

Initial Experience in a Long-Term Acute Care Facility: Using a Novel Thermoplastic Elastomer NPWT Dressing Compared to Traditional Foam

Colton C Mowers, MD¹, Michael S Shuler, MD², Carrie Wohlers³, Jonathan Aguilera, BA⁴, Rananjay V. Singh, BSc⁵ Brett A Freedman, MD⁶

1. Dept of Orthopedics, Rush University, Chicago IL USA; 2. Athens Orthopedic Clinic, Athens, GA USA; 3. Landmark Hospitals, Columbia, MO USA; 4. Clear Choice Therapeutics, Raleigh, NC USA; 5. Faculty of Medicine, Imperial College London, London, UK; 6. Mayo Clinic Department of Orthopedic Surgery, Rochester, MN, USA

BACKGROUND

- The initial experience with a novel TPE NPWT dressing is described.
- Traditional black foam has been used for over 3 decades with minimal innovation.
- Black foam results in elevated positive pressures on the wound surface which can result in ischemia at the wound under the dressing.
- A novel TPE dressing is FDA cleared and available for use, but no clinical data exists prior to this study.
- The TPE is transparent, non-compressive, does not collapse under suction, avoids tissue ingrowth, non-absorptive and allows use at low suction (-50mmHg)
- The initial 10 consecutive patients that received the TPE dressing are compared to the last 10 consecutive patients treated with traditional black foam NPWT dressings.

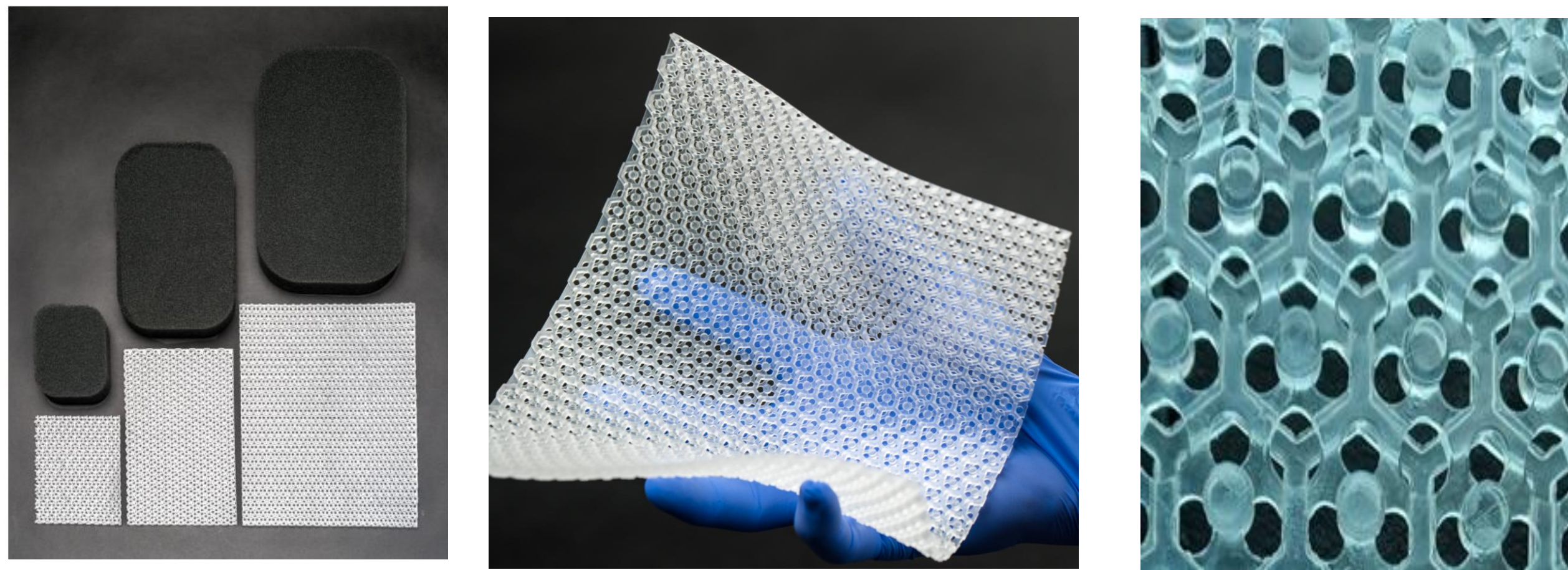


Figure 1: Size options and structural design of the TPE dressing

AIM

- The study is designed to examine the potential for a novel TPE NPWT dressing to manage patients in a long-term acute care (LTAC) facility.
- The hypothesis is the TPE dressing would improve healing with less duration and less dressing changes resulting in a reduced cost.



