Evaluating the use of the Dermisplus® Prevent pad to prevent pressure damage among patients at risk of pressure ulceration

KIRSTEN MAHONEY
Clinical Nurse Specialist Wound Healing, Primary, Community and Intermediate Care Division, Cardiff and Vale University Health Board Cardiff

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KEY WORDS
- Gel pad
- Pain
- Pressure ulcer
- Prevention

While pressure and shear can be reduced through the use of appropriate patient support surfaces; gel pads and wound dressing materials may also be used to protect skin and soft tissues from mechanical loading. This case series reports recent experience in the use of one soft polymer gel pad (Dermisplus® Prevent, Frontier Medical, UK) to reduce the risk of pressure damage. The patients who took part in the case series were at risk of developing pressure related damage to the skin either based on their Waterlow score or on the nurses' clinical judgement. Four patients participated in the evaluation and are presented as case studies. Overall the product was well tolerated by all 4 patients. There was a marked improvement in pain scores in 3 out of 4 patients with the final patient having neuropathy and so did not experience any pain. In the two patients with erythema this was reduced in both cases. Dermisplus® Prevent was washable and durable and did not disintegrate or show any signs of deterioration during the two-week evaluation. The product was well accepted by the patients all of which said they would use the product

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Clinical Nurse Specialist Wound Healing, Primary, Community and Intermediate Care Division, Cardiff and Vale University Health Board Cardiff

Pressure ulcers are caused by high or sustained skin and soft tissue deformation due to pressure and/or shear (The National Pressure Ulcer Advisory Panel (NPUAP), European Pressure Ulcer Advisory Panel (EPUAP) Pan Pacific Pressure Injury Alliance (PPPIA), 2014). There are several contributory factors that may increase the risk of developing a pressure ulcer including poor mobility, incontinence, extremities of age, neurological conditions, poor nutrition, poor posture or deformity and an episode of serious illness (National Institute for Health and Care Excellence (NICE), 2014). The exact prevalence of pressure ulcers in the UK is difficult to establish due to lack of consistency in reporting methodologies however NICE (2014) reported that the prevalence of pressure ulcers among in-patients in hospitals in England was 4.7%. More recently Clark et al (2017) reported an 8.9% prevalence of pressure ulcers across all acute and community hospitals across Wales. Clark et al collected data using the European Pressure Ulcer Advisory Panel (EPUAP) methodology (Vanderwee et al, 2007) where the skin of all consenting patients was visually inspected by two nurses and is likely to be more accurate than estimates based on staff recollection of which patients have pressure ulcers. The prevalence of pressure ulcers in non-hospital settings is yet to be accurately established. Vowden and Vowden (2009) reported the numbers of superficial and severe pressure ulcers in hospital or in patients' home in Bradford with 40 and 115 patients respectively with pressure ulcers. From a database review, Guest et al (2015) considered that 7% of wounds that presented to GP practices were pressure ulcers. The cost of treating pressure ulcers has been estimated at £1.4–2.1 billion per year (Dealey et al, 2012), this cost includes dressing expenditure, nursing time, treatment of complications and pressure redistributing products. The cost of pressure ulceration is not just financial; for affected patients there are often negative impacts on their quality of life (Essex et al, 2009) including pain, odour, social isolation and even death.

Successful prevention of pressure damage involves identification of a patient's specific risk

factors and the implementation of interventions that mitigate these risks. While pressure and shear can be reduced through the use of appropriate patient support surfaces; gel pads and wound dressing materials may also be used to protect skin and soft tissues from mechanical loading (NPUAP, EPUAP, PPPIA, 2014). This case series reports recent experience in the use of one soft polymer gel pad (Dermisplus® Prevent, Frontier Medical, UK) to reduce the risk of pressure damage.

Dermisplus® Prevent are pressure-redistribution gel pads *(Figure 1)* designed to help reduce the risk of pressure damage as part of a pressure ulcer prevention strategy. The products work by redistributing peak pressures on anatomical sites prone to pressure damage (e.g. sacrum and heels) so reducing the risk of pressure-related tissue damage. Dermisplus® Prevent is available in a range of shapes, sizes and thicknesses. The product is reported to be durable and comfortable to wear, suggesting its use over bony prominences or preventing pressure damage from a medical device, e.g. face masks. It is available as a sheet, strip, heel or sacrum dressing and can be used anywhere on the body identified as being 'at risk'.

