

OFFLOADING ALLOWING FOR MOBILIZATION IN POST-SURGICAL REHABILITATION OF DIABETIC FOOT ULCER PATIENTS

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Introduction :

It is well known that complete and constant off-loading of diabetic foot ulcers (DFUs) is mandatory for wound healing¹. Total contact casts (TCC) are now widely used for extremity off-loading in DFUs and diabetic neuro-arthropathy (Charcot foot)¹⁻⁴. The TCC is considered to be the most effective method² although comparative studies on TCC and alternative offloading methods are relatively rare. In Russian speaking countries traditional methods for offloading of DFUs include the half-shoe (for forefoot ulcers) and bed rest, wheelchair or crutches (for mid-foot, rear-foot or bilateral ulcers)¹. However this practice is changing, as is shown by Udovichenko and Galstyan (2004) who reported on a comparison between a removable semi-rigid TCC and alternative off-loading methods in patients with neuropathic plantar diabetic foot ulcers¹.

Aim :

During the postoperative period offloading of the extremities is important to patients suffering from diabetic foot ulcers. Methods should be used that allow for early mobilization without causing trauma to the post-surgical wounds. Mobilization is key to a successful rehabilitation of diabetic foot ulcer patients.

Method :

For offloading of post-surgical diabetic foot ulcer patients, we applied an alternative to total contact casting. This modified offloading device is a semi-rigid removable non-windowed fiberglass cast as developed by Boogers and Droogmans (2000)¹. The device can be removed and reapplied for e.g. wound inspection and dressing changes. With this technique inner and outer layers are made of flexible synthetic cast and between them two rigid splints are placed. These splints are made of synthetic cast (one U-shaped and another longitudinal along the sole).

CASE



Fig. 1:
Situation after amputation and debridement, *NPWT in situ



Fig. 2:
The wound bed is clean



Fig. 3:
Skin graft application



Fig. 4:
Ulcer is almost closed



Fig. 5:
The patient is walking with the cast, protecting the ulcer

Results :

Using a semi-rigid cast has important advantages over rigid casts, considering soft edges allowing for calf muscle movement. This will reduce among others the risk of immobilization complications, such as venous thrombosis, joint stiffness, muscle atrophy and pressure ulcers. Moreover removable casts allow inspection of the wound and daily dressing changes. In the authors' experience, these casts demonstrate better safety than non-removable casts, although efficacy depends on patient concordance. The application of the offloading device enabled redistribution of forces from the foot to the shin. Moreover the loading surface on the foot is more evenly distributed, protecting the wound from forces, reducing friction and edema. A typical case is presented to show this treatment (Fig.1 - Fig. 5)

Conclusion:

The application of the offloading device during rehabilitation of diabetic foot ulcer patients improved the treatment outcome and allowed for early mobilization.

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