The evaluation of two medical devices to resolve Category 1 heel pressure ulcers in at-risk elderly patients

Introduction

The aim of the study was to evaluate the ability of two medical devices (1) silicone heel pad* compared with (2) silicone adhesive foam dressing* to resolve Category 1 heel pressure ulcers in at-risk patients in a care of the elderly setting. Clinical outcome measures were:

1. Area of non-blanching erythema
2. Skin maceration
3. Pain
4. Quantifiable assessment of dermal oedema (Day 28)

The 5 patients in this study were residents in nursing homes. All patients were classed as 'at-risk' or 'high-risk' of pressure injury to the heels and had a history of developing such pressure damage. A clinical assessment of each patients non-blanching erythema region of the heel was conducted, indicating a Category 1 pressure ulcer on both heels.

*Brand name: Silicone heel pad, KerraPro, Crawford Healthcare. Silicone adhesive foam dressing, Mepilex Border Heel, Mölnlycke Health Care

Method

Each patient had 1 silicone heel pad* *(Figure 2)* placed on the left heel and a silicone adhesive foam dressing* *(Figure 3)* placed on the right heel.

Patient's heels were photographed and clinically assessed weekly.

High frequency ultrasound scans were also taken of each heel at the start of the study (Day 0) and at the end of the study (Day 28). Scans were also taken of the subjects normal skin adjacent to the affected area to obtain a profile of what the patients uninjured skin should actually look like. Ultrasound assessment provides quantitative information about what is happening beneath the skin surface which is not always clinically evident.

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Scanner used in the evaluation is operated at a frequency of 20MHz (Episcan – Longport Inc.), this frequency gives an axiel resolution

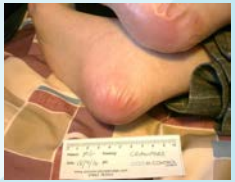

Figure 1 Photograph of a patients heels at Day 0

Figure 2 Left Heel: At each heel assessment the silicone heel pad* was always in the same position/condition as it was when it was applied.

Figure 3 Silicone adhesive foam dressing: At most heel assessments the dressing was not as originally applied and was typically as shown in the photograph .

Results

Heels treated with silicone heel pads* had fully resolved from Category 1 status by week 2. Heels treated with silicone adhesive foam dressings*, 2 patients recovered by week 2, with the remaining 3 patients taking 3 weeks to recover. *(Figure 4)*.

No skin maceration was recorded, with all patients scoring 1 = healthy, at each weekly assessment.

Category 1 pressure ulcers can be painful and a visual analogue scale of pain was measured at time zero and weekly. Pain was reduced in heels treated with silicone heel pads* in all but one patient after two weeks, pain was only resolved in the silicone adhesive foam dressing* treated heels in week 3. A close relationship between resolution of non-blanching erythema and reduction in pain.

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Patient	Time 0		1 week		2 week		3 week		4 week	
	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
KJ	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No
MD	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No
MF	Yes	Yes	Yes	Yes	No	No	No	No	No	No
MG	Yes	Yes	Yes	Yes	No	No	No	No	No	No
RW	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No

Figure 4 Table indicating presence of non-blanching erythema

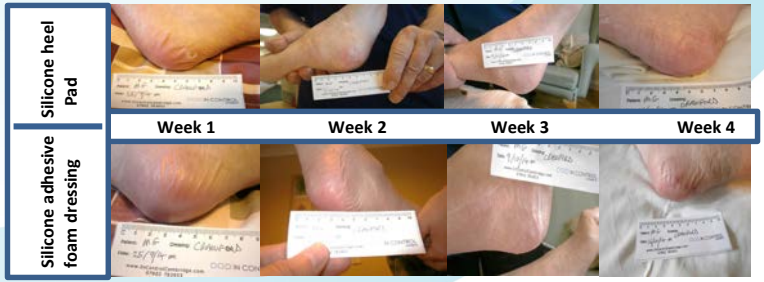

Figure 5 Photographic evidence of patient MG's weekly clinical assessment

Results & Conclusion

After 4 weeks, the ultrasound scan on the heels treated with silicone heel pad* had returned the injured skin to an almost uninjured condition, whereas the heels treated with silicone adhesive foam dressings* had a lower level of improvement (*Figure 6).*

Studies involving 5 patients are small for any firm conclusions to be drawn but this is mitigated by each patient acting as their own control. Resolving a Category 1 pressure ulcer 1 week earlier would have a significant bearing on cost as well as improving patient outcomes. Care staff commented on ease of use for the silicone heel pads*, with silicone adhesive foam dressings* being more difficult to apply. Clinical staff reported using silicone adhesive foam dressings* on average every 3 days whereas only one silicone heel pad* was required for the full 4 weeks, due to the material being flexible, hard-wearing and easily cleaned, dried and re-used.

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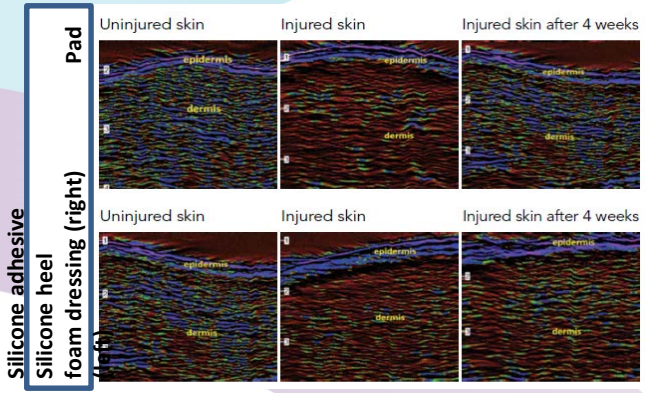

Figure 6 Scans comparing the patient's uninjured skin with the damaged site at time 0 and injured site at day 28