

Unique Properties of Oxygenated Composite Dressing Provides Superior Pressure Redistribution

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Introduction

Recent studies^{1,2} have suggested the utilization of a variety of foam and silicone dressings for the purpose of mitigating shear, friction and pressure forces in the prevention or mitigation of pressure injury and resultant pressure ulcer formation. This study was designed to test the properties of a novel oxygenated composite dressing and measure its capability to provide pressure forces compared to currently available standard foam and silicone dressings.

Methods

A pressure mapping device (XSensor LX205 – XSENSOR Technology Corporation, Calgary, Canada) was utilized to measure the reduction in pressure forces that were achieved in a variety of standard foam and silicone dressings. The testing was performed using a standardized protocol (1.7kg, 7.5cm sphere) in a controlled environment by the same technician [Photo 1]. A variety of readily available and common clinically used foam and silicone dressing were tested. Additionally, a composite foam dressing with an oxygenated reservoir was also tested. Each study dressing was sequentially tested 3 times in the same order. Digital data output which included Average Pressure (mmHg) [Graph 1], Contact Area (cm²) [Graph 2] and Peak Pressure (mmHg) [Graph 3], and corresponding colorized pressure map images were recorded [Photo 2]. Mathematical analysis of the averaged pressure readings and surface area was performed.



