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Use of floating flange in ostomy care

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Following an ostomy surgery, bodily wastes such as faecal matter, urine and mucus can be diverted through a surgically created opening called a stoma into an external prosthetic device known as ostomy pouch or ostomy bag, which is connected on the outside of the body[1].

There are two principal types of pouching systems: one-piece systems and two-piece systems.

In a one-piece system, both the barrier and pouch are combined into one convenient unit, which means that during the replacement the whole system is removed.

A two-piece system is made up of a base plate barrier and a pouch which are separate. The two-piece systems are mechanically connected with a coupling ring/flange, and during the replacement, the existing bag is removed and a new one is fixed, while the base plate remains in place.[1]

Two-piece systems can help reduce the discomfort and irritation associated with removing adhesive from the skin[2]. The flange on the pouch and the flange on the base plate must match and fit together to create a secure pouching system[3].

One of the difficulties in the use of two-piece designs is that it may be difficult to separate and join the pouch and base plate to one another. Since the base plate flange is so close to the user's body (peristomal area), it is necessary to insert fingers between the base plate ring/flange and ostomy pouch ring/flange to separate them effectively.

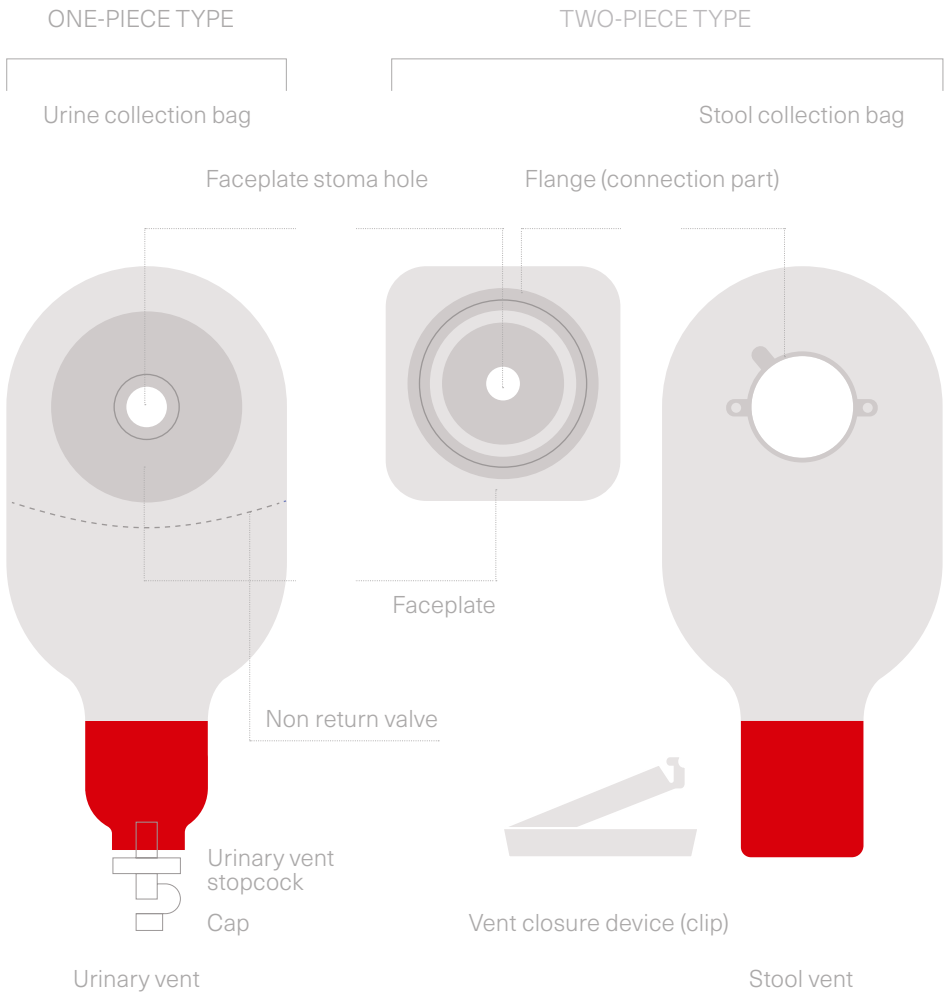
This can be difficult even for those users with full dexterity and it becomes more difficult for those with impaired dexterity, as well as for overweight patients.[2]

1 Ravikanth K. Advancements in ostomy systems. SciTech Patent Art Services. 2021 https://www.patent-art.com/knowledge-center/advancements-in-ostomy-systems/

2 Masters BE. Adaptive floating flange for ostomy appliance. 2010; Patent: CA2809618A1 https://patents.google.com/patent/CA2809618A1/en

3 United Ostomy Associations of America (UOAA). New Ostomy Patient Guide. 2020 https://www.ostomy.org/wp-content/uploads/2020/10/UOAA-New-Ostomy-Patient-Guide-2020-10.pdf

In the postoperative period, peristomal skin is sore and painful, which is why mechanical coupling can cause discomfort to the patient. This is a concern for the medical staff and the patient when they are pressing into the painful area to join the mechanical coupling system.



Izvor: https://www.patent-art.com/knowledge-center/advancements-in-ostomy-systems/

Development of the floating flange

To address this concern, two-piece designs that include a floating flange have been developed.

