Salvadalena, 2016; WOCN, 2016).
Caput Medusa (peristomal varices)	Peristomal area is at risk for bleeding if subject to pressure at the skin/stoma junction (Butler, 2009; De Ocampo, 2012; Hoeflok et al., 2013; Salvadalena, 2016).
Peristomal hernia	Firm rings and belts used to hold the convex pouching system tightly against the skin may cause trauma or a pressure ulcer/injury in the peristomal skin (Colwell, 2016; Hoeflok et al., 2013; Pittman, 2016; WOCN, 2011, 2014b).
New postoperative stoma in a person at risk for compromised healing	Convexity may contribute to mucocutaneous separation (Butler, 2009).

5. Select the convex product that best fits the needs of the individual.
- Multiple factors are involved in product selection, but the overall goal is to maintain a seal between the pouching system and the peristomal skin (Hoeflok et al., 2013; Stelton, Zulkowski, & Ayello, 2015; WOCN, 2010).
 - Consider the individual’s needs and preferences (e.g., dexterity, vision, ease of use, activities, financial issues, etc.) when selecting or making changes to the current pouching system (Colwell, 2004; Fellows, 2009).
 - Terms and descriptions for various types of convex products.
 - Moldable or formable convexity: A convex skin barrier that can be conformed or stretched to fit around the stoma.
 - Light convexity: A convex skin barrier with a minimal amount of curvature (Colwell, 2016).

- Deep convexity: A convex skin barrier with a maximum amount of curvature (Colwell, 2016).
- Flexible/soft convexity: A convex skin barrier that can bend and move with the body and may be considered when there are deep creases on a soft abdomen that might cause a rigid convex product to lift off the skin (Colwell, 2016).
- Rigid convexity: A convex skin barrier that does not bend with body movement (Colwell, 2016). The rigidity can produce tension/pressure to alter the peristomal skin plane and may enhance the protrusion of the stoma (Hoeflok et al., 2013).
- Custom made convexity: Convex skin barriers or convex one-piece pouches made for an individual based on their specific measurements.
- A variety of accessories can be used to create and/or enhance convexity of the pouching system (Hoeflok et al., 2013).
 - Skin barrier rings (Colwell, 2016; WOCN, 2013):
 - Circular, hydrocolloid-based barriers that can be used around the stoma to enhance the seal by providing an additional solid skin barrier between the skin and the pouching system.
 - The rings can be flat or convex, and they can be used with a flat pouching system to create convexity that is relatively flexible.
 - The rings can also be used with a convex skin barrier to further enhance the depth of the convexity.
 - Rigid convex rings: A plastic ring that is inserted under the flange of a two-piece, flat skin barrier to create convexity.
 - Ostomy belt: Elastic belt with hooks that fasten to the pouching system and can be used to apply pressure to the pouching system to help enhance the seal and security of the skin barrier to the skin (WOCN, 2013).
 - Ostomy binder: Wide, binder-type belt designed to provide support and security of the pouching system to increase wear time (WOCN, 2013).
 - Support wear: Stretchy wraps or undergarments used to provide support to help enhance the adherence of the skin barrier to the skin.
- Most manufacturers of ostomy products offer products with convexity. Contact the manufacturers if additional information and individualized product suggestions are needed (see Appendix A).
- Descriptions and examples of one-and two-piece convex products are provided in Table 2.

Table 2. Description and Examples of One-Piece and Two-Piece Convex Pouching Systems.

Product and Description	Example
<p>One-piece convex pouching systems (Colwell, 2016):</p> <ul style="list-style-type: none"> • Skin barrier and pouch are constructed together as a single unit. • Are available in pre-cut and cut-to-fit styles with extended-wear or standard-wear, skin barriers. • Have round or oval openings. 	 <p>Image courtesy of Christina Augustyn</p>
<p>Two-piece pouching systems with convex skin barriers (Colwell, 2016):</p> <ul style="list-style-type: none"> • Skin barrier and pouch are constructed in two separate parts that connect with a flange/coupling mechanism. • Are available in pre-cut and cut-to-fit styles with extended-wear or standard-wear, skin barriers. • Have round or oval openings. 	 <p>Image courtesy of Christina Augustyn</p>

6. Educate patients and their caregivers how to manage their ostomy care and any skin problems. Asking the patient directly about their ostomy care routines and involving caregivers in ostomy care can facilitate detection and resolution of ostomy-related problems (McMullen et al., 2011). Include the following topics in the education:
 - Characteristics of healthy peristomal skin.
 - How to use ostomy products and manage the ostomy, including care of the peristomal skin.
 - The importance of contacting a certified, ostomy specialist (e.g., wound, ostomy, and continence nurse [WOC nurse]; or other qualified healthcare provider) for the following issues or concerns:
 - Problems with wear time or fit of the pouching system: persistent leakage or undermining of the seal.
 - Peristomal skin changes: irritation, rash, bleeding, itching, burning, pain, lesions or ulcerations, and MASD (Gray et al., 2013).
 - Injuries to the stoma: bumps or cuts.
 - Changes in the stoma: altered color, persistent bleeding, stenosis, or prolapse.
 - Development of a peristomal bulge or hernia.
 - Resources that are available for information about products (see Appendix A) and/or for support and assistance (see Appendix B).

