

Gregory Bohn, MD FACS Medical Director
Trinity Medical Center
Bettendorf, Iowa

Transforming Powder Dressing combined with Total Contact Cast may shorten days to heal Wagner Grade 2 Neuropathic Diabetic Foot Ulcers.

Purpose:

This poster presentation illustrates the use of a new Transforming Powder dressing combined with off loading total contact casting to bring about healing of Wagner Grade 2 Diabetic Foot ulcers.

Objectives:

- 1. Evaluate the use of Transforming Powder Dressing with contact casting.
- 2. Demonstrate the application of Transforming Powder dressing.
- 3. Review healing trajectories of Diabetic Neuropathic Foot Ulcers treated with Transforming Powder Dressing and contact cast.

Abstract:

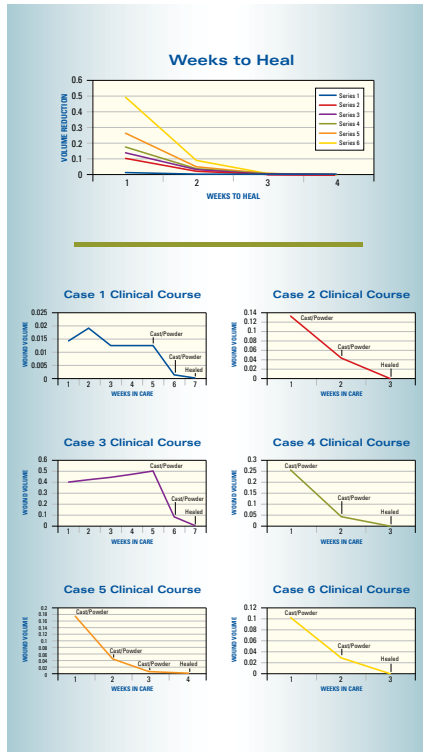
Total contact casting has been considered the gold standard for offloading Diabetic Neuropathic Foot Ulcers. Typical dressing material for moist wound healing applied under a contact cast has been petroleum gauze as it will maintain that environment for the length of the cast application. A new dressing material is available that may influence healing by its unique ability to manage moisture while maintaining an optimal wound environment. The High Moisture Transpiration Rate of this material creates a negative pressure effect of 200-300 milli torr at the wound surface, 100 milli torr of negative pressure is enough to activate wound fibroblasts. This unique and important aspect of this particular material may stimulate wound fibroblasts and bring about accelerated healing. The fact that the dressing material can stay in place for up to 30 days makes it an attractive choice for use in longer term applications like contact cast application. Cadexomer iodine and baclopermin have been combined with this material at the time of application in order to manage Wagner Grade 2 Diabetic Foot Ulcers. This presentation discusses the use of this new wound dressing technology in conjunction with the use of "gold standard" contact cast offloading in treating Diabetic Wagner Grade 2 Neuropathic Foot Ulcers.

Methods and Materials:

An easy to apply contact cast system and a new Transforming Powder Dressing material were used to heal Diabetic Grade 2 neuropathic ulcers. Transforming Powder Dressing was applied to neuropathic Wagner Grade 2 foot wounds, covered with wound veil and foam supplied with the kit. The initial cast was removed and the leg inspected for cast related at 72 hours. Wounds were followed weekly and measured and photographed. Simple wound measurements were used to monitor healing and track progress of the wounds. Wound Volume was calculated using the formula Width X Length X Depth X .8. Wound progress was examined and monitored with use of Transforming Powder Dressing and easy to apply Contact Cast. Vascular integrity was assessed by ABI measurement. Patients with less than .8 ABI were referred for vascular assessment. Patients were assessed for mobility and suitability for contact cast application. Six cases are reported.

Results:

Patients were either started initially in contact cast and powder therapy or failing other treatment and switched at the time of their 30 day review. Five of 6 patients (1,2,3,4,6) healed within 2 weeks with combination Transforming Powder and contact cast. Patient 5 had healed by week 3 and had decreased wound volume by 97.2% at week 2. There were no cast complications in this group. Reduction in wound volume relative to weeks in wound care is summarized in table 1. Two patients had declined initial use of contact casting in favor of a DH walker for offloading. Both had not shown sufficient healing by 30 day review to predict healing at 14 weeks. Both patients agreed to contact casting after their 30 day review and healed in 2 weeks with Transforming Powder dressing and easy to apply contact casting. Days to heal for the group was 15.2 days.



Conclusion:

Since instituting easy contact casting and Transforming Powder dressing in our clinic, we have seen an improvement in our ability to heal diabetic Wagner grade 2 lesions. When patients are in a removable offloading orthotic, compliance is always an issue. We found that contact casting ensured compliance with offloading and had a beneficial effect on healing. Offloading is improved by redistributing force onto the leg itself. We have observed an effect from Transforming Powder dressing and its impact on healing. The property of the material to create a low but real negative pressure at the wound dressing interface may impact on the activity of wound fibroblasts and positively affect healing. The ability to combine the material with actives could be beneficial to healing as well. The material can be left in place for up to 30 days. The long wear time of this material makes it an attractive dressing choice under contact casting. "Days to Heal" decreased from 41 days to 15 days since instituting easy to apply contact casting and Transforming Powder dressing.

References:

1. St. John J V, Brown S A, Hatfield DA, Unzeitig A W, Noble D, Waller L K, and Ponder B C. Formulation development and in vivo testing of a novel powder wound dressing. The University of Texas Southwestern Medical Center at Dallas, Department of Plastic Surgery, 1821 Inwood Rd., Dallas, TX 75390
2. St John J V, Altrazael TM : Transforming Clinical Wound Management: From Science to Outcomes with an Innovative Powder Dressing. Clinical Symposium on Advances in Skin & Wound Care, Oct 29, 2008 Las Vegas Nevada.
3. Nabuurs-Franssen MH, Sleepers R, Huijberts M SP, Wijnen W, Sanders AP, Walenkamp G, Schaper NC. Total Contact Casting of the Diabetic Foot in Daily Practice: A Prospective Follow Up Study. Diabetes Care Feb 2005 (6):2 p 243-47.
4. Petre M, Tokar P, Kostar D, Cavanagh PR. Revisiting the Total Contact Cast: Maximizing off-loading by wound isolation. Diabetes Care Apr 2005 (28):4 p 893-90.
5. Myerson M, Papa J, Eaton K, Wilson K. The Total Contact Cast for Management of Neuropathic Plantar Ulceration of the Foot. J Bone Joint Surg Am. 1992;74:261-269.