

Sacral Soft Tissue Deformations When Using a Prophylactic Multilayer Dressing and Positioning System: MRI Studies

CITATION

Cohen L, Levy A, Shabshin N, Gefen A, et al. Sacral soft tissue deformations when using a prophylactic multilayer dressing and positioning system: MRI studies. *J Wound Ostomy Continence Nurs.* 2018 Sep/Oct;45(5):432-437.

Pubmed Link:

[https://www.ncbi.nlm.nih.gov/pubmed/?term=Cohen%2C+L.%2C+Levy%2C+A.+J+Wound+Ostomy+and+Continence+Nursing.+2018+Sep%2FOct%3B45\(5\)%3A432-437](https://www.ncbi.nlm.nih.gov/pubmed/?term=Cohen%2C+L.%2C+Levy%2C+A.+J+Wound+Ostomy+and+Continence+Nursing.+2018+Sep%2FOct%3B45(5)%3A432-437)

SYNOPSIS

This study utilized magnetic resonance imaging (MRI) to measure the effect of a prophylactic soft silicone multilayer dressing combined with a turning and positioning device while lying on a rigid MRI table and a standard foam mattress. Sacral skeletal muscle, subcutaneous fat, and skin tissue deformation was measured in the weight-bearing sacral skin, subcutaneous fat, and muscle of 3 healthy adults. Deformation was measured by soft tissue thickness preservation.

RESULTS

The prophylactic dressing and the turning and positioning system work complementarily to reduce tissue deformation in the subcutaneous fat layer by cushioning and by redistributing pressure across the layers respectively.

- 39% increase in soft tissue thickness when the turning and positioning system and prophylactic dressings were used in combination as compared to the soft surface alone
- 22% increase in soft tissue thickness with use of the turning and positioning system compared to the soft surface alone
- 12% increase in soft tissue thickness with use of the prophylactic dressings as compared to the soft surface alone

- Subcutaneous fat tissue (typically involved in DTIs) show thickness increase by 52% with the 3 in combination (prophylactic dressings, turning and positioning system and mattress) and 21% with the turning and positioning system on the mattress compared to a soft surface alone

- This effect was statistically significant with respect to the rigid MRI table (P <.05)

It is important to note that this study only looks at the effect of compression (pressure) and does not consider the impact of shear, friction and microclimate on tissue tolerance to deformation.

Product information:

Prophylactic Dressing: Mepilex® Border Sacrum

Turning and Positioning System: Tortoise® Turning and Positioning System

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