

THE OUTCOMES OF A NEW REUSABLE FIBERGLASS AND POLYESTER COMBINED TOTAL CONTACT CAST SYSTEM (CELLACAST LOHMANN AND RAUSCHER) IN THE MANAGEMENT OF PLANTAR ULCERS

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Materials and Methods

- This was a single-center, IRB-approved retrospective assessment of all patients who had an ulcer treated with a reusable TCC at our institution between January 2020 to September 2022.
- All patients were treated till formation of granulation tissue in the wound bed. Deep tissue infections and osteomyelitis were treated under the guidance of international working group on diabetic foot.
- Patients who had persistent ulcers at the pressure points that could not be healed despite appropriate wound care practices and were therefore treated with TCC were included in the study.
- A total of 70 patients (47 men and 23 women) were recognized.

Results

The study included 70 patients who had previously performed TCC application for treatment of unhealed diabetic foot ulcer despite appropriate wound treatment in our hospital. Forty-seven patients (67,1%) were male. Patients in the study group had a mean age of $57,3 \pm 12,8$ years. Average of duration of diabetes mellitus was $20,0 \pm 8,3$ years.

Table 1. Demographic Data.

	Results (n=70)
Age, year	$57,3 \pm 12,8$
Gender, male, n (%)	47 (67,1)
BMI, kg/m ²	$29,4 \pm 6,4$
Duration of Diabetes, year	$20,0 \pm 8,3$
GFR	$83,7 \pm 32,5$
HbA1C, %	$8,4 \pm 1,8$
LDL, mg/dL	$118,5 \pm 33,6$

BMI; body mass index, GFR; glomerular filtration ratio.

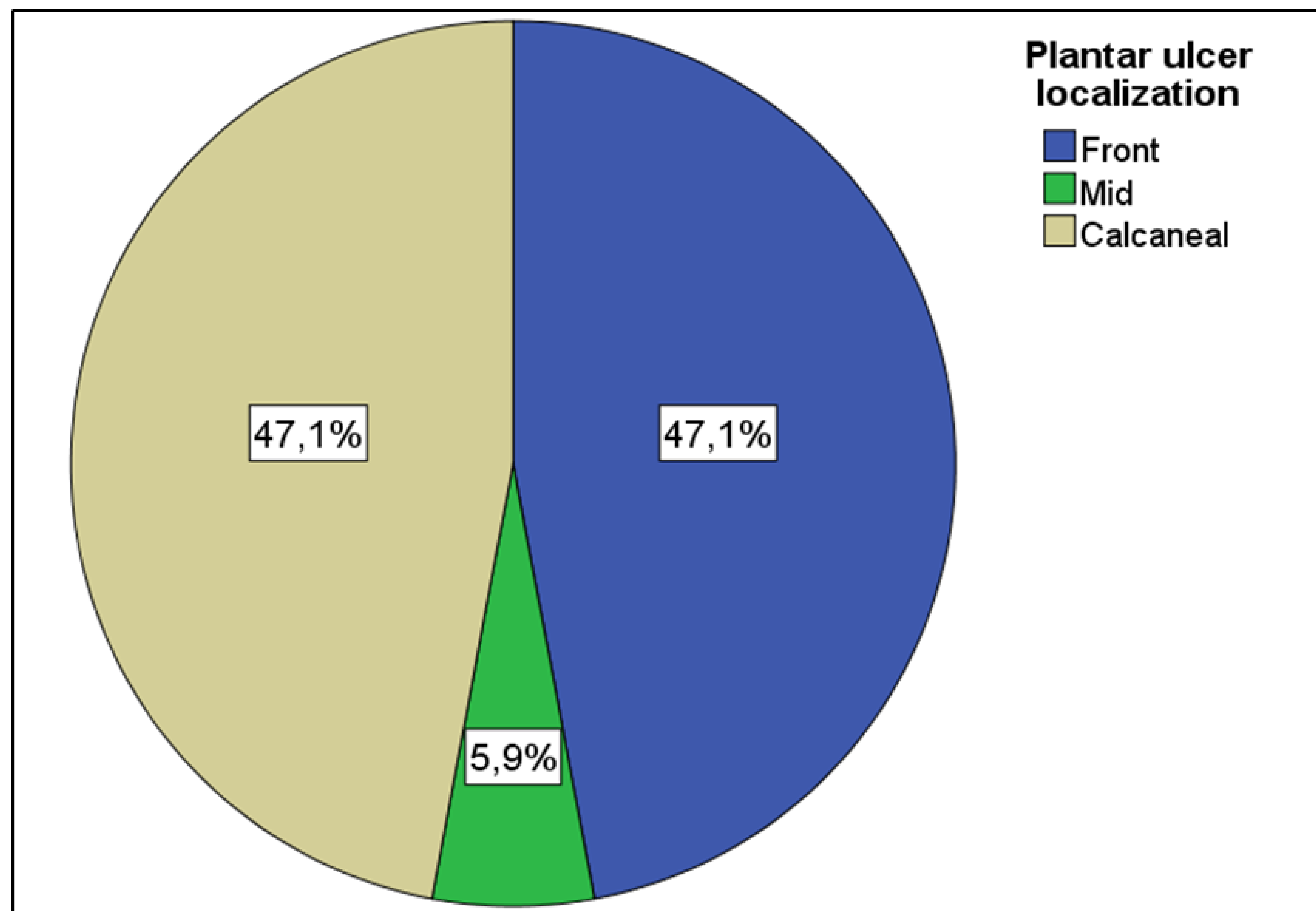
Thirty-eight (54,3%) patients had underlying peripheral neuropathy and 5 (7.1%) had peripheral arterial disease. The majority (n=38) of DFU were located in the forefoot with 11 in the midfoot and 10 in the hindfoot region, respectively

