

COMPLIANCE IS KEY: SUCCESSES IN REDUCING WOUND SIZE IN COMPLEX, CHRONIC HEEL PRESSURE ULCERS BY OFFLOADING HEELS WITH AN ENGINEERED HEEL PROTECTOR

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BACKGROUND

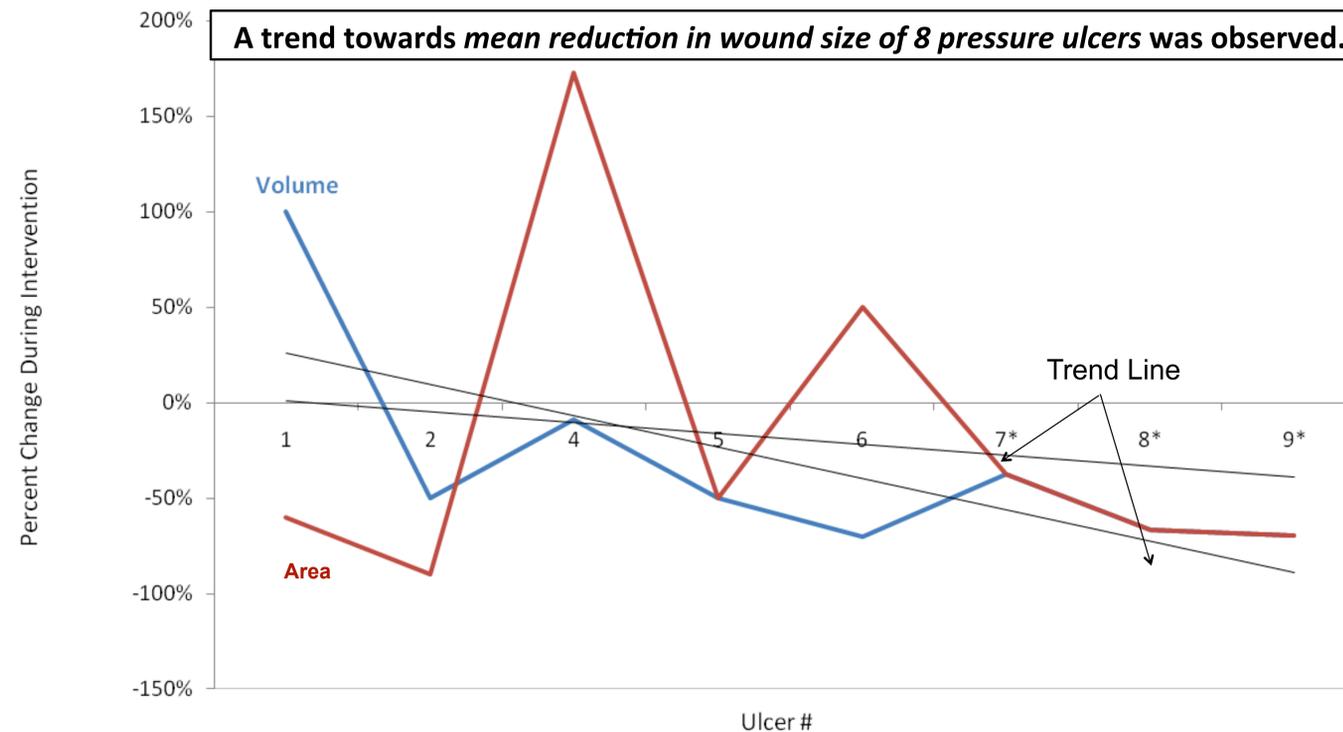
Heel pressure ulcers are painful and serious medical conditions affecting surgical and other non-ambulatory patients.¹⁻³ Once present, these ulcers can be extremely difficult to manage. Published studies and pressure ulcer guideline recommendations, including those of the NPUAP, suggest that pressure relief, or offloading, is the most important aspect of heel ulcer prevention.⁴ At the Berger Wound Clinic, a group of non-ambulatory patients with multiple comorbidities, including compromised vascular conditions and diabetes, were being seen for treatment of ongoing heel pressure ulcers (hPU's). These hPU's were being managed with minimally successful aggressive advanced wound therapies. Standard wound care protocols and offloading techniques had been utilized, including two pillows on calf (*slid off easily*), foam block (*will not wear, straps tear off, not cleanable*), suspension over leg rest (*only works when pt in bed or chair*), PRAFO (*expensive, patient do not like to wear, no protection from lateral or medial roll*), other foam boots (*not enough padding, poor quality, fall apart easily*), heel pads and donuts (*no pressure relief, bother the calf, sit improperly to relief pressure*). All of these failed to heal these hPU's. **This retrospective cohort pilot study uses real-time clinic data to assess the effectiveness in reducing hPU wound size when utilizing a pillow-based, engineered heel protector with a dermasuede-lined interior surface that grips the limb, ensuring that the heels are completely off-loaded.**

