

QUICKGUIDE

Improving
offloading
for the foot in
diabetes: Use
of total contact
casting in
practice



WOUNDS | UK

THE IMPACT OF DIABETIC FOOT ULCERATION

In the UK, studies have shown that there are around 450,000 people with diabetes that develop a diabetic foot ulcer (DFU) at some point in their lives, which equates to approximately 10% of those diagnosed with diabetes¹. In addition, some 7,000 diabetes-related amputations are performed every year in the UK.

The seriousness of the development of a DFU is starkly expressed by Armstrong et al², explaining that individuals with lower-extremity complications of diabetes have 5-year mortality rates similar to or worse than most common types of cancer.



DFUs come with a considerable cost. The mean cost of the management of a DFU is £7,800, ranging from £2,140 to £8,800 per healed and unhealed DFU, respectively, and £16,900 per amputated wound³. This translates to an annual NHS cost attributable to managing these DFUs of between £524.6 million and £728.0 million³.

The IWGDF guidelines on offloading foot ulcers in people with diabetes⁴ are unequivocal that a non-removable knee-high offloading device should be the primary choice of offloading treatment.

THE PRINCIPLES BEHIND OFFLOADING

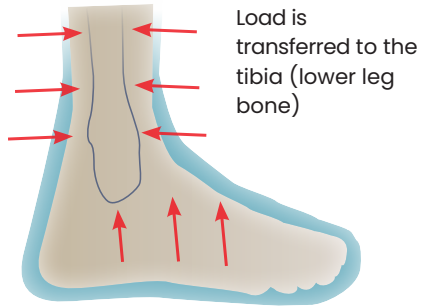
Load Distribution



Plantar surface area of the foot

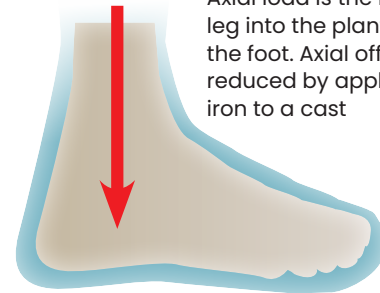
Increased weightbearing
plantar surface area due to the
application of a cast

Load Sharing



Load is
transferred to the
tibia (lower leg
bone)

Axial Offloading



Axial load is the load down the
leg into the plantar surface of
the foot. Axial offloading can be
reduced by applying a Böhler's
iron to a cast

Offloading in the management of the diabetes-related foot is “generally understood as relieving pressure from an ulcerated area”⁶. Optimal offloading will stimulate the healing process and reduce injurious forces at an ulcerated site. A reduction in DFUs will result in a decrease in amputations, so offloading and amputation reduction go hand in glove.

Total contact casting (TCC)

The following definition of TCC comes from the IWGDF 2023 update guidelines⁵: “Custom made, well-moulded, minimally padded, knee-high non-removable fibreglass* or plaster cast that maintains total contact with the entire plantar surface and lower leg. The cast is often worn with an attachable sole that protects the cast and facilitates walking.” (It should be noted that a cast shoe must be used if a walking cast.)

**Please note: Most clinicians in the UK use a polyester-based product and not fibreglass.*

TCC is the accepted gold standard for the offloading of forefoot and midfoot lesions and there is a body of evidence to support its use, healing between 72% and 100% of ulcers within 5–8 weeks^{7,8}. The latter was a prospective clinical trial involving 63 patients with superficial non-infected, non-ischaemic diabetic plantar foot ulcers, which found that the healing rates in 89.5% of patients treated with TCC compared favourably with those treated with removable cast walkers (RCWs) and half shoe (65.0% and 58.3%, respectively).

The use of Wifl in patient selection for TCC

Use of the Wifl classification was recommended by the National Wound Care Strategy's vascular guidelines⁹ to determine the overall degree of limb threat. Williams et al¹⁰ found that Wifl stages 1–4 corresponded better with time to healing, with stage 1 having the shortest time and stage 4 having the longest time.



CONTRAINDICATIONS OF TCC

- › Severe peripheral arterial disease
- › Untreated osteomyelitis
- › Infection present
- › Extensive necrosis
- › Heavily exuding wounds necessitating daily dressing changes.

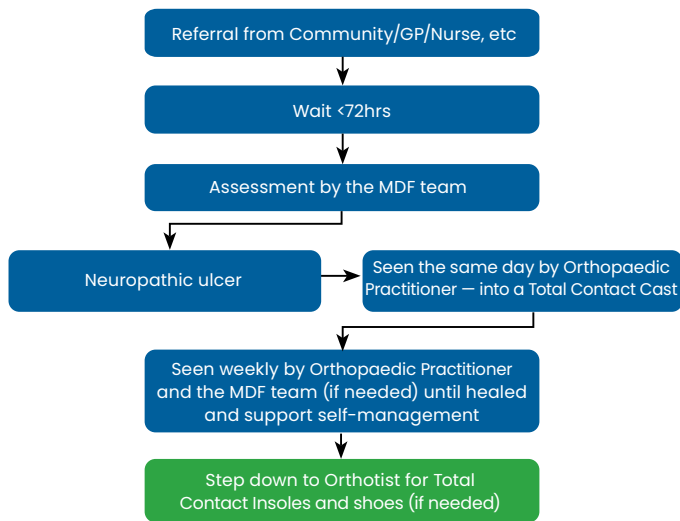
As with any treatment plan, it is essential to carefully consider patient engagement. Patients must be able to engage with the cast care instructions and attend regularly scheduled appointments for debridement and recasting. As such, the use of a total contact cast may not be deemed appropriate in cases where patients are not actively engaging in their treatment or are exhibiting signs of mental instability. It is of significant importance that verbal and written cast instructions are made available.

Potential disadvantages of a total contact cast and suggestions to overcome these

The cast may rub and cause other wounds to develop on the patient's foot or leg	Advise the patient on how best to avoid activities that may aggravate the foot or leg
The patient may not be able to work while wearing the cast	Offer advice on how to find an alternative to affected elements of their daily routine; for example, it may be that a walker enables the individual to become more independent
The patient is unable to drive while wearing the cast	Talk through the options with the patient for appropriate alternatives; brief family and friends if they are in attendance
The patient may fear falling or report difficulties in managing daily activities	Prescribe a walker and a cast protector for use in the shower
Time of application	Train staff to become confident with application
Cast slippage can occur due to oedema reduction after applying a leg cast	Train staff to be on the lookout for this and to mitigate it as and when it occurs
Cast sores can occur	Advise patients and carers about the 'danger signs' – check daily for swelling, cast strike through, pain/soreness, bad odour, etc

CLINICAL TREATMENT PATHWAY

This clinical treatment pathway seeks to be as seamless as possible, utilising the full multidisciplinary foot (MDF) team. With a neuropathic ulcer, the patient will be placed into a non-removable cast. The patient will then have a weekly review with the MDF team as and when required, until the ulcer is healed.



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