Figure 2: two clinical photos showing the TPE in place on clinical wounds (left to right) A sacral wound with bridging of the TPE dressing. A venous leg ulcer with two suction tubes allowing for BID wound irrigation through the dressing

METHODS

- Retrospective data was collected for the initial 10 consecutive patients using the TPE dressing and compared to the last 10 patients treated at the facility using traditional black foam
- Wound sizes were measured at each dressing change (height, width & depth) and granulation rates were calculated by a reduction in these parameters.
- Care duration was determined by the head certified wound care nurse.
- Costs savings were calculated based on care duration, cost of LTAC room per day, and cost of dressings
- Dressing changes were dictated based on facility protocol and clinician discretion: by-weekly changes with black foam and weekly changes based extended wear with the TPE
- As indicated, wounds were treated with instillation (Black foam) and irrigation (TPE) per the clinicians' discretion

RESULTS

- The TPE dressing produced an average decrease in wound volume of 170 cm³, compared to 130 cm³.
- Average treatment was 14.6 days (TPE) versus 34 days (BF).
- TPE required an average of 2 dressing changes versus to 8.
- The rate of granulation formation was 16.5 cm³/day (TPE) versus 5.5 cm³/day (BF).
- Granulation per dressing averaged 113 cm³ (TPE) versus 32 cm³ (BF).
- 2 patients were treated with instillation (foam) and 2 patients were treated with irrigation (TPE)
- There was a \$22,689 cost savings per patient in the LTAC setting based on reduced treatment duration despite a >20x increase in cost of the dressing

Table 3: Comparative Summary — TPE Dressing versus Traditional Black Foam NPWT

Patient	Initial Vol (cm ³)	Final Vol (cm ³)	Volume Change (cm ³)	Days of Therapy	cm ³ Change per Day	Dressing Changes	% Change	cm ³ /Dressing
TPE Dressing (PREVENT)								
Sum	2406.6	705.7	1700.9	146.0	165.4	20.0	591%	1129.7
Avg	240.7	70.6	170.1	14.6	16.5	2.0	59%	113.0
Traditional Black Foam NPWT								
Sum	2983.8	1682.3	1301.5	339.0	55.3	79.0	552%	32.6
Avg	298.4	168.2	130.1	33.9	5.5	7.9	55%	32.6
Difference (TPE minus Foam)								
Sum	-577.2	-976.6	399.4	-193.0	110.1	-59.0	40%	1097.2
Avg	-57.7	-97.7	39.9	-19.3	11.0	-5.9	4%	80.4
P Value	0.30	0.15	0.30	<0.001	0.07	<0.001	0.43	0.06

Table 3: Average results from the TE and black foam including days of therapy, Volumen change, cm³ per day and per dressing, and number of dressings

Table 4: Cost Analysis Model

	Cost per kit	Number of Dressings Used	Total Dressing Costs	Number of Treatment Days	Estimated Facility Internal Cost/In-patient Day	Estimated Facility Total Cost for In-patient Stay	Estimated Total Cost of Care
TPE	\$840	2	\$1,680	14.6	\$1,250	\$18,250	\$19,930
Black Foam	\$40	7.9	\$316	33.9	\$1,250	\$42,375	\$42,619

Table 4: Peripheral & Central Pressure by Dressing, Wound and NP



Figure 5: Initial wound and after 24 days on TPE dressing at discharge

CONCLUSIONS

- TPE wound reduction was 131% versus BF.
- Treatment duration was reduced 57% with TPE versus BF.
- BF required four times as many dressing changes.
- Granulation with TPE occurred three times the daily rate with BF, and healing per dressing change was approximately 3.5 times greater with TPE.
- A 75% reduction in dressings and >50% reduction in treatment time offer significant potential savings.
- An average of \$22,689 in cost savings per patient.
- Lower pressures likely improve perfusion facilitating rapid and cost-effective healing.

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