CREST-Syndrome Scleroderma - Eight Years of Wound Management and Pain Control with Polymeric Membrane Dressings

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PROBLEMS

A 65-yr-old woman (AM) with CREST-syndrome myoscleroderma had routine surgical debridement of calcifications (see R column) in the soft tissues of her left thumb and index finger. Historically, her post-operative healing was slow following these procedures. However, this time AM experienced dehiscence and progressive wound enlargement, most likely due to her comorbidities and chronic prednisone use. The wound center's conventional advanced dressings, and even onabotulinumtoxinA injections for increasing circulation, were unsuccessful. After two years, tendon was exposed and amputation of AM's left index finger seemed inevitable.

Meanwhile, AM's multiple non-healing foot fractures were becoming so painful and inflamed that she could rarely bear weight on them. She refused to be mobility-scooter-dependent.

Five years later, AM suffered from two traumatic lower leg wounds, so she dutifully went to a wound center. The L leg wound enlarged to expose tendon despite 10 months of the local wound center's treatments, including skin substitutes. The R wound was enlarging as well. AM's comorbidities ruled out skin grafting and HBO.

METHODS

A mutual friend connected AM to the author for guidance in using polymeric membrane dressings (PMDs) to rescue her left index finger from amputation. Use of PMDs to prevent amputation began 2016.08.16. After an initial rinse, AM applied PMD cavity filler and finger-cot shaped PMDs. PMDs control the nociceptor response, even when used over intact skin.[1–3] The resultant inflammation control makes the wound milieu more favorable to healing, relieves pain, and decreases inflammation-related edema, increasing circulation.[4–6] Synergism between PMDs and the body leads to balanced wound moisture and powerful continuous atraumatic wound debriding, as well.[3,7–10] All of these functions lead to improved wound healing.[4,10]

PMDs eliminated the need for rinsing; excessive dryness from scleroderma was addressed with drips of water onto dry wound areas, when needed, at dressing changes. Dressings were removed and replaced only when the darker color indicating saturation, visible through the backing, extended beyond any open wound edge. Prayer, nutrition, lymphedema control, and exercise were integral adjuncts to PMDs in AM's treatment. AM began wrapping her feet with PMDs to control pain and inflammation on 2017.06.07. AM's wound clinic agreed to monitor her use of PMDs for self-care of the two leg wounds monthly, starting 2022.07.26.

RESULTS

PMDs led to steady complete closure of all of four wounds, despite scleroderma and long-term prednisone use. The thumb and finger wounds closed in 3.5 months and 5.5 months, respectively. AM's leg wounds closed in 15 months (L) and 17.5 months (R) with PMDs. AM credited PMDs with controlling her foot pain and inflammation enough to allow her to walk short distances indoors until shortly before her death at age 74.

Left Index Finger and Thumb:

AM was left-handed, which made avoiding amputation and healing these wounds especially important to her quality of life. When her plastic surgeon saw the evidence for PMDs, he expressed enthusiasm about using them to "solve his wound care problem." For the first four days, because of the deep cavity, the PMDs did not make good contact with the finger wound bed. PMD cavity filler was added, with AM's husband helping with the dressing changes.

AM wrote, "My fingers feel safe, they are cocooned, I feel as if they are being helped."

2016.08.16 Initial presentation. | 2016.08.25 Green already gone, slough breaking up. | 2016.09.14 Much cleaner and more moist in only one month. | 2016.10.16 Improvement is undeniable. AM and her physicians are thrilled. Thumb almost closed and finger no longer feels "sore." | 2016.11.29 Thumb wound is almost closed. Finger wound is filling in quickly, but keeping it moist is a struggle due to the scleroderma. | 2016.12.05 Thumb wound is closed. Finger wound too dry, despite using moisture-balancing PMDs and dripping water on open area. | 2017.01.12 Finger wound is almost closed. No amputation! (Thumb is already developing new calcifications.) | 2017.02.02 AM says "closed." Did not reopen.

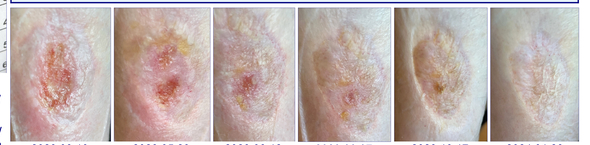
Left Leg Wound:

AM fell off her mobility scooter on 2021.09 and received advanced wound care for the resultant left leg wound for 10 months. The wound center then declared the ulcer unhealable, but agreed to monitor with AM and husband doing all of the hands-on care with PMDs, beginning after a sharp debridement on 2022.07.26. Before PMDs, AM wrote, "Because of my Scleroderma I have constant pain and the wounds have upped my level of pain. Still tolerable but definitely unpleasant." With PMDs, AM no longer had dressing change pain, and her wound pain quickly dropped down to 0 - 2 (on 0-10 scale). This ulcer closed on 2023.10.17.

2022.07.26 Initial presentation (after wound center sharp debridement). Tendon exposed. | 2022.10.18 Filling in over tendon. Wound center reports in 3 mos. size decreased from 3.7 x 2.0 x 0.2cm to 2.1 x 1.4 x 0.19cm. Pain usually 2 (of 10). | 2023.01.14 Tendon almost completely covered after 3 more months. Continuing to stay clean and moist. Dressing changes every 3 days.

