Enzymatic Debriding Agent Eliminated and Accompanied by Other Improved Outcome Parameters DaNielle Carver MSN, APRN, FNP, CWS. R3 Wound Care and Hyperbarics. 18626 Hardy Oak Blvd. Ste. 103, San Antonio, TX 78258

Introduction

Three patients presented with hard-to-heal, full thickness wounds with nonviable tissue; periwound skin swollen, induration, and discoloration.

- Patient 1: 49 y.o. male, diabetes type 2, cardiovascular disease. Left leg venous ulcer for a year; 30% fibrin slough/ 70% granulation tissue.
- Patient 2: 79 y.o. female, diabetes type 2, hypertension, developed left leg hematoma from a trauma; evacuated in the emergency department and 4 sutures placed. 5 days with no care after emergency department discharge. In clinic dressing change 1x/week: 14 days with gauze, thick pad, non-adherent dressing, compression with an elastic wrap changed 1x/week, resulting in wound with necrotic tissue, fibrin/slough and hypergranulation. Patient unable to tolerate compression because of pain. Procedural pain, with wound cleansing, 7 (0-10 pain scale). Pain a 5, with activities of daily living. Patient on blood thinners; not a candidate for deep sharp debridement.
- Patient 3: 81 y.o. male, peripheral vascular disease and hypertension, painful right leg trauma wound. Wound with 75% eschar and 25% fibrin/slough. Periwound skin with erythema. Pain 9 (0-10 pain scale) with cleansing and 7 with activites of daily living.

Rationale

Polymeric Membrane Dressings* (PMDs) contain a cleanser and a moisturizer that are released into the wound bed. Together, they support enhanced autolytic debridement by reducing interfacial tension between the healthy tissue and nonviable tissue. PMDs have been shown to reduce persistent and procedural wound pain while providing continuous cleansing.

Methods

Facility's dressing change protocol: wounds cleansed with hypochlorous acid (HA), then flushed with normal saline. Topical lidocaine applied, with cleansing, as comfort measure for patients 2 and 3 initially. **Patient 1:** Collagenase Topical (CT), covered with silver extra-thick PMD, Zinc paste compression wrap applied, changed weekly. CT applied for 2 applications (1x/wk), then discontinued because 1) too

expensive for patient; 2) author discovered PMDs provide enhanced autolytic debridement. The author applied PMD without CT use for the next applications. Patient 2: PMD applied, secured with elastic bandage. Dressing

change frequency 2 to 3x a week and prn, depending on drainage. Patient had large amount of necrotic tissue to be debrided; patient placed on oral antibiotics for 11 days for Methicillin-resistant Staphylococcus aureus (MRSA). PMDs changed daily when patient taking oral antibiotics. Patient 3: Silver PMDs changed weekly with Zinc paste compression wrap.

Results

PMDs enhanced autolytic debridement while maintaining clean wound beds. All periwound skin issues resolved with PMDs.

Patient 1: One year old venous ulcer closed in 35 days. CT was discontinued after author documented improved outcomes with just PMDs. There was an 89.41% savings by only using PMDs for debridement. After wound closure, PMDs were applied 7 more days to help strengthen the scar tissue. Patient 2: Wound closed in 78 days. PMDs reduced pain to 3 with

dressing changes; patient tolerated compression with PMDs. Pain was 0 in the last 2 weeks of PMD management. PMDs did not stick to the wound bed; dressings which stick to wound beds can cause bleeding during removal, which can create a risk for patients on blood thinners.

Patient 3: Patient not accepting the Zinc compression wrap but cooperative with PMD use; nearly closed after PMDs for 39 days. Curious patient requested skin substitute applied on superficial wound even though PMDs nearly closed wound.

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*PolyMem® Wound Dressings, PolyMem MAX® Silver, PolyMem® Silver Ferris Mfg. Corp.,5133 Northeast Parkway, Fort Worth, TX 76106 USA, 1-800.POLYMEM (765.9636) • www.polymem.com This case study was unsponsored. Ferris Mfg. contributed to this poster presentation.