Table 2. Chronic complications and Results

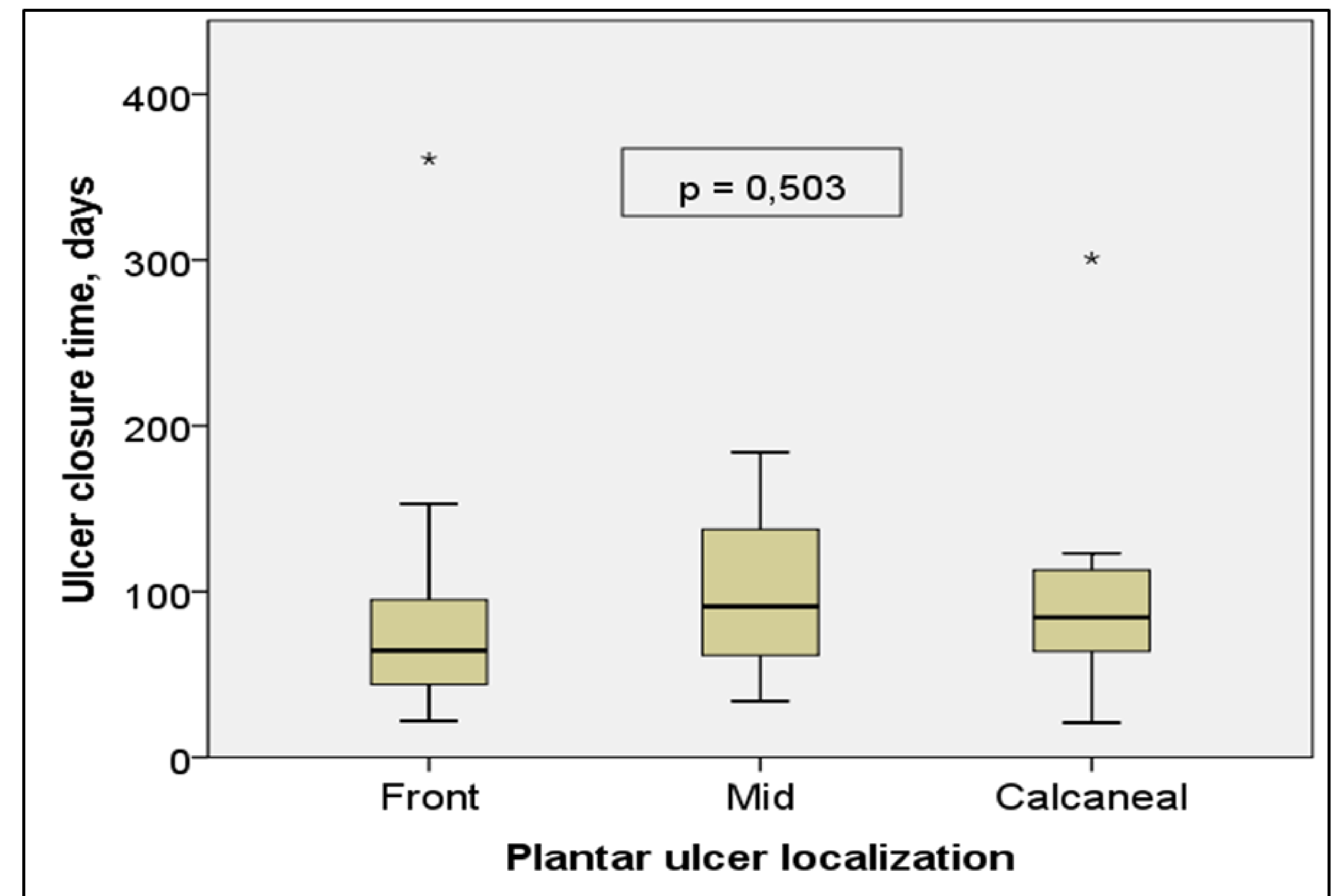
	Results (n=70)
Peripheral arterial disease, exist, n (%)	5 (7,1)
Peripheral neuropathy, exist, n (%)	38 (54,3)
Plantar ulcer localization, n (%)	
Forefoot	38 (54,3)
Midfoot	8 (11,4)
Hindfoot	24 (34,3)
Minor amputation, n (%)	9 (12,9)
Major amputation, n (%)	1 (1,4)
Mortality, n (%)	3 (4,3)