Recommendations for Future Research

Robust evidence about the use of convexity is limited. Research in the following areas is recommended:

- Determine the prevalence of the use of convex products (WOCN, 2007).
- Determine the effect(s) of modifying the pouching system with convexity on patient outcomes (e.g., wear time, skin condition, comfort, quality of life, product costs, etc.).
- Develop guidelines for patient assessment and selection of convexity (Hoeflok et al., 2013) and appropriate pouching systems.
- Identify clinical indications and contraindication for selection of convexity (Hoeflok et al., 2013; WOCN, 2007).
- Determine the prevalence of the use of belts, support wear, or binders with convex pouching systems (WOCN, 2007).
- Identify risk factors associated with the development of peristomal pressure ulcers/injuries during use of convex products.
- Determine the prevalence and incidence of complications due to convex products (Hoeflok et al., 2013).
- Identify the effects of weight gain or loss on the need for a convex pouching system (WOCN, 2007).
- Develop criteria for establishing standard levels of convexity (WOCN, 2007).
- Examine the effects and efficacy of various types and levels of convexity (Hoeflok et al., 2013).
- Establish a taxonomy with standardized terms and definitions for convex products (Hoeflok et al., 2013).

Summary

Convex products are used to enhance the fit of ostomy pouching systems and prevent leakage. The selection and use of convex products requires the healthcare provider to examine the patient's stoma and the surrounding peristomal area and evaluate how convexity might impact the fit and wear time of the pouching system. Consideration of pre-existing skin conditions and individual preferences and capabilities is needed when using convex products. If an individual with an ostomy has questions or problems regarding their ostomy care or pouching system, it is advisable that they consult with a specialist, such as a certified wound, ostomy, and continence nurse (CWOCN); or a certified ostomy care nurse (COCN). These certified specialists have expertise in ostomy management and education, assessment and fitting of pouching systems, and the use of convex products. The use of convexity is primarily based on anecdotal information. Therefore, additional studies are indicated to provide more robust evidence for the selection and use of convex products.

References

- Butler, D. L. (2009). Early postoperative complications following ostomy surgery: A review. *Journal of Wound, Ostomy and Continence Nursing*, 36(5), 513–519.
<http://dx.doi.org/10.1097/WON.0b013e3181b35eaa>
- Claessens, I., Probert, R., Tielemans, C., Steen, A., Nilsson, C., Dissing Andersen, B., & Storling, Z. M. (2015). The ostomy life study: The everyday challenges faced by people living with a stoma in a snapshot. *Gastrointestinal Nursing*, 13(5), 18–25.
<http://dx.doi.org/10.12968/gasn.2015.13.5.18>
- Colwell, J. C. (2004). Principles of stoma management. In J. C. Colwell, M. T. Goldberg, & J. E. Carmel (Eds.), *Fecal & urinary diversions: Management principles* (pp. 240–262). St. Louis, MO: Mosby.
- Colwell, J. C. (2016). Selection of pouching system. In J. E. Carmel, J. C. Colwell, & M. T. Goldberg (Eds.), *Wound, Ostomy and Continence Nurses Society core curriculum: Ostomy management* (pp.120–130). Philadelphia, PA: Wolters Kluwer.
- Cronin, E. (2005). Problem stomas and the use of convexity. *Gastrointestinal Nursing*, 3(10), 33–40.
- De Ocampo, M. L. (2012). WOC nurse consult: Peristomal varices. *Journal of Wound, Ostomy and Continence Nursing*, 39(2), 178–179.
<http://dx.doi.org/10.1097/WON.0b013e318246dadb>
- Fellows, J. (2009). Ostomy: General principles of management and patient teaching. *Journal of Wound, Ostomy and Continence Nursing*, 36(2), 200–201.
doi:10.1097/01.WON.0000347663.33088.80
- Gray, M., Colwell, J. C., Doughty, D., Goldberg, M., Hoeflok, J., Manson, A., . . . Rao, S. (2013). Peristomal moisture-associated skin damage in adults with fecal ostomies: A comprehensive review and consensus. *Journal of Wound, Ostomy and Continence Nursing*, 40(4), 389–399.
<http://dx.doi.org/10.1097/WON.0b013e3182944340>
- Hoeflok, J., Kittscha, J., & Purnell, P. (2013). Use of convexity in pouching: A comprehensive review. *Journal of Wound, Ostomy and Continence Nursing*, 40(5), 506–512. <http://dx.doi.org/10.1097/WON.0b013e3182a219b7>
- McMullen, C. K., Wasserman, J., Altschuler, A., Grant, M. L., Hornbrook, M. C., Liljestrand, P., . . . Krouse, R. S. (2011). Untreated peristomal skin complications among long-term colorectal cancer survivors with ostomies. *Clinical Journal of Oncology Nursing*, 15(6), 644–650. <http://dx.doi.org/10.1188/11.CJON.644-650>
- Pittman, J. (2016). Stoma complications. In J. E. Carmel, J. C. Colwell, & M. T. Goldberg (Eds.), *Wound, Ostomy and Continence Nurses Society core curriculum: Ostomy management* (pp.191–200). Philadelphia, PA: Wolters Kluwer.