In such an arrangement, the flange is mounted to the base plate by a flexible membrane, such as a short, polymeric element that is sealed to both the base plate and to the ring. The membrane serves as an extension piece between the base plate and the ring/flange. This allows the ring/flange to be accessed slightly farther away from the base plate and the user's skin. It has been found that this configuration greatly increases the ability both of those with full dexterity, as well as those with limited dexterity or access to the peristomal area to grasp the barrier ring when removing the pouch.[2]

Products incorporating convexity may be used in retracted stomas or stomas that are poorly sited and positioned in deep skin creases or wrinkles in the peristomal area. They are designed to be effective in preventing leakage by increasing the protrusion of the stoma, which is achieved by adding additional rigidity and pressure.

Some convex systems have a deep annular recess located directly behind the coupling ring (floating flange), making it easy for the user to insert his/her fingers behind the coupling ring during the coupling operation. The floating flange also has the effect of reducing the weight of the base plate and rendering the pressure ring more flexible and conformable. At the same time, the pressure ring provides the base plate with sufficient convexity and stiffness to press against the peristomal skin surfaces and promote stomal protrusion when the appliance is worn[4].

While the two-piece design functions well for its intended purpose, there are some drawbacks. For example, the increased distance between the user and the pouch (or the base plate and the pouch) and the flexible membrane can induce the feeling of less security for the user.

4 Holmberg S, F. Larsen FJ. Convex ostomy faceplate with floating flange and finger recess. 1997; Patent: EP0812583B1 https://patents.justia.com/patent/5607413#citations

Also, with a floating flange, the pouch can tend to pull away from the user and is therefore more likely to be visible (e.g, create a noticeable bulge beneath the user's clothing), especially when the pouch contains a significant amount of stomal output. This can result in the user becoming less likely to maintain normal everyday activities.[2]

Indications for the floating flange

The postoperative pouching system selected should be transparent or two-piece to facilitate the stoma inspection. The two-piece system allows a removal of the pouch to assess the stoma without disturbing the base plate. In the immediate postoperative period, frequent pouch changes place increased pressure on the patient's abdominal surface, causing pain and discomfort[5].

On the other hand, the act of assembling the two-piece system results in pressure being exerted against the body. This may be undesirable, particularly for the period following the surgery. Proposals for overcoming this difficulty have involved a displacement of the rib coupling member/flange from the surface of the base plate[6].

Conversely, a convex base plate may also lift off if it is too rigid for the patient's abdominal tone. If the patient's abdomen is firm, the application of an opposing force from a convex base plate may result in a higher pressure, affecting the peristomal skin and resulting in pressure injuries[7].

The floating flange on two-piece convex systems has the effect of reducing the weight of the base plate and rendering the pressure ring more flexible and conformable. At the same time, the pressure ring provides the base plate with sufficient convexity and stiffness to press against the peristomal skin surfaces and promote stomal protrusion when the appliance is worn.[4]

5 Barr JE. Assessment and management of stomal complications: a framework for clinical decision making. Ostomy Wound Manage. 2004; 50(9): 50-2.

6 Arnone RM, Ferguson KT. Adapter for use with two piece ostomy system. 1983; Patent: CA1243915A https://patents.google.com/patent/CA1243915A/en

7 Hoeflok J, Kittscha J, Purnell P. Use of Convexity in Pouching. Journal of Wound, Ostomy and Continence Nursing. 2013; 40(5): 506–12.

Rigid ostomy appliances and extended pressure should be avoided in pyoderma gangrenosum, caput medusae (parastomal varices), mucocutaneous separation, Crohn's ulceration, peristomal hernia, stomal prolapse and in the early postoperative phase[8].

The abdominal contour of the patient with a hernia is often round and hard. Pouching modification involves using a one- or two-piece flexible pouching system or a two-piece flat system with a flexible tape border and a floating flange.[5]

Parastomal varices are not common, however, they can be a source of considerable bleeding. A gentle technique is required when providing care to the stoma and peristomal area. Pouching systems that apply pressure to the peristomal area should be avoided, and one-piece systems or two-piece base plates with a floating flange are recommended[9].

Conclusion

Ostomy systems with a floating flange have gained significant attention from patients and medical professionals in the postoperative period, as they fit securely around the stoma without additional pressure applied on the peristomal area for the mechanical coupling of two-piece systems.

The floating flange can be used in flat and convex ostomy base plates and make rigid convex system more flexible and conformable. When used appropriately, it can provide patients with security and promote their physical and psychological well-being.

8 Boyd K, Thompson MJ, Boyd-Carson W, Trainor B. Use of convex appliances. Nursing Standard. 2004; 18(20): 37–38.

9 Wound, Ostomy and Continence Nurses Society. Pediatric Ostomy Complications: Best Practice for Clinicians. 2014 https://cdn.ymaws.com/member.wocn.org/resource/resmgr/document_library/PEDIATRIC_OSTOMY_COMPLICATIO.pdf

Indications for use of a floating flange and associated definitions

Indication for use	Definition
Peristomal hernia	Peristomal hernia is a type of incisional hernia occurring in ab-dominal integuments in the vicinity of a stoma.
Parastomal varices	Stomal or parastomal varices are extraperito neal ectopic mesen-teric varices. Parastomal varices are not common but can be a source of considerable bleeding.
Convex appliances	Convex appliances are more rigid. Patients with a firm abdomen would benefit from a convex base plate with a floating flange.
Postoperative period	The edema continues to decrease for the first 6–8 weeks after surgery.
Prolapsed stoma	Use a flexible pouching system to accommo date the length of stoma. Avoid two-piece systems with a rigid ring.
Mucocutaneous separation	A mucocutaneous separation occurs when a stoma completely or partially separates/de taches from the skin.