Results

Among the patients treated with removable TCC system, 17 wounds did not reached complete closure during the follow-up period. Eight of the non-closure wounds (47,1) were located in forefoot, one (5,9%) in midfoot and eight (47,1%) in hindfoot, respectively



During follow-up period, there was no statistical significant difference between healing times of plantar regions of the foot ($p=0,503$). Median wound closure time for forefoot ulcers was (IQR) 64.5 (41-100.75), median wound closure time for midfoot ulcers was (IQR) 91,00 (47-182) and median wound closure time for hindfoot ulcers was (IQR) 84,5 (63,5-115,5), consecutively



Discussion:

- In a recent study, Healing time of DFU with an off-loading device varied from 1 week to 156 weeks with median duration of 17.5 (95% confidence interval = 15-33) weeks (122,5 days)(1).
- In our study, median healing rate for forefoot ulcer (IQR) was 64.5 (41-100.75), midfoot ulcer (IQR) was 91,0 (47,0-182,0) and hindfoot ulcer (IQR) was 84,5 (63,5-115,5) days consecutively (p=0,503)
- In another study that used a single used TCC system, of the 132 ulcerations, 113 (85.6%) resolved, 6 (5.5%) remained unresolved, and 13 resulted in amputation (9.8%) (2).
- In our study, among 70 patients treated with removable TCC system, 53 wounds reached complete closure during the follow-up period. Major amputation was performed in 9 (12,9%) patients and minor amputation was performed in 1 (1,4%) patient.

References:

1. Lim WT, Robinson H, Jude E, Rajbhandari S. The Real-Life Outcome of VACOped Boot in the Management of Diabetic Foot Ulcers. *Int J Low Extrem Wounds*. 2022 Sep;21(3):290-293. doi: 10.1177/1534734620942671. Epub 2020 Jul 31. PMID: 32734794.
2. Arnold JF, Marmolejo V. Outcomes Achieved With Use of a Prefabricated Roll-On Total Contact Cast. *Foot Ankle Int*. 2017 Oct;38(10):1126-1131. doi: 10.1177/1071100717716486. Epub 2017 Aug 11. PMID: 28800712.

Conclusion:

- Reusable fiberglass and polyester combined total contact cast system (Cellacast Lohmann and Rauscher) has similar results with removable cast walkers and single used prefabricated rigid TCC systems.
- These data support the utilization of this device as an alternative to conventional TCC or any other offloading device in the treatment of plantar diabetic foot ulcerations.