

Effective Off-loading Of The Ulcerated Diabetic Foot With Total Contact Cast – A Case Study

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Aim

Periphery sensory losses are severe long-term consequences of diabetes. Especially the absence of sensory feedback warnings bear high risks of developing foot ulcers. For ulcer-treatment, effective off-loading, supported by adequate moist wound management, is essential. Whereas in Germany bed-rest, wheelchairs or pressure-reducing half-shoes are commonly used, the Total Contact Cast (TCC) is considered the „gold standard“ for off-loading in the US and this method was tested here for its clinical use¹.

Case history

The male patient, 62 years, 178cm, 90kg, diabetes since 1994, experienced severe plantar ulcerations on both of his insensitive feet from a hot footbath. The wound sizes were approx. 6cm² on the right foot and 25cm² on the left foot. For one week both wounds were covered with dry gauze dressings, but the patient had to be admitted to a hospital due fever and ague. After four weeks in hospital (treatment: bed-rest, surgical debridement of the necrotic wounds and gauze dressings with Fibrolan®) the patient was released from hospital with the wounds about the same size as initially (Fig. 1. A. and B.) and he was given a prescription for a wheelchair.

Treatment of the wound on the left foot (25 cm²)

At home under supervision of the general practitioner, treatment was changed to moist wound management including alginate, hydrogel, collagen and polyurethane foam (Suprasorb®range). Off-loading was achieved by a removable lower-leg fiberglass-TCC (Cellacast®Xtra) for five weeks. The application of the TCC included an adhesive felt-padding on the plantar surface of the foot (Cellona® Adhesive Padding), excluding the site of the ulcer (Fig. 2. A), skin protection (tg® Tubular Bandage, Fig. 2. B.), padding (Cellona® Synthetic Undercast Padding, Fig. 2. C and tg® soft) and fiberglass cast (Cellacast® Xtra, Fig. 2. D). For the regular wound inspection, the TCC was opened and fixed with hook and loop fasteners (see Fig. 2. E and F). After five weeks of treatment with this lower-leg-TCC, the method of off-loading was changed to a special removable cast-shoe (Cellacast® Active, Fig. 2. G) for another five weeks .

Treatment of the wound on the right foot (6 cm²)

The smaller wound on the right foot was treated according to the rules of moist wound management as well (see above, Suprasorb®range). Due to the small size of the wound, off-loading was achieved by a removable cast-shoe only, which could be applied together with the lower-leg TCC on the left leg (Fig. 3).

Result

Within 10 weeks of treatment, the ulcerations on both feet were completely closed (see Fig 4. A-C).

Conclusion

This case-report impressively underlines the efficacy of the removable TCC and cast-shoe in combination with moist wound management, especially with respect to the patients higher quality of life compared to an off-loading by bed-rest or with the support of a wheelchair.

Reference

1. American Diabetes Association. Consensus Development Conference on Diabetic Foot Wound Care. Diabetes Care 1999; 22:1354-1360

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Fig. 1. A. Right foot: 6 cm².



Fig. 1. B. Left foot: 25 cm².

Fig. 1: Wounds on both feet at the beginning of the TCC-off-loading.



Fig. 2. A:
Adhesive felt padding



Fig. 2. B:
Skin protection



Fig. 2. C:
Undercast padding



Fig. 2. D:
Fiberglass-TCC



Fig. 2. E:
Opened fiberglass-TCC



Fig. 2. F:
Removable lower-leg TCC



Fig. 2. G:
Cast-shoe

Fig. 2: Treatment of the left foot with a lower-leg TCC, followed by a removable cast-shoe from week five.



Fig. 3: Treatment with cast-shoe and TCC.



Fig. 4. A.:
After 2.5 weeks.



Fig. 4. B:
After 6.5 weeks.



Fig. 4. C:
Healed after 10 weeks.