METHODS

Consecutive series of 4 patients with (n=8) chronic hPU's were provided with the heel protecting device and instructed by the investigating podiatrist regarding proper application and use. The ulcer measurements were tracked at regular clinic visits. Area and volume were compared between baseline and most recent evaluations. Statistical analysis was performed.⁶ Compliance with the heel protector was evaluated by review of clinic notes.

RESULTS & DISCUSSION

During the initial 2 weeks following the implementation of the heel protector, the first 5 hPU's in the group of 8 showed a noticeable mean reduction in both area and volume. Measurements continued at subsequent visits, and the average area and volume *percent change* calculations for each wound are shown below. All 4 patients had extremely compromised vascularization and fluctuated in progression. It should be noted that most of these patient's feet would have been amputated under different care, due to their vascular status and the slow progression. No statistically significant differences between measurements were calculated, likely due to the small sample size. Such results may warrant further study in larger populations. *As the graph below indicates, a trend toward mean reduction (shown by percent change) in the size of each of the 8 pressure ulcers was observed.*



COMPLIANCE IS KEY

*Case Study, Subject # 4 (Ulcers #7-9): Approximately 2 weeks after initiation of the offloading-heel protector, a subject with 3 ulcers became noncompliant and removed this device, despite successfully reducing the area and volume of the 3 wounds by an average of 56% while utilizing the heel protector. Due to noncompliance, study participation was discontinued and a graft was applied over the 3 ulcers. Measurements obtained 9 weeks after discontinuation in study demonstrated that all 3 pressure ulcers had increased in size. **These results indicate a trend: regular use and compliance with the offloading heel protector is strongly correlated with a decrease in wound size, while non-compliance with this device correlates with an increase in wound size. Thus, compliance is key in overall success of relieving pressure ulcers**

CONCLUSIONS

A pillow-based off-loading heel protector⁵ engineered specifically for offloading and protecting the heels of non-ambulatory patients was used in addition to standard wound care protocols for heel pressure ulcers.



The addition of this offloading heel protector to standard wound care protocols showed great improvement in reducing wound size in the majority of the heel pressure ulcers over a short period of time. With use of this off-loading heel protector, there was an observable clinically significant decrease in wound size in each of the 8 ulcers. This was significant because these patients had previously been unsuccessfully treated for an extended time with various standard of care methods. In addition, the heel protector may be effective in relieving pressure experienced by the patients, potentially increasing comfort and compliance. Compliance appears to be very strongly correlated with positive outcomes. Regular and continued use of the heel protector may lead to decreased pressure to the heel and reduction in even chronic hPU wound size.

Notes & References

1. Park-Lee E, Caffrey C. *Pressure ulcers among nursing home residents: United States, 2004*. NCHS Data Brief. 2009;14,1-8.
2. Clegg A, Kring D, Plemmons J, Richbourg L. *North Carolina wound nurses examine heel pressure ulcers*. J Wound Ostomy Continence Nurs. 2009;36:635-9.
3. Fowler E, Scott-Williams S, McGuire JB. *Practice recommendations for preventing heel pressure ulcers*. Ostomy Wound Manage. 2008;54:42-8,50-2,54-7.
4. NPUAP-EPUAP. *Pressure Ulcer Prevention, Quick Reference Guide*, 2009
5. Sage Products, Inc., Cary, IL: Prevalon Heel Protector with Integrated Wedge (#7355).
6. Statistical analyses were performed using SigmaStat® Software, version 2.0 (SPSS, Inc., Chicago, IL).