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Day 0 1st application of CT and PMDs with zinc 30% fibrin slough/ 70% granulation tissue

Collagenase Topical and Polymeric Membrane Dressing: dressing	2 weeks total cost	Polymeric Membrane Dressing; dressing changed 1x/ week for 2	2 weeks total cost
changed 1x/week for 2 weeks		weeks without Collagenase Topical	
1. Hypochlorous acid	8.33	1. Hypochlorous acid	8.33
(2 rinses, 4.16 ea.)		(2 rinses, 4.16 ea.)	
2. Collagenase Topical	358.00	2. Gauze 4x4 (.22 cents each gauze;	1.32
		3 gauze used at each dressing	
		change per week, 0.66)	
3. Gauze 4x4 (.22 cents each gauze;	1.32	3. Normal Saline bullet	0.26
3 gauze used at each dressing		(2 rinses, 0.13 ea.)	
change per week, 0.66)			
4. Normal Saline bullet	0.26	4. Silver Extra-Thick PMDs	10.58
(2 rinses, 0.13 ea.)		(1 dressing once a week, 5.42 ea.	
5. Silver Extra-thick PMD	10.58	5. Zinc Paste	18.60
(1 dressing once a week, 5.42 ea.		(2 applications, 9.30 ea. per week)	
6. Dermal Curette-	5.58	6. Stretch wrap	3.96
2.79 each use per week		(2 applications, 1.98 ea. per week)	
7. Zinc paste	18.60		
(2 applications, 9.30 ea. per week)			
8. Stretch wrap	3.96		
(2 applications, 1.98 ea. per week)			
Total cost	\$406.63	Total Cost	\$43.05
		% Saving with PMDs	89.41%





Day 7 2nd application of CT and PMDs with zinc paste wrap Fibrin, slough



Day 14 1st application of PMDs alone with zinc paste wrap

Wound with fibrin/ slough and granulation

Exudate is serous and moderate

Periwound skin is swol-

len, indurated, discolored and erythema Wound Measurement: 4.8 cm x 3.18 cm area Depth: superficial



Day 21 2nd application of PMDs alone with zinc paste wrap Wound granulating and epithelization Exudate is scant

Periwound skin induration, discoloration and erythema reducing

Wound Measurement: 4.34 cm x 1.86 cm area Depth: superficial



Day 35 21 days after the application of PMDs without CT Wound closure

Discussion

PMDs eliminated the need for CT debriding agent, provided effective healing, and managed patients' wound pain. Eliminating CT resulted in significant cost savings in the wound clinic as well as for the patients individually because of insurance coverage issues and expenses for CT, which is a drug. PMDs provide significant clinical and financial benefits, PMDs' ability to debride and not cause trauma, bleeding or pain to the patient was dramatic. PMDs are the dressing of choice for wound care, including debridement. Based on patient 1's experience, it is estimated that eliminating CT, through the use of PMDs for debridement, resulted in an approximate 90% cost savings for managing each of the three patients' wounds.

Calculation of Cost Savings: The cost savings for patient 1 was determined by evaluating the medical supply account and identify individual prices for each item used. For the cost of collagenase topical, the dosage calculator on the collagenase website was used to determine how much collagenase is needed for the specific wound based on the measurements. There was a cost savings of 89.41% using PMDs without CT for patient 1. Two weeks of treatment costs including CT were compared to two weeks of treatment without CT.

Patient 1: Cost of Supplies with Collagenase Topical (CT) covered with **Polymeric Membrane Dressing plus Zinc Paste Wrap for 2 weeks vs Polymeric Membrane Dressing plus Zinc Paste Wrap for 2 weeks.**



Initial application of PMDs Wound painful, necrotic, fibrin/slough and hypergranulation tissue Scant serosanguineous exu-

swollen, discolored Wound Measurement: 13.5 cm x 6.25 cm Depth: superficial

Periwound skin indurated,

PATIENT 2



24 days after the initial application of PMDs Wound granulating, with epithelization and scant fibrin/ slough

Scant serosanguineous exudate

Wound Measurement: 15.2 cm x 5.2 cm x 0.3 cm Small area of tissue that is deeper with small area of epibole on left side of the wound. Silver nitrate to area. Small piece of collagen placed to fill cavity, then PMDs placed over the wound.



78 days after the initial application of PMDs the wound is closed