Clinical Highlights

ACTitouch Delivers Accurately Targeted and More Consistent Compression versus Multi-Layer Bandages

Original Article:	Comparison of 4-layer bandages and an Adaptive Compression Therapy device on intended pressure delivery
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INTRODUCTION

Sustained compression provided by compression bandaging is the underpinning for treatment of chronic venous insufficiency and venous leg ulcers (VLU)[1-5], but is challenged by a loss of pressure over time due to a decrease in limb volume in both healthy and edematous indivduals[6]. The commonly used "four-layer bandage" (4LB) is designed to provide a pressure profile of 40 mmHg at the ankle graduating to 17 mmHg at the upper calf when applied correctly per manufacturer's instructions. ACTitouch® Adaptive Compression Therapy is a 4-chamber pneumatic compression device which offers both intermittent and sustained compression[7]. Pressures are monitored by a microprocessor which measures and adjusts inflation levels every 30 minutes to achieve targeted interface pressures of 40, 30 and 20 mmHg distal to proximal.

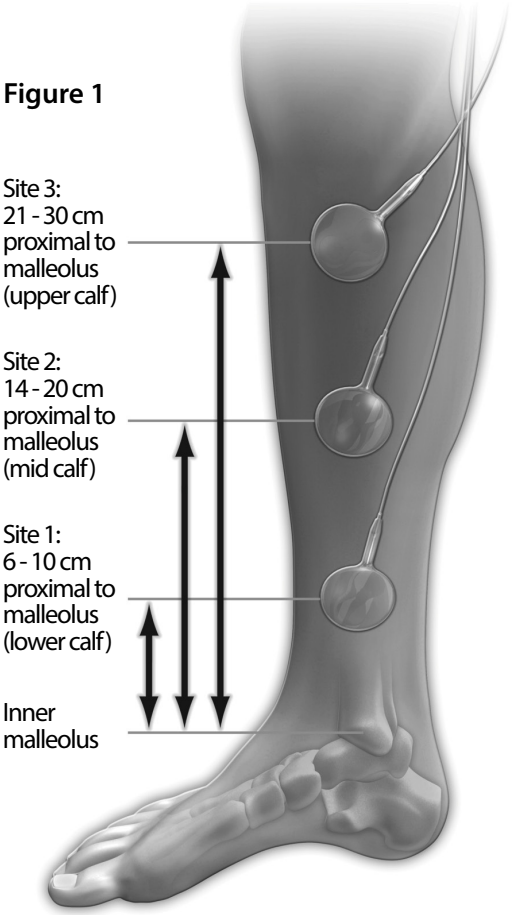
OBJECTIVE

To compare interface pressure profiles of ACTitouch therapy with traditional 4LB and compare the ability of each to sustain graduated compression over time.

METHODS

ACTitouch and 4LBs were evaluated for interface pressure magnitude, variability, and consistency over time on 12 healthy individuals (24 legs). Subjects wore ACTitouch on one leg while a new 4LB was applied daily on the opposite foot by a single, experienced healthcare professional. A PicoPress® Compression Measurement System measured interface pressures at three sites on the lower leg **(Figure 1)**. Pressures were recorded with subjects seated and standing at time of device application and at 1, 4 and 8 hours of device wear.

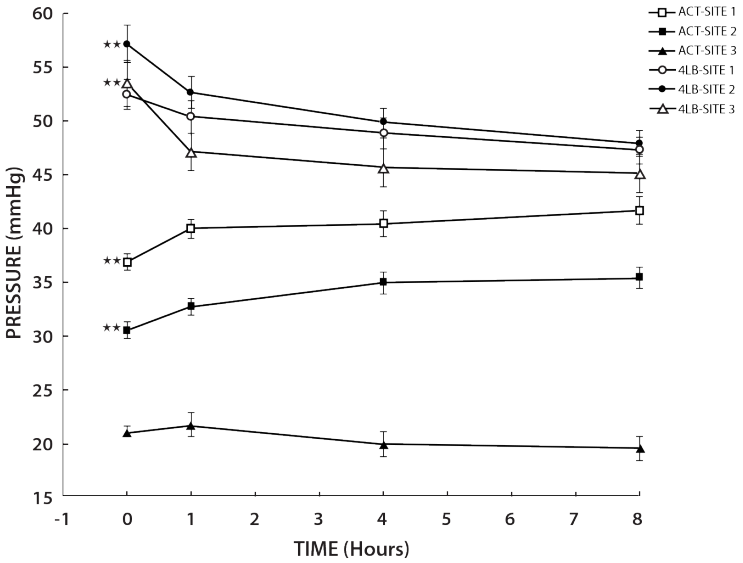
Figure 1



RESULTS (Figure 2)

At 1 hour, the 4LB showed a significant ($P < 0.001$) decline in pressures while seated at all three pressure sites while ACTitouch pressures showed no decline. By hour 8 of device wear, the largest average seated pressure decrease for the 4LB occurred at site 2 and was 9.1 mmHg, while ACTitouch showed an increase of 4.9 mmHg at the same site.

Figure 2 – Seated Pressures



DISCUSSION

Static and dynamic (also called "working") pressures are beneficial in the treatment of VLUs[8-11]. Static compression is most often applied using compression bandaging, with dynamic pressure produced by the calf muscle working against the counterforce of this bandaging when standing or walking. Intermittent pneumatic compression (IPC) simulates this working pressure in patients with low activity levels or an insufficient calf muscle pump[12-15]. While both static and dynamic compression are important, most devices are developed to apply only one type of pressure. This data shows ACTitouch is able to provide targeted static compression levels in addition to dynamic pressure using IPC with one device regardless of patient ambulation.

CONCLUSION

ACTitouch delivers a more consistent and predictable sustained interface pressure when compared to a 4LB. The 4LB demonstrated significant pressure loss.

KEY POINTS

- Even with daily application, a 4LB loses interface pressure immediately and continuously – a mean of 16% at 8 hours
- ACTitouch delivers consistent target interface pressures immediately and over time
- Both static and dynamic compression are important in treatment of VLUs
- ACTitouch may be self-applied by a patient and achieves consistent pressures

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The full article can be found in the J Wound Ostomy Continence Nurs. 2015;42(5):1-6 Published by Lippincott Williams & Wilkins.

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