



**Using a convex ostomy appliance to
manage peristomal skin complications
introducing Aura Plus Soft Convex**

Using a convex ostomy appliance to manage peristomal skin complications: introducing Aura Plus Soft Convex

Elaine Cronin

ABSTRACT

This article explores convex stoma appliances, introduces Aura Plus Soft Convex (CliniMed) and presents three case studies of its use. Convexity applies pressure to flatten uneven peristomal skin and form an effective adhesive seal, as well as increase protrusion of a poorly spouted stoma. This reduces the risk of leaks and peristomal skin damage, as well as minimising accessory use. Excess pressure can damage the skin, so convexity should be used with caution at the appropriate depth and firmness for the ostomate's body profile and stomal complications. Aura Plus Soft Convex has a soft and flexible baseplate for easy application and adherence, as well as a unique shape, comfort curves and a large adhesive area to reduce creases and leaks. The hydrocolloid contains Manuka honey to promote skin health, and integral belt loops offer additional security. The case studies show how this appliance can restore peristomal skin integrity and relieve stoma-related anxiety; provide gentle support for a flush stoma and a rounded abdomen; and prevent leaks and improve quality of life after years of stoma-related complications.

Key words: Adhesive baseplate ■ Convex stoma appliance ■ Convexity ■ Peristomal skin complications ■ Manuka honey

There are more than 175 000 ostomates in the UK, with an estimated 20 000 people having stoma surgery each year (Kettle, 2019). The skin around the stoma (peristomal skin) is vulnerable to irritation, damage and breakdown. Consequently, it is common for people with a stoma (ostomates) to experience a peristomal skin complication (PSC), with prevalence variously reported at 77% (Malik et al, 2018) and 74–83% (Richbourg et al, 2007).

PSCs most often result from contact with faecal or urinary effluent, which macerates the skin and causes chemical irritation from its high alkalinity (ileostomy) and/or bacterial content (colostomy) (Rølstad et al, 2012). This is known as peristomal irritant dermatitis or moisture-associated skin damage (MASD). Stomal effluent usually only comes into prolonged contact with the peristomal skin when there is a leak in the seal with the adhesive baseplate of the stoma appliance. This adhesive seal is harder to form both in uneven skin, marked by creases,

bumps or folds, and in stomal complications, such as a flush stoma, retraction, stenosis, herniation or mucocutaneous separation—with these managerial issues thought to affect 70% of all ostomates (Ambe et al, 2018). PSCs can also develop due to skin stripping from frequent and traumatic removal of the appliance baseplate, known as medical adhesive-related skin injury (MARSI).

Damaged skin makes it more difficult to form an adhesive seal, further compounding the problem and making PSCs difficult to treat once they occur (Le Ber, 2021). Therefore, one of the main aims of good stoma care is to maintain good peristomal skin health, which is best defined as there being no difference between the peristomal skin and the surrounding skin (Boyles, 2010). Maintaining peristomal skin health involves reducing the risk of PSCs occurring and helping to treat them if they do occur. Preventing and healing PSCs is more difficult in patients with a high body mass index (BMI), poor nutritional health leading to severe weight loss or poor wound healing due to immunosuppressant agents, such as steroids (Cronin, 2005). The most effective treatment for a PSC is typically an appliance that forms an effective adhesive seal with the peristomal skin. This will avoid contact with stomal effluent and minimise the frequency of potentially traumatic product changes, thus allowing the skin to rest and repair itself.

Convex stoma appliances

How convexity works

One of the tools available to maintain good peristomal skin health is convexity (*Box 1*). In contrast to the flat baseplate of a typical stoma appliance, convex appliances have a dome-shaped (bevelled) baseplate that protrudes into the abdominal wall. While flat baseplates are suitable for ostomates with a relatively flat abdominal wall and a well-spouted stoma, other ostomates may require a convex baseplate to form an effective adhesive seal (Burch, 2019).