AIM OF THE CASE SERIES

To evaluate the performance of Dermisplus® Prevent on patients who were at risk of developing injury to the skin and underlying soft tissues because of prolonged localised pressure.

OBJECTIVE

To observe if using Dermisplus® Prevent prevents damage to the skin and if the patient tolerated the product.

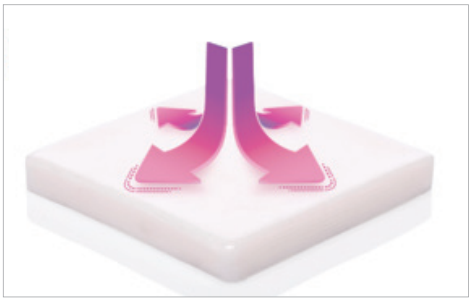

Figure 1. Pressure redistribution through Dermisplus® Prevent

METHODS

The patients who took part in the case series were at risk of developing pressure related damage to the skin either based on their Waterlow score (Waterlow, 1985) or on the nurses' clinical judgement. No restriction was imposed on using the device upon areas of non-blanching erythema or wound scabs. All participating patients were provided with an information sheet about the case series and gave their informed consent to participate. The case series was conducted in community settings within Cardiff & Vale University Health Board with the service evaluation approved by the Research and Development lead for the Primary Care Clinical Board.

At the start of the evaluation, the nurse recorded which area of the body was at risk, a photograph of the site was taken, and the skin visually assessed for redness or other signs of pressure related damage.

Pain was measured at the start of the evaluation using a Visual Analogue Scale (VAS) with each patient asked to rate pain at the body site which was at risk of pressure damage from 0 (no pain) to 10 (worst pain imaginable). The Dermisplus® Prevent pad was placed over the area considered to be vulnerable to pressure damage and secured with tape or a cotton retention bandage. All other pressure ulcer preventive care continued during the evaluation.

The Dermisplus® Prevent pad was used as part of routine care for 2 weeks, after which time the nurse assessed the condition of the skin under the gel pad and a second photograph of the area was taken. The nurse then asked the patient how easy the pad was to apply and remove, and if the patient had experienced any problems whilst wearing the pad. Ease of application and ease of removal were both scored from 1–5 with 1 being 'not very easy' and 5 being 'very easy'.

Four patients participated in the evaluation and are presented as case studies 1–4. Pseudonyms were used to protect patient data.

IMPACT AND OUTCOMES

The aim was to observe if using Dermisplus® Prevent prevents any damage to the skin and can be tolerated by patients. Overall the product was well tolerated by all 4 patients. There was a marked improvement in VAS scores in 3 out of 4 patients (the final patient had neuropathy and so did not experience any pain). In the two patients with erythema this was reduced in both cases. Dermisplus® Prevent was washable and durable and did not disintegrate or show any signs of deterioration during the two-week evaluation.

Case Study 1

'Marion', a 72-year-old lady, under the care of the community wound team for treatment of her venous ulcer. As part of the treatment she was required to wear a hosiery kit that applied 40 mmHg to help reduce her venous hypertension. Marion presented for a review of her treatment where it was found that she had sustained category 1 pressure damage along the tibial bone from wearing the hosiery. The area presented as a line of non-blanching erythema *(Figure 2a).* This was considered to be device related damage. Marion was in significant pain from the pressure damage (VAS score of 8) but was required to continue with her hosiery to prevent further venous ulceration. Dermisplus® Prevent strips were applied to the tibial crest and secured with a cotton tubular bandage. The hosiery was then applied, and full instructions were given to the patient on how to apply, remove and wash the Dermisplus® Prevent. After two weeks wearing the gel strips the non-blanching erythema had largely resolved *(Figure 2b)*, and her pain had reduced to 0. This indicated that the Dermisplus® Prevent had been effective in reducing the pressure over the bony prominence and had also assisted in eliminating the pain the patient experienced. Marion commented that she was amazed that it had reduced the pain completely. Marion found it comfortable to wear and liked the fact that it was washable and did not move once it was in place. When Marion was asked to score the ease of application and removal she scored the product 4 and 5 respectively. Marion's only negative comment was that it was difficult to keep in place whilst the retention bandage was being applied. The Dermisplus® Prevent was washed by the patient every day and remained intact with no damage to the product. Marion stated that she would use this product again.

