

Off-Loading Neuropathic Plantar Metatarsal Ulcers with Total Contact Casting

Author

Anita Robinson, R.N./B.S./W.C.C & Kristina Wagner, R.N./B.S.N.
Hamilton Wound & Hyperbaric Center
Dalton, GA., 30720, USA

Introduction

Diabetes is increasing in our population with an anticipated increase globally from 246 million, or 5.9% in 2007, to 380 million or 7.1% by 2025 (1). As diabetes increases, the complications associated with the disease multiply.

Studies reveal 50% of patients with diabetes will develop neuropathy (2). The lifetime risk of acquiring a foot ulcer is as high as 25% for the diabetic patient and 84% of diabetic amputations are preceded by ulceration. 61% of amputations are preceded by neuropathy.

Our goal as clinicians is to find the most efficient treatment to heal these neuropathic wounds, prevent infection, and/or avoid amputation.

The purpose of this study was to assess the rate of healing of neuropathic plantar metatarsal ulcers using total contact casting.

Methods and Materials

When treating neuropathic plantar metatarsal ulcers, off-loading is a key component. Removable cast walkers are not the first choice because compliance is often difficult to enforce as they can be

removed and cause dressings to shift with ambulation. For these reasons, we chose a total contact cast system* that cannot be removed, to be applied to the patients in this study.

Three patients were chosen with Neuropathic Plantar Metatarsal Ulcers classified as Wagner II diabetic ulcers. All wounds were free of infection and had adequate blood supply. In addition to diabetes, the patients further complicated their wound healing by smoking.

Patient #1 is a 56 year old female with ulceration to right great toe for more than one year. Patient #2 is a 52 year old male presenting with a 2 week old ulceration to his right great toe. Patient #3 is a 52 year old female presenting with ulceration to the left plantar hallux present for three months.

Results

After 40 days in a total contact cast*, Patient #1 was healed. Patient #2 was healed in 31 days, using total contact casting*. Lastly, patient #3 was healed after 32 days of treatment with total contact casting*.

Conclusion

A key component to healing neuropathic plantar metatarsal ulcers is offloading. When using Cutimed® Off-Loader® Select in conjunction with various dressings and advanced modalities, healing is expedited. Overall, Cutimed® Off-Loader® Select is a cost effective modality that forces off-loading compliance and allows tissue to repair without constant trauma to the ulceration while decreasing risk of infection or further insult. Cutimed® Off-Loader® Select* proves to be superior to other off-loading methods used to treat neuropathic plantar metatarsal ulcers.

References

1. Woo, K.Y., Botros, M., Kuhnke, J., Evans, R., & Alavi, A. (2013) Best practice for management of foot ulcers in people with diabetes. *Advances in Skin & Wound Care*, 26, 513-524.
2. Feldman, EL. (2012) Epidemiology and classification of diabetic neuropathy. *UpToDate*, (accessed December 20, 2013)

* Cutimed® Off-Loader® Select by BSN medical Inc.

PATIENT 1

A 52 year old female was referred to the Wound Care Center for total contact casting. She had been treated by her podiatrist for 5 months. Evaluation included vascular studies, xrays, and bone scan to assess blood flow and rule out osteomyelitis. Her situation was further complicated by diabetes and renal failure.

Day 1



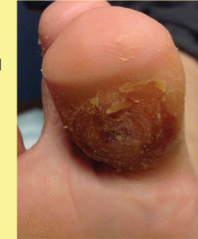
The wound was debrided of callus and necrotic debris.

Day 25



Total Contact Casting* was applied weekly. Additionally, Leptospermum honey was applied to the wound bed and covered with Cutimed foam dressing.

Day 40



After 40 days of treatment, closure was obtained.

PATIENT 2

This 52 year old male with a history of diabetes, smoking, and delayed wound healing presented to the Wound Care Center with a two week old diabetic ulcer to his right great toe.

Day 1



Callus and necrotic tissue were debrided.

Day 16



The patient was monitored weekly and placed in a total contact cast*. The wound was dressed with Cadexomer Iodine and covered with Cutimed foam.

Day 31



Wound was healed on day 31.

PATIENT 3

Patient was referred to the Wound Care Center by her podiatrist. The wound had been present for 4 months.

Day 1



Cadexomer Iodine was applied to wound bed and covered with Cutimed foam. A total contact cast was applied for off-loading.

Day 32



The Patient received a bioengineered graft two weeks earlier. SteriStrips were used to secure the graft. A wound contact layer and foam dressing covered the graft and was secured with gauze wrap. The patient continued having a total contact cast* applied for off-loading. In 32 days, the wound had healed.