Convex baseplates are designed to hold their shape and apply gentle circumferential pressure directly onto the skin around the base of the stoma. In ostomates with uneven peristomal skin, this pressure fills in any creases, indents and gaps, including puckering from peristomal sutures, and thus provides a smooth, flat, stable surface (peristomal plane) for the baseplate to securely adhere to (Hoeflok et al, 2017). In ostomates with a poorly spouted or off-centre stoma, the same pressure encourages the

Elaine Cronin, Colorectal and Stoma Clinical Nurse Specialist, the London Clinic, e.cronin@thelondonclinic.co.uk

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stoma to spout further out from the abdominal wall. Even a couple of millimetres can be advantageous for directing the stomal effluent into the main chamber (pouch) of the appliance instead of onto the skin (Cronin, 2005; Hanley, 2013; Perrin, 2016; Kelly-O’Flynn, 2019).

A flat peristomal plane and a well-spouted stoma should reduce the chance of stomal effluent coming into contact with skin, where it could undermine the adhesive seal and thus cause leaks and PSCs (Cronin, 2008; Burch, 2019). In ostomates who have developed peristomal MASD, use of convexity has been associated with healing of the affected areas (White and Evans, 2019). Thus, in the right patients, convexity can obtain a leak-free, waterproof and securely fitting appliance that maximises skin protection and thus improves the ostomate’s quality of life.

Appropriate use of convexity can also reduce the need for supportive accessory products to form an effective seal, as well as minimise appliance changes due to leaks. This can simplify the ostomate’s routine, making management easier, as well as reduce the risk of MARSI and the overall cost of care (Hopkins, 2015).

Risks associated with convexity

Excessive pressure from a convex stoma appliance presents the risk of erythema (redness), bruising and ulceration (Boyles et al, 2004). Likewise, rubbing of the convex plastic ring against the stoma can lead to friction ulcers, mucosal bleeding and growth of overgranulation tissue, which can continue to grow and bleed if not treated (Cronin, 2008).

Therefore, convex stoma appliances should only be used where indicated, for example when being considered for flush or retracted stomas or for areas with creases and skin folds (Association of Stoma Care Nurses UK, 2016). Caution is advised when using any convex product, and regular reviews are essential (Cronin, 2008; Perrin, 2016; Burch, 2019). The degree of pressure should be kept to the minimum required to achieve the desired effect. Stoma care nurses should look out for a depth of pressure denoting the outline of the baseplate. Soft convex products can be effective in increasing the protrusion of the stoma, while minimising the risks associated with convexity. Care should be taken about further compounding the degree of pressure with the addition of an ostomy seal—known as double-depth skin trauma (Cronin, 2008).

Likewise, ostomates using an elasticated belt with a convex appliance should be taught to be mindful of increasing the level of pressure beyond what is intended, as this can traumatise the skin. Ostomates should be able to slip their hand inside the belt and move it freely from side to side, and they should know that removal of the belt should not leave deep penetrating lines or the imprint of the fabric on their skin, as this would indicate that the belt is too tight (Cronin, 2008).

Types of convexity

To make a good seal with the peristomal skin, a convex stoma appliance system needs to apply pressure around the stoma with sufficient force to effectively flatten uneven skin and increase stomal protrusion, without causing trauma to the skin and stoma. The optimal amount of pressure required varies depending on

the shape and softness of the individual ostomate’s abdomen (body profile), as well as the protrusion of their stoma and presence of stomal complications (Hoefflok, 2017; Perrin et al, 2023). A convex baseplate also needs to be flexible enough to conform to varying tissue profiles during changes in posture (Rolstad and Boarini, 1996; Turnbull, 2003; Perrin, 2016).

Consequently, convex appliances vary in both depth (shallow or deep) and firmness (soft or firm) (Burch, 2019; Evans and White, 2020). Shallower convexity limits the amount of pressure applied but reduces the risk of damage to the skin, while deeper convexity provides more pressure but at a greater risk of skin trauma. Soft convex baseplates are relatively malleable, being easy to shape, bend or contort, while firm convex baseplates are rigid and inflexible; there are also moderate convex baseplates that are somewhat rigid but can still be manipulated. A baseplate’s rigidity is often determined by the presence and hardness of an integral inner central plastic ring. The harder the plastic ring, the more pressure exerted onto the peristomal skin and the greater the pressure applied to the peristomal area. Stoma care nurses need to find an appliance that provides enough pressure to effectively ensure good adhesion and security without causing harm. Consequently, the convexity pathway typically begins by trying an appliance with shallow, soft convexity. Only if this gentle pressure proves to be insufficient, such as in some very deeply recessed stomas or very rounded and soft abdomens, will deeper, firmer alternatives be tried.