Photo 3: Actual Testing of OxyBand Rescue Dressing

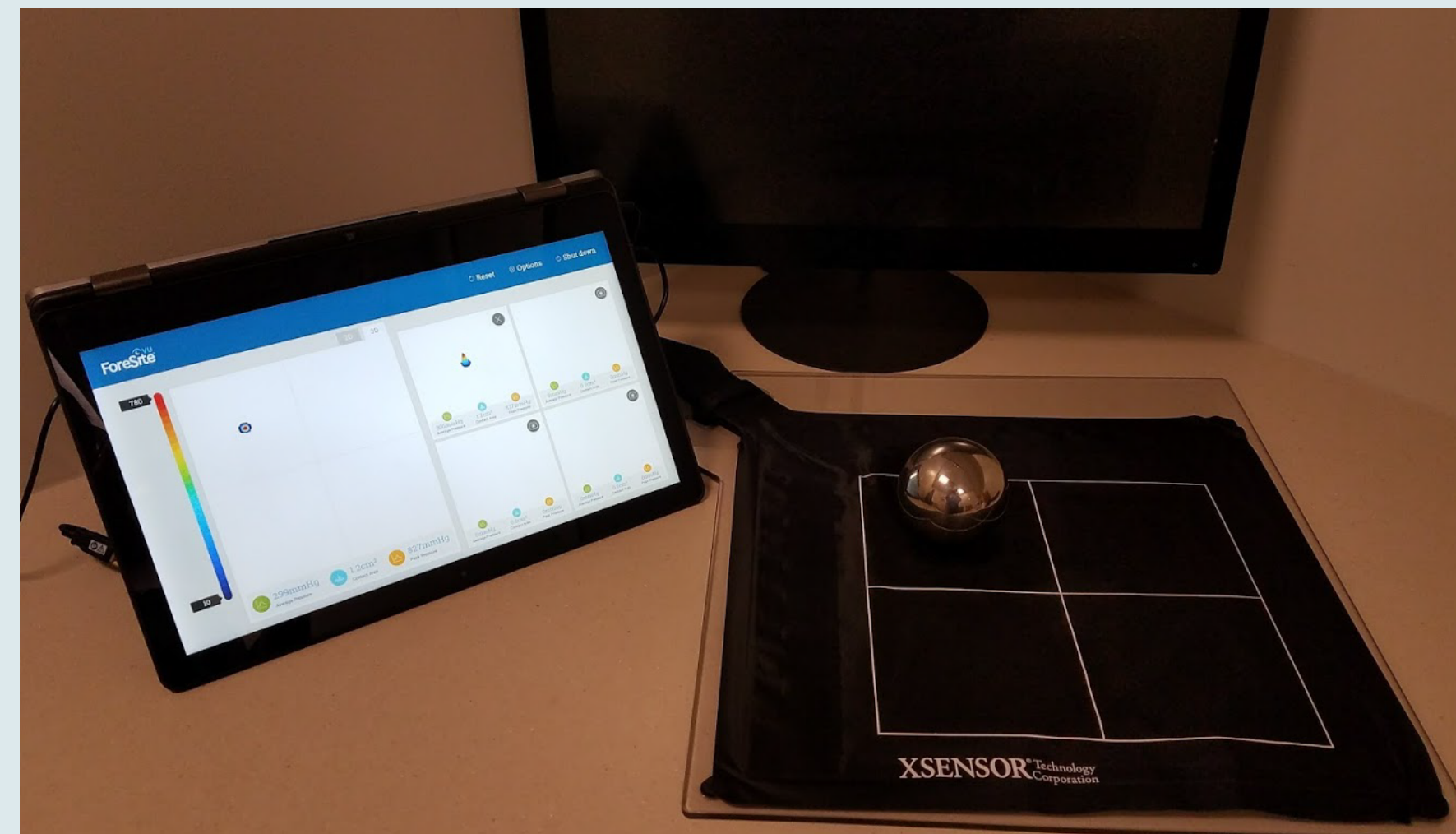


Photo 1: Standardized Pressure Mapping & Testing Equipment

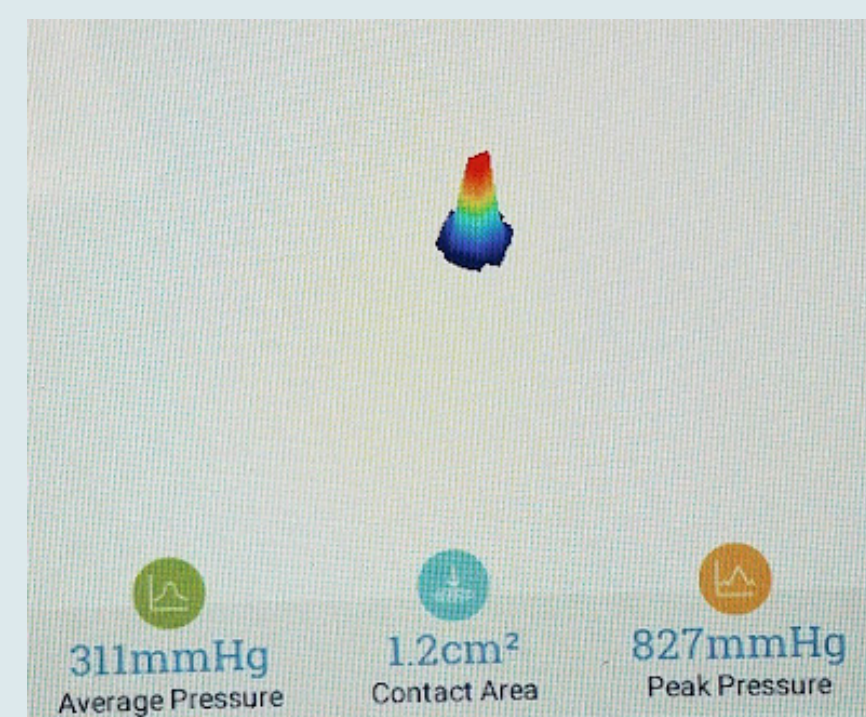
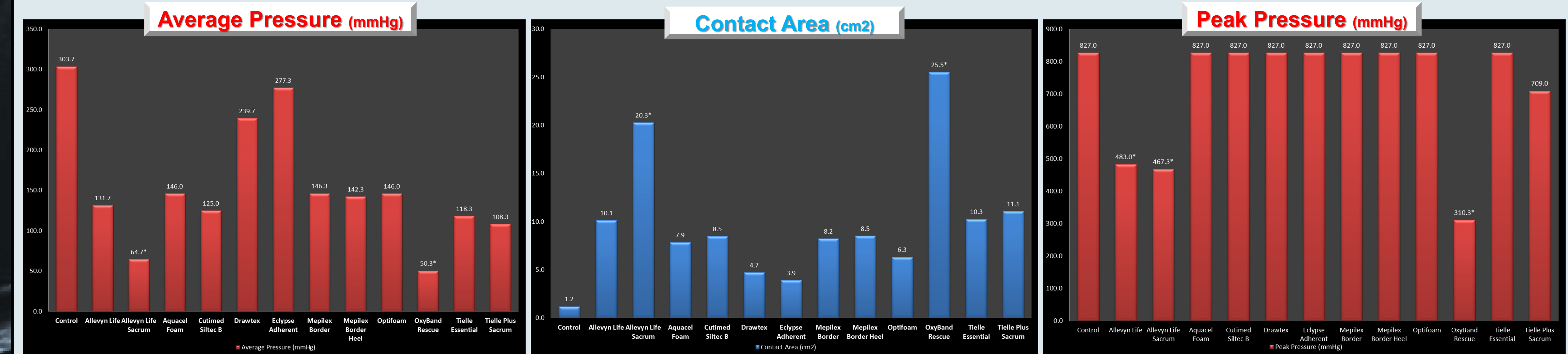


Photo 2: Graphic Displayed Results

Results



Discussion

All dressings tested demonstrated reduction of pressure forces as compared to the control (sphere with no dressing interface). The oxygenated composite foam dressing demonstrated the greatest reduction of pressure forces and the greatest surface area of all the study dressings tested [Photo 3]. There was a positive correlation between force dispersion over a greater surface area and a reduction in both Average and Peak Pressure results. The results were significant for both the Alleyn and OxyBand dressing types ($p \leq 0.05^*$).

Conclusion

This study confirms that foam and silicone dressings may provide some protection for patients at risk for pressure injury by decreasing pressure forces and dispersing pressure over a greater surface area. A novel oxygenated dressing provided significantly greater pressure reduction in this model. The superior pressure reduction properties may be due to the composite oxygenated reservoir contained in this composite dressing which could improve the clinical benefit achieved when using dressings to mitigate pressure forces in at risk patients.

References

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- Call E, Pedersen J, Bill B, Black J, Alves P, Brindle CT, Dealey C, Santamaria N, Clark M. Enhancing pressure ulcer prevention using wound dressings: what are the modes of action?. *Int Wound J* 2013; doi: 10.1111/iwj.12123