- Pittman, J., Rawl, S. M., Schmidt, C. M., Grant, M., Ko, C. Y., Wendel, C., & Krouse, R. S. (2008). Demographic and clinical factors related to ostomy complications and quality of life in veterans with an ostomy. *Journal of Wound, Ostomy and Continence Nursing*, 35(5), 493–503. <http://dx.doi.org/10.1097/01.WON.0000335961.68113.cb>
- Rolstad, B. S., & Boarini, J. (1996). Principles and techniques in the use of convexity. *Ostomy and Wound Management*, 42(1), 24–32.
- Salvadalena, G. (2016). Peristomal skin conditions. In J. E. Carmel, J. C. Colwell, & M. T. Goldberg (Eds.), *Wound, Ostomy and Continence Nurses Society core curriculum: Ostomy management* (pp. 176–190). Philadelphia, PA: Wolters Kluwer.
- Stelton, S., Zulkowski, K., & Ayello, E. A. (2015). Practice implications for peristomal skin assessment and care from the 2014 World Council of Enterostomal Therapists International Ostomy Guideline. *Advances in Skin & Wound Care*, 28(6), 275–284. <http://dx.doi.org/10.1097/01.ASW.0000465374.42350.0f>
- Wound, Ostomy and Continence Nurses Society. (2007). *Convex pouching systems: A best practice document for clinicians*. Mt. Laurel, NJ: Author.
- Wound, Ostomy and Continence Nurses Society. (2016). *Peristomal skin complications: Clinical resource guide*. Mt. Laurel, NJ: Author.
- Wound, Ostomy and Continence Nurses Society. (2010). *Management of the patient with a fecal ostomy: Best practice guideline for clinicians*. Mount Laurel, NJ: Author.
- Wound, Ostomy and Continence Nurses Society. (2011). *Peristomal hernia: Best practice for clinicians*. Mount Laurel, NJ: Author.
- Wound, Ostomy and Continence Nurses Society. (2013). *Colostomy and ileostomy products and tips: Best practice for clinicians*. Mount Laurel, NJ: Author.
- Wound, Ostomy and Continence Nurses Society. (2014a). *Urostomy products and tips: Best practice for clinicians*. Mount Laurel, NJ: Author.
- Wound, Ostomy and Continence Nurses Society. (2014b). *Stoma complications: Best practice for clinicians*. Mount Laurel, NJ: Author.
- Wound, Ostomy and Continence Nurses Society. (2014c). *Discharge planning for a patient with a new ostomy: Best practice for clinicians*. Mount Laurel, NJ: Author.

Appendix A Examples of Ostomy Product Manufacturers

Manufacturer/Address	Website	Telephone Number
Coloplast 1601 West River Road North Minneapolis, Minnesota 55411	www.coloplast.us	1-800-533-0464 or 1-888-726-7872
ConvaTec, Incorporated 211 American Avenue Greensboro, North Carolina 27409	www.convatec.com	1-800-422-8811
Hollister Incorporated 2000 Hollister Drive Libertyville, Illinois 60048	www.hollister.com	1-800-323-4060
Nu-Hope Laboratories, Incorporated 12640 Branford Street Pacoima, California 91331	www.nu-hope.com	1-800-899-5017
Marlen Manufacturing & Development Company 5150 Richmond Road Bedford, Ohio 44146	www.marlenmfg.com	1-216-292-7060

Appendix B Examples of Resources for Support and Assistance

Organization/Address	Brief Description	Website	Telephone Number
United Ostomy Associations of America, Inc. (UOAA) P.O. Box 525 Kennebunk, Maine 04043-0525	An association of affiliated, nonprofit, support groups who are committed to improving the quality of life of people who have, or will have, an intestinal or urinary diversion (WOCN, 2014c).	www.ostomy.org	1-800-826-0826
Wound, Ostomy and Continence Nurses Society (WOCN) 1120 Route 73 Suite 200 Mount Laurel, New Jersey 08054	A professional nursing society whose members provide and direct the care of people with ostomies. The Society's website can be searched using the "Patient Links" tab to find a nurse who is available for a referral or consultation for ostomy service in/or near a patient's geographic location (WOCN, 2014c).	www.wocn.org	1-888-224-9629

Statement Acknowledging Content Validation

This document was reviewed in the consensus-building process of the Wound, Ostomy and Continence Nurses Society known as Content Validation.