Stoma care appliances, including convex appliances, can be difficult to adhere to damaged skin or complex body profiles. If the adhesive seal is insufficient, a convex baseplate tends to repel (push away) from the abdominal surface. In these cases, it may be necessary to increase the contact area and provide more grip by using an appliance with a larger baseplate (as not all baseplates extend much beyond the weld of the bag). A similar effect can be achieved with flange extenders, supportive accessories used to increase the adhesive area either circumferentially or in an arc between the points of 3 o’clock and 9 o’clock, where there is often greater baseplate resistance (Cronin, 2005).

Convexity is available in both one-piece and two-piece appliances, which are suitable for different types of stomal output and user priorities. The diameter of the convex area of the flange (plateau) can vary from 25 mm to 60 mm.

Aura Plus Soft Convex

Overview

Convex stoma appliances have evolved since they were first introduced in the mid-1980s, initially as a simple plastic ring inserted into the inner plastic coupling on a two-piece baseplate to create a slight indent in the inner section of the baseplate

Box 1. Advantages of convexity

- Flattens uneven peristomal skin to form an effective adhesive seal
- Increases protrusion of a poorly spouted stoma
- Minimises leaks and skin damage
- Protects damaged skin
- Reduces accessory use

(Cronin, 2008). Convexity now tends to be integral to the baseplate, and it is available as part of both one-piece and two-piece appliances.

One example of an innovative contemporary convex appliance is Aura Plus Soft Convex (CliniMed) (Box 2). Aura Plus Soft Convex has a hydrocolloid adhesive baseplate that is light, soft and flexible, allowing it to be bent prior to application for ease of use and visual acuity. This softness helps the baseplate conform and adhere effectively to the abdominal wall, making it easy to apply (Bedford, 2022). However, the baseplate regains its form within seconds of application, thus maintaining its essential properties of depth.

The gentle pressure applied by Aura Plus Soft Convex is sufficient to flatten creases and folds in the peristomal skin, as well as push up flush, retracted or recessed stomas so they protrude inside the pouch, both processes reducing the risk of leakage and skin damage.

The baseplate of Aura Plus Soft Convex is uniquely shaped like a plus sign (Figure 1), which can benefit patients who may struggle to obtain sufficient adhesion with a circular or oval-shaped baseplate. The baseplate comprises four comfort curves, positioned evenly around the perimeter at 2, 4, 8 and 10 o'clock. These comfort curves reduce the potential for crease development while maximising flexibility, thus reducing the risk of leakage (Bedford, 2022). The baseplate is also wide, reducing the need for flange extenders and other accessories. Aura Plus Soft Convex is available in three sizes, with differing capacities: Mini, Midi and Maxi. It is available in four plateau sizes, 25 mm, 35 mm, 48 mm and 60 mm, the latter being the largest plateau size available and produced by only two stoma companies (Bedford, 2022).

Aura Plus Soft Convex is available in two colours – black and sand – allowing ostomates to choose the colour that best suits their style of dress and/or activities which may help them feel more confident wearing their appliance, helping them with their adjustment to life with a stoma (Bedford, 2022). Ostomates who were asked to evaluate Aura Plus have reported confidence and comfort while wearing it, and it was also found to adhere and contour well (Bedford, 2022). Aura Plus Soft Convex is also available in a clear option.

