

# Pressure relief by means of a lower-leg total contact cast (TCC) in the treatment of diabetic foot ulcers – results from a case study



Deutsches Institut für Wundheilung



Gesundheitsverbund HBH-Kliniken  
Nah bei Ihnen

**Krenmayer H.<sup>1</sup>, Klare W.-R.<sup>2</sup>, Koggel A.<sup>3</sup>**

<sup>1</sup> Deutsches Institut für Wundheilung, 78315 Radolfzell, Germany,

<sup>2</sup> Diabetic foot outpatient facility of the Hegau-Bodensee Hospital, 78315 Radolfzell, Germany,

<sup>3</sup> Lohmann & Rauscher GmbH & Co KG, 56579 Rengsdorf, Germany.

## Aim

Pressure relief is indispensable in the treatment of diabetic foot ulcers. One of the best-documented methods is the lower-leg total contact cast (TCC)<sup>1</sup>, a method which has thus far not been widely used in Germany. This case study was supposed to investigate its efficacy in patients with diabetic foot syndrome receiving treatment at a diabetic foot outpatient clinic.

## Method

Eight diabetic patients (2 f, 6 m) with nine foot lesions (max. Wagner 2, no clinically relevant ischaemia, no infection, wound size: 0.06 - 5.70 cm<sup>2</sup>) were consecutively fitted with a bivalved TCC (Cellacast®Xtra, Fig. 1). The TCC's were applied by an experienced wound manager, who had received a special training on the application of a TCC. Seven patients presented with plantar ulcers (one Charcot's foot), two with an ulcer beneath the big toe. In six of the patients, wound healing had stagnated over 2-24 months under treatment with a forefoot pressure-relief shoe or a custom-fit shoe (patients characteristics see Table 1). Two patients were treated with the TCC on an outpatient basis following extensive wound débridement. Moist wound treatment was continued as before (change of wound-dressings: every 3-7 days).



Fig. 1: Bivalved TCC.

## Result

The results of the case studies are summarized in Table 1 and exemplarily shown for three patients in Fig. 2. Eight of the nine ulcers had completely healed after an average period of 34 (SD +/-16) days. In one patient (patient A.Z.) the treatment was terminated after 60 days due to an arbitrary removal of the TCC by the patient in his home area, which resulted in a stagnation of the wound healing. In general, no incidences of new pressure-ulcers had been observed during the treatment with TCC.

	Patient	Age (years)	Localization		Ulcer size (cm <sup>2</sup> )	Stagnation before Treatment (Days)	Time to Healing (Days)
			Plantar	Toe			
	P.M.	62	+		0,4	60	70
	L.E.	83	+		0.06	0	40
	G.R.	67	+		0.48	90	35
	A.M.	67	+		3.06	730	20
	A.M.	67	+		5.70	0	27
	L.R.	66	+		0.70	180	13
	R.H.	67		+	0.27	270	35
	B.B.	58		+	0.30	365	31
	A.Z.	70	+		4.20	540	Term.
<b>Total</b>	<b>9</b>	<b>67.4 ± 6.4</b>	<b>7</b>	<b>2</b>	<b>1.69 ± 1,97</b>	<b>248 ± 240</b>	<b>34 ± 16</b>

Table 1: Patient characteristics and results from the case study.

## Conclusion

Compared to the stagnation of the wound closure up to 730 days before treatment with the TCC (248 ± 240 days), the healing rate of 34 ± 16 under TCC treatment impressively demonstrates that the bivalved TCC is a highly effective method of pressure relief. When the TCC is applied by well educated personnel, this method is well suited for use in a diabetic foot outpatient facility.

## Reference

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

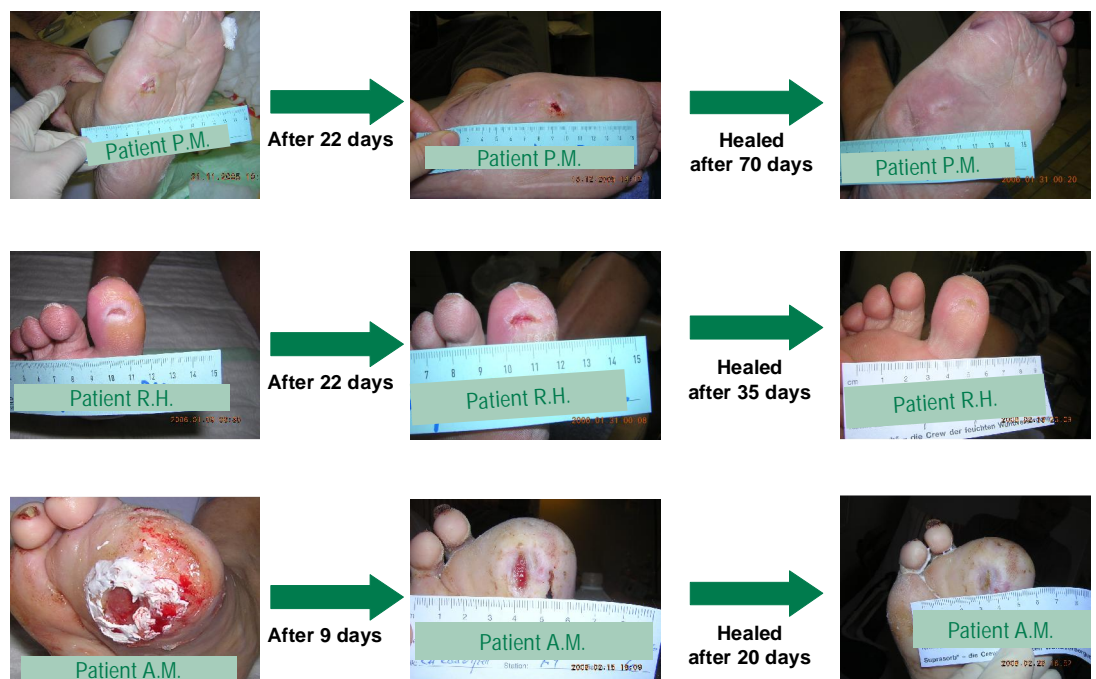


Fig. 2: Foto documentation from three patients.