

Multimodal remote monitoring of patients with diabetes and peripheral artery disease who underwent revascularization and are treated in a high-risk foot clinic: 3- and 6-months' follow up outcomes

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Background:

Israel has one of the highest rates of lower-extremity amputation due to diabetic foot ulcers in the world. The integrated patient unit (IPU) was established at the Sheba Medical Center to improve outcomes among patients with foot ulcers and peripheral artery disease (PAD), which often lead to amputation. The IPU has a unique multimodal postoperative monitoring system, including remote monitoring, a wound clinic, and periodic ultrasound exams.

Aim: To evaluate post-revascularization outcomes for IPU patients with diabetes and PAD.

Methods:

- Data is collected from IPU patient records at baseline and every 3 months, up to 12 months post-revascularization, including demographic information, clinical indices, and patient reported outcome measures. We focus on mid-terms results at 3 and 6 months.
- Between June 2023 and July 2025, 107 cases of PAD in 94 patients with diabetes underwent revascularization and enrolled in postoperative monitoring.
- Data analysis was conducted using descriptive statistics and paired t-tests.

Results:

- Most cases (78.5%) were male; mean age was 74.64 years (SD 9.58) and diabetes duration 21.39 years (SD 11.56); 56.1% were treated with insulin and 22.4% with dialysis.
- Close to 40% of cases were lost to follow up due to major amputation (n=23), death (n=10), declined monitoring or continued care elsewhere (n=7).
- Minor, largely insignificant improvements were found in clinical indices with a gradual decline in blood perfusion. (**Table 1**)
- Significant improvements were found in pain scores from baseline to 3 months and 6 months. (**Figure 1**)
- Patient diabetes distress levels (PAID score) improved from baseline (PAID score 29.39, SD 19.48) to 6 months (PAID score 22.71, SD 22.86, p=0.048).
- Patient satisfaction with recovery was consistently high. (**Table 1**)

Conclusions:

While it may not significantly improve clinical outcomes, the IPU's multimodal approach to postoperative monitoring may be successful in improving patients' quality of life. Prevention and early detection must be implemented along with the IPU model of care to prevent disease severity and amputation.

Table 1. Clinical and Patient Reported Outcomes at baseline & post-revascularization

	Baseline N=107	3 Months N=56	6 Months N=53
HbA1c (%) mean (SD)	7.21 (1.40)	6.96 (1.47)	7.03 (1.38)
LDL cholesterol(mg/dL) mean (SD)	76.79 (44.14)	60.19 (30.43)*	59.79 (35.49)
Triglycerides (mg/dL) mean (SD)	150.96 (85.62)	143.13 (62.77)	156.74 (103.27)
Ankle-Brachial Index mean (SD)			
Left	1.22 (0.41)	1.16 (0.51)	1.13 (0.41)
Right	1.23 (0.50)	1.16 (0.46)	1.05 (0.33)
PVR Amplitude mean (SD)			
Left	0.40 (0.20)	0.30 (0.19)*	0.29 (0.20)
Right	0.39 (0.24)	0.32 (0.15)	0.27 (0.14)*
PVR RT mean (SD)			
Left	245.93 (32.67)	253.68 (58.00)	252.17 (72.81)
Right	220.71 (79.80)	261.11 (75.53)	242.44 (93.49)
PAID Scores mean (SD)	29.39 (19.48)	28.35 (19.47)	22.71 (22.86)*
PROMIS-10 Mental Health T score (SE)	41.1 (3.6)	41.1 (3.6)	41.1 (3.6)
PROMIS-10 Physical Health T score (SE)	32.4 (4.2)	34.9 (4.1)	34.9 (4.1)
Patient Satisfaction: High (%)		75.00%	75.47%

*Statistically significant results (p<0.05). P values reflect comparison to baseline, using a paired t-test. Hemoglobin A1c, HbA1c; standard deviation, SD; milligrams per deciliter, mg/dL; Pulse Volume Recording, PVR; Problem Areas in Diabetes, PAID; Patient-Reported Outcomes Measurement Information System-10, PROMIS-10; standard error, SE

Figure 1. Pain scores at baseline, 3 months and 6 months