Belt

Aura Plus Soft Convex is one of many convex ostomy appliances that can be worn with an elasticated belt designed to pull the baseplate closer to the abdominal wall. Wearing a belt for 2–3 hours following initial application can help the baseplate conform to the abdominal wall to improve adhesion. The belt



Figure 1. Aura Plus Soft Convex stoma appliance

also supports the pouch as it fills and becomes heavy, providing the wearer with additional security and peace of mind. Some patients may remove the belt after the initial 2–3-hour period and leave it un-attached until the next appliance change, while others may wear the belt continually from one change to another – both approaches can be appropriate.

Aura Plus Soft Convex possesses two thin, soft, low-profile and highly flexible integral belt loops, one positioned at 3 o'clock and the other at 9 o'clock. A thin elasticated belt can be threaded through these loops and secured in place by way of hook-and-loop fastening, which can be adjusted to achieve an adequate and comfortable level of pressure.

Manuka honey

The hydrocolloid baseplate of Aura Plus Soft Convex contains medical-grade Manuka Honey. Manuka honey is one of several ingredients that are included in different stoma appliances, including ceramide, aloe vera and vitamin E (Sica, 2018).

The antibacterial, antimicrobial and skin-friendly properties of honey give it the potential to protect healthy peristomal skin and help treat skin conditions such as MASD (Belcher, 2013; Woodward and Belcher, 2013; Sica, 2018; Woodward, 2019; Le Ber, 2021). Moreover, medical-grade honey is known to be safe and easy to use (Belcher, 2013). In a study undertaken by White and Evans (2019), 94% of patients reported improved peristomal skin health within 7 days of applying a baseplate that includes Manuka honey. In another paper, the same authors (Evans and White, 2020) identified that a convex baseplate containing Manuka honey could increase appliance security and wear time, as well as reduce leakages and the need for stoma accessories.

The Aura Plus Soft Convex baseplate only contains naturally derived food-grade ingredients and is without additives or preservatives (Bedford, 2022).

Box 2. Attributes of Aura Plus Soft Convex

- Applies gentle pressure to flatten creases and increase stomal protrusion
- Light, soft and flexible material allows for easy application and adherence
- Unique shape and comfort curves reduce creases and leaks
- Large adhesive area minimises need for accessories
- Integral belt loops offer additional security
- Manuka honey promotes skin health

Case studies

Case study 1. Improving peristomal skin integrity and relieving stoma-related anxiety

Winnie (not her real name) was a 65-year-old woman with an end ileostomy stoma that was formed in February 2022 as part of a panproctocolectomy for ascending colon cancer. Her stoma was flush to the skin, and she had a rounded abdominal body profile. She had gained weight since her surgery, which she attributed to previous knee surgery that had impacted on her ability to go to exercise classes.

After stoma formation, Winnie was commenced on a flat stoma appliance and a convex washer, which she used for 1 week in hospital and was discharged with. However, while using these she experienced frequent leaks, and on the first day of her referral to the community team she presented as having leaks, so she was changed to a soft convex appliance. From that point, she adjusted well to life with a stoma, returning to her normal daily activities, including travelling abroad. However, she did experience occasional leaks and sore skin, which she managed with stoma powder and skin barrier wipes. There were two leaks reported in the first 2 weeks on commencing convexity and no further leaks were reported until review 10 months after stoma formation.

At a routine appointment 12 months after stoma formation, swelling to Winnie's abdomen in the region of her stoma and a ring of erythema around her stoma were noted (*Figure 2a*). She reported these changes in her abdominal appearance following a prolonged cough. It was agreed that she would continue to use this soft convex appliance, with additional accessories to help manage these leaks, and her skin integrity would be closely monitored.

The swelling settled, and there was no evidence or diagnosis of parastomal hernia. However, despite use of a barrier film, the sore skin persisted. It was noted that the circle of blushed skin corresponded to the convex plateau of her appliance, suggesting that it had been applying excessive pressure, which had been damaging her skin. Therefore, she was recommended to try a softer convex appliance that offered more gentle support.

Winnie was identified as a suitable user for Aura Plus Soft Convex, with the plus-shaped baseplate having the benefit of conforming and moulding around the abdomen to help maintain a secure seal throughout the day. Likewise, it was suggested that her persistent sore skin could potentially benefit from the healing properties of the Manuka honey in Aura Plus Soft Convex. The appliances were demonstrated to Winnie, and she agreed to try them for 2 weeks until her next follow-up appointment with her stoma care nurse, when she would evaluate them by filling out a questionnaire to record her experience. Winnie provided written consent for this and for clinical photography to be captured and shared.