OBJECTIVES

1. Note the effectiveness of the atraumatic slough removal system built into polymeric membrane dressings (PMDs), which can safely clean areas around tendons.
2. Recognize that PMDs limit and focus inflammation, which can provide dramatic pain relief, decrease edema, and make the wound milieu more favorable to healing.
3. Consider that in patients with poor circulation and underlying disease processes that cause extreme drying, it can be beneficial to drip a little warm water on the wound bed.



2023.03.10 Very shallow. | 2023.05.29 Center closed. | 2023.08.12 0.4x0.3.x0.1cm | 2023.09.07 0.2x0.2x.01cm | 2023.10.17 Closed | 2024.01.28 Durable scar.

Right Shin Wound:

AM injured her right shin as she was getting out of her car on 2022.05. She was already going to a wound center for management of the L leg ulcer, so for several months, they managed both wounds. However, although the wound center exhausted all options with which they were familiar, both wounds were getting larger. The wound center was not willing to provide PMDs. AM was hesitant to perform self-care until the wound center agreed to monitor the progress of the wounds monthly if AM and her husband did all of the dressing changes themselves, with remote guidance from the author. This began on 2022.07.26, immediately after the wound center debrided both wounds. Most of the PMDs were donated by the manufacturer, but AM did purchase some of them online. AM wrote, "For me ...[PMDs have] been an amazing product… The one bright spot in my Scleroderma life..." Her right shin wound closed 2024.01.08 (17.5 months of PMDs].

2022.07.26 Prior to wound center debridement. | 2022.07.26 After wound center debridement. 2.2 x 1.1 x 0.2cm | 2022.07.26 After half a day of PMDs, slough is breaking up. | 2022.10.02 Wound is cleaner, so it appears deeper. | 2023.01.20 Atraumatic cleaning has revealed exposed structure.

2023.04.16 Wound center measurements: 0.8 x 0.7 x 0.2cm | 2023.08.25 Closing rapidly. Wound center: 0.3 x 0.2 x 0.1cm. | 2023.10.03 Scleroderma made moisture balancing challenging. | 2024.01.08 Soaked scab, gently removed it. Wound is closed! | 2024.01.28 Scar is durable. Still using PMDs to strengthen it.

Painful, Severely Damaged Feet:

AM wrote, "I have chronic plantar fasciitis and a neuroma in my left foot, which causes not only constant pain but also constant swelling and bruising (above the ankle) in both the foot and ankle. Do you think the [non-sterile PMDs] would help in lessening the swelling and bruising? I have tried every remedy (except surgery) to relieve the pain in my foot." Several of the author's chronic pain patients experienced reduced pain levels when using PMDs for extended periods of time, which they documented. AM recorded her foot pain upon awakening, at rest, with activity, and upon trying to sleep, daily, with comments, for seven years. In late 2023, AM wrote, "As for the [non-sterile PMDs] I will be needing them the rest of my life. They are the only product I have found that allows me to walk with two broken bones and three stress fractures .. all permanent ... "

The difference between being completely non-weight bearing, and being able to walk short distances (from chair to bed, toilet, refrigerator, or front door), is tremendous with respect to quality of life. AM chose to risk potential further damage and sacrifice some comfort in order to maintain that level of independence. PMDs gave her that choice.

WHAT IS CREST-SYNDROME SCLERODERMA?

AM's form of scleroderma, managed with steroids, is characterized by CREST (Calcinosis, Raynaud's, Esophageal dysmotility, Sclerodactyly, and Telangiectasia). Calcinosis caused her to develop large, painful calcium deposits in her fingers. Raynaud's caused AM's hands to feel painful (or tingly) at times. Esophageal dysmotility made it difficult for AM to keep weight on. Late-stage sclerodactyly caused AM's skin to atrophy. AM also had myocytosis (inflammation of the muscles). She was instructed not to exercise, as this was thought to exacerbate the inflammation. Instead, AM took Jazzercise classes almost daily for 30+ years, which may have contributed to her longevity.

WHY TRY PMDS FOR FOOT FRACTURE PAIN?

The surfactant, glycerol, and superabsorbent in PMDs interact with the body to control the response of the nociceptors (pain-sensing nerves), even when used on intact skin. Inflammation needed for healing is focused; pain, edema, and bruising from secondary inflammation are dramatically reduced.[1-9]

DISCUSSION

PMDs solved a wide variety of wound problems in a patient who had exhausted all other options. Her wounds closed steadily and durably. PMDs also provided moderate pain and inflammation relief for AM's feet, significantly improving her quality of life.

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*PolyMem®, PolyMem WIC® Silver, PolyMem WIC, PolyMem MAX®, PolyMem Silicone Bordered, PolyMem Finger/Toe dressings, and SportsWrap by PolyMem, collectively referred to generically as "polymeric membrane dressings" or PMDs, are made by Ferris Mfg. Corp. in Fort Worth Texas. The author (the clinician) is a Ferris Mfg. Corp. employee.