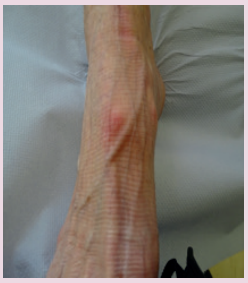

Figure 2a. First assessment

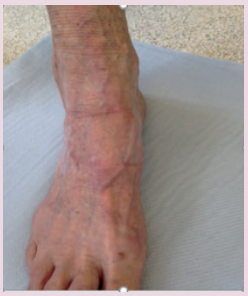

Figure 2b. After 2 weeks

Case Study 2

'John', a 67-year-old paraplegic following a road traffic accident 25 years ago, was hospitalised due to a category IV pressure ulcer to his right hip. The PU became infected but has since healed. John has erythema to both his heels which never fully resolves due to shearing, and these areas are of concern to John as he is keen for them not to develop into a pressure ulcer. John had a Waterlow score of 18 putting him at high risk of developing new pressure ulcers. John had been provided with a high specification low-air loss mattress for pressure redistribution. At the first assessment the right heel had areas of blanching erythema and the left heel *(Figure 3a)* had a scabbed area which was a resolving category 2 pressure ulcer. John thought this was due to shearing forces when he had involuntary movements in his legs. No pain score was obtained as John had no sensation in his legs. The Dermisplus® Prevent heel protectors were used upon both heels.

After 2 weeks, John had noted a difference in his skin and commented that the scab and the reddened areas had resolved *(Figure 3b).* This was confirmed on visual assessment. The ease of application and ease of removal both scored 5. John was very happy with the product, as he had not previously experienced any time when his heels were free from pressure damage. The only negative comment was that he experienced slight skin sweating under the pads. The Dermisplus® Prevent pads were washed on alternate days and remained intact.

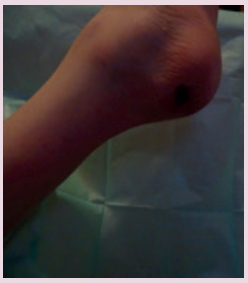

Figure 3a. First assessment

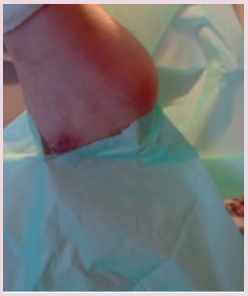

Figure 3b. After 2 weeks

Case study 3

'Janet' is a 52-year-old lady with a rare neurological condition that has rendered her bed bound. She developed a category IV pressure ulcer to her sacral region, which was non-healing. Due to the significant challenges experienced in healing the pressure ulcer her consultant decided to initiate treatment with an oxygen delivery system. The oxygen delivery system was required to be applied directly to the wound bed, however the tubing, which formed part of the delivery system, was hard and rigid. Janet would be at risk of developing medical device related skin damage if the tubing was applied without adequate pressure relief to the skin directly under the tubing. It was decided to apply Dermisplus® Prevent strips under the tubing, which were secured with a film dressing. After two weeks there was no evidence of skin damage and the Dermisplus® Prevent had contributed to the safe usage of the oxygen delivery system by preventing skin damage under the rigid tubing. Pain scores were not recorded for this patient, as she had no sensation over the areas.

Case Study 4

'Ceri' was a 50-year-old that had recently undergone breast surgery and reconstruction. On her left chest wall, she had a drain in situ which was causing discomfort at night as this was the side that Ceri needed to lie on to sleep. The result was that Ceri was experiencing a pain score of 5 which was impacting on her sleep pattern. The Dermisplus® Prevent was used at night over the left chest area. After 2 weeks her pain score had reduced to 1 and her sleep pattern had improved. Ceri stated that the Dermisplus® Prevent had made a big difference easing the pressure on the rib area. Ease of application was scored at 4 and ease of removal 5. The only negative point was that Ceri experienced sweating and a heat rash over the area under the gel pad at times.

there was slight skin sweating when the product had been in place for a long period of time.

CONCLUSION

From the evaluations Dermisplus® Prevent gel pad was effective at reducing pain and minimising any pressure damage. The product was reusable and easy to apply and appears to be a potentially useful adjunct intervention for pressure ulcer prevention. WUK

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