After 2 weeks of using Aura Plus Soft Convex, Winnie reported an improvement in her skin condition. This improvement in peristomal skin integrity was visible in the post-evaluation photograph, with the ring of erythema having disappeared and the peristomal skin looking like the skin on the rest of her abdomen (*Figure 2b*). Winnie said that her stoma care routine and appliance experience had improved, as she

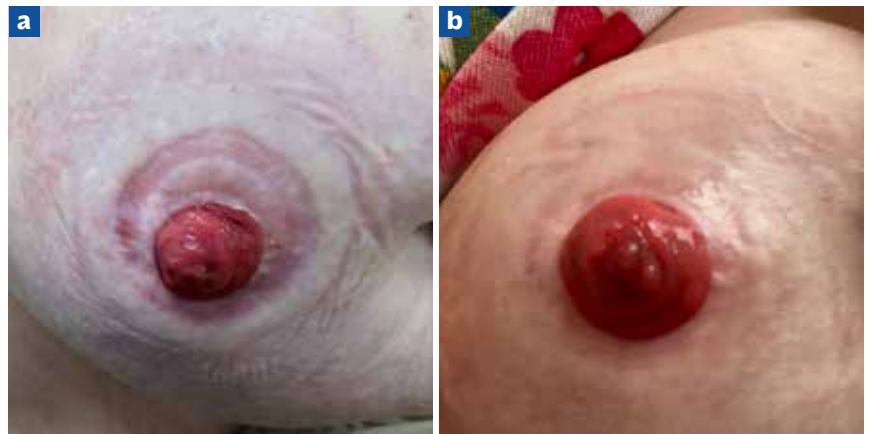


Figure 2. Case study 1: before (a) and after 2 weeks of (b) using Aura Plus Soft Convex

no longer worried about her appliance becoming insecure and leaking as it filled.

Winnie's reduction in erythema and improvement in skin health are likely to have resulted from Aura Plus Soft Convex's gentle degree of convexity, with potential additional benefits from the Manuka honey in the hydrocolloid. The reduction in leaks was down to a durable adhesive seal, which was likely achieved through Aura Plus Soft Convex's flexibility, conformability and plus-shaped baseplate, with sufficient pressure to provide security and reduce the risk of leaks.

Case study 2. Providing gentle support for a flush stoma and a rounded abdomen

Odette (not her real name) was a 78-year-old woman with an end colostomy that was formed in October 2020 related to a total abdominal hysterectomy. She had a poorly spouted stoma that was flush to the skin, as well as a large rounded abdominal body profile that meant that, when she sat upright, the stoma would sit within a recessed area, which would be exaggerated on movement. She had a history of macular degeneration, cerebrovascular accident and fibromyalgia. These conditions had left her with reduced mobility and unable to care for herself. Her main carer was her husband, who carried out all personal care, including stoma care. Her appliance was normally changed daily, but this could alter depending on bowel movements.

For the years following stoma-forming surgery, Odette had used the same soft convex stoma appliance. While using this appliance, she was experiencing ulcerated peristomal skin, breakdown of the stoma's mucosal edge and discomfort from where the appliance dug into her leg and groin. These complications were initially managed with stoma washers and a protective skin barrier, which led to improvements, although these accessories added to the complexity of her stoma care routine.

At a review by her stoma care nurse, there was visible irritation on the left side of Odette's stoma, where the skin appeared dry and fragile (*Figure 3a*). This irritation was thought to be pressure-related, as there had been no previous reports of leaks. Odette was recommended to try Aura Plus Soft Convex, as it was hoped that the soft convexity would minimise the risk of any pressure-related skin injury, while

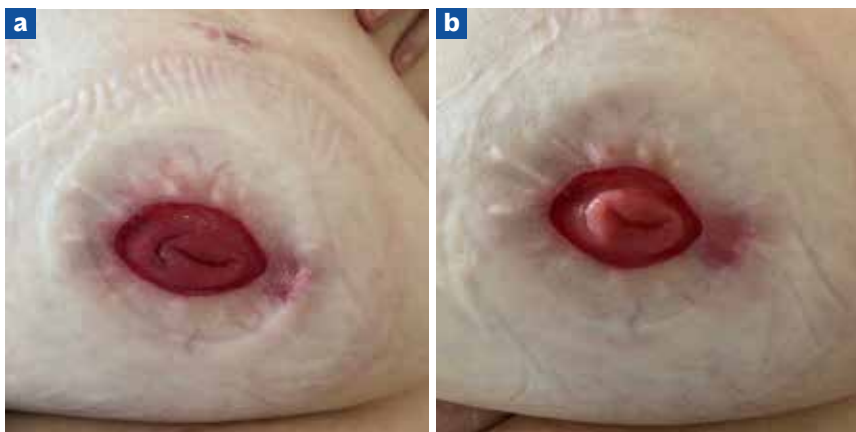


Figure 3. Case study 2: before (a) and after 1 week of (b) using Aura Plus Soft Convex

providing enough pressure for an effective seal. Meanwhile, the flexible, conformable, plus-shaped baseplate would enable an optimal fit for her body profile, and the Manuka honey in the hydrocolloid would promote healthy skin and so reduce the need for further skin barriers. These potential benefits were explained, and she consented to try the appliance for 7 days. Odette was advised to stop using the stoma washer, as it should no longer be necessary due to the support offered by Aura Plus Soft Convex. She was reluctant to stop using these accessories, which had provided earlier improvements, but was reassured that Aura Plus Soft Convex could reduce the risk of leaks, while making her stoma care routine more simple. Odette agreed to try changing her appliance without using the additional accessories.

At her 1-week review, there was a noticeable improvement in the condition of Odette's peristomal skin, which was less irritated and no longer dry in the affected areas, while the redness around the mucosal edge had reduced greatly (Figure 3b). Odette reported that Aura Plus Soft Convex offered superior levels of comfort compared to her previous appliance, saying it was a better shape for her body and did not dig into her skin, while the drainable outlet was more robust and discreet.

Aura Plus Soft Convex appeared to be a suitable choice for Odette. It provided the right level of convexity, preventing leaks without causing any trauma or damage to the surrounding skin.

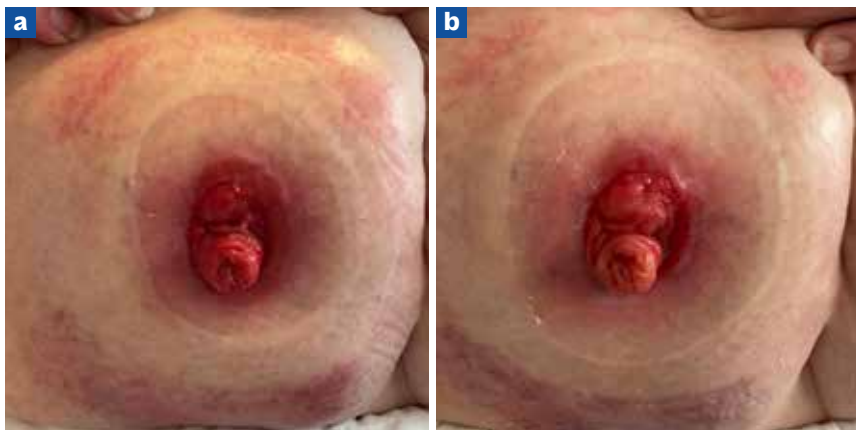


Figure 4. Case study 3: before (a) and after 1 week of (b) using Aura Plus Soft Convex

The plus-shaped baseplate had moulded well to the contours of her rounded abdomen and remained secure regardless of the flush and recessed nature of the stoma. The security and skin health offered by Aura Plus Soft Convex meant the use of additional washers and protective skin barriers was no longer needed.

Case study 3. Preventing leaks and improving quality of life after years of stoma-related complications

Betsy (not her real name) was a 73-year-old woman who had a loop ileostomy formed in 2014 as part of a subtotal colectomy for Crohn's disease. Her stoma had an erratic output, and her abdominal body profile involved uneven skin contours and a parastomal hernia, while her stoma sat in a slight dip, which affected its spouting.

Betsy had been using the same stoma appliance for several years. Over that time, she experienced frequent leaks, and she would sometimes change her appliance up to four times a day. She was having several ongoing issues with skin health, including MASD caused by stomal effluent contacting the skin and skin stripping caused by traumatic adhesive removal (Figure 4a). She also had difficulties with her parastomal hernia, the stretching of which was causing broken areas of skin around the stoma. She had been self-treating the damaged skin with calamine lotion at home. However, she was struggling to cope and lead a normal life, and she did not have the confidence to leave the house because of the fear of leaks.

Betsy was booked for a review with the stoma care team, where these issues were all apparent. She was recommended to try Aura Plus Soft Convex as a more appropriate fit for her stoma and abdominal body profile. This change to soft convexity was aimed at providing enough gentle pressure to help protrude her stoma out into pouch and so reduce the risk of leaks, while having enough flexibility to maintain a secure seal around her parastomal hernia. She consented and began to use the appliance, with a follow-up appointment booked in 1 week.

At her 1-week follow-up, the condition of Betsy's skin had visibly improved (Figure 4b). The skin was no longer wet and sore, and the area of skin discoloration had reduced. Betsy reported an extremely positive experience using Aura Plus Soft Convex. Unlike her previous appliance, she found it to be kind to her peristomal skin, which she felt benefited from the Manuka honey in the hydrocolloid. She felt the adhesion of the appliance was excellent and provided security, and she had not experienced any leaks. This meant that she was having to change her appliance less frequently and thus ordering fewer appliances. Consequently, she did not have to worry about carrying excess appliances in case of emergencies, and it resulted in a cost saving for the health service.

Betsy also benefitted from the release tab on the drainable outlet, which she found easier to open and direct into the toilet, as well as much less messy overall than her previous appliance, which she had found difficult to clean and would often soil her hands. She also found Aura Plus Soft Convex more discreet than her usual appliance, helping her to feel more confident leaving the house. All of this contributed to improved wellbeing.

Conclusion

Convexity is an essential part of the stoma care nurse's tool kit. These three case studies demonstrate that Aura Plus Soft Convex offers a solution for people with different stoma needs. In each case, using a soft convex appliance reduced leaks, skin damage and appliance renewal, and it improved the comfort, security and the condition of the skin. These impacts, alongside other positive features, improved each ostomate's self-confidence, body image and overall wellbeing. They reported that they felt able to leave their house again and engage in their usual day-to-day activities without the constant worry of leakage – anxiety about leaks being known to have a significant impact on a person's ability to adapt to life with a stoma (Bedford, 2022). After the case study, all three ostomates wished to continue using Aura Plus Soft Convex, feeling that it performed well and offered them multiple benefits that added up to a greater quality of life.

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KEY POINTS

- Peristomal skin complications are common and generally result from leaks caused by a poor adhesive seal between appliance and skin
- Convex stoma appliances flatten uneven peristomal skin to form an effective seal that reduces the risk of leaks
- Convexity can also increase the protrusion of a poorly spouted stoma that is flush or retracted below the skin
- Excess pressure can damage skin, so convexity should be used with caution, and soft convexity should be considered when aiming to provide enough pressure to ensure adhesion while reducing risk of skin damage

CPD reflective questions

- Can you list three reasons for choosing a convex stoma appliance?
- How should a patient's need for convexity be assessed?
- Have you encountered an ostomate with repeated leakage or ongoing skin problems? If so, how did you help, and what was your thought process?
- Describe any changes you will make in your clinical practice as a result of reading this article

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St Jude's Church, Dulwich Road,
London, SE24 0PB, UK
+44 (0)20 7501 6726

www.markallengroup.com

Produced by **Mark Allen
Medical Communications**

www.mamedcomms.com

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