

A 13-year Experience Of Microsurgical Free Tissue Transfer For Chronic Lower Extremity Wound Limb Salvage: Long-term Outcomes From 339 Flaps At A Tertiary Wound Center

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Introduction

- Lower extremity (LE) free tissue transfer (FTT) is an effective tool for limb salvage in complex wounds.¹⁻²
- Successful LE FTT requires collaboration between vascular, orthopedic, and plastic surgeons to optimize both vascular supply and soft tissue coverage.³
- Long-term outcomes of limb salvage, ambulation, and mortality are important metrics for evaluating the success of these interventions.
- Limited large-scale data exist on LE FTT outcomes in the atraumatic population

Objective

To present long-term outcomes of our institution’s 12-year experience of LE FTT in a comorbid patient population

Methods

- A retrospective chart review of patients receiving LE FTT reconstruction from July 2011 to March 2024 was conducted.
- Patient demographics, vascular characteristics, intraoperative details, flap characteristics, and outcomes were collected.
- Primary outcomes were limb salvage and flap success.

Results

During the study period, 330 patients underwent 339 LE FTT.

Patient Characteristics

The average age was 55.9 ± 14.1 years, and the median body mass index was 28.8 kg/m2 (IQR: 8.1). The median Charlson Comorbidity Index was 4 (IQR: 3), with prevalent rates of diabetes (n=188, 55.5%), peripheral vascular disease (n=112, 33.9%), and chronic kidney disease (n=35, 10.6%).

Vascular Characteristics

A total of 294 cases (89.1%) underwent preoperative angiography and 56 (18.7%) underwent a preoperative endovascular intervention.

Microsurgical Details

The majority of patients received 2 venous anastomoses (n=275, 81.1%) using end-to-side anastomosis (n=294, 86.7%). Arterial calcification was evident in 93 cases (27.4%), with intraoperative thrombosis occurring in 4 (1.2%). A saphenous vein interposition graft was used in 38 (11.2%) cases. Immediate flap success occurred in 326 (96.5%) cases.

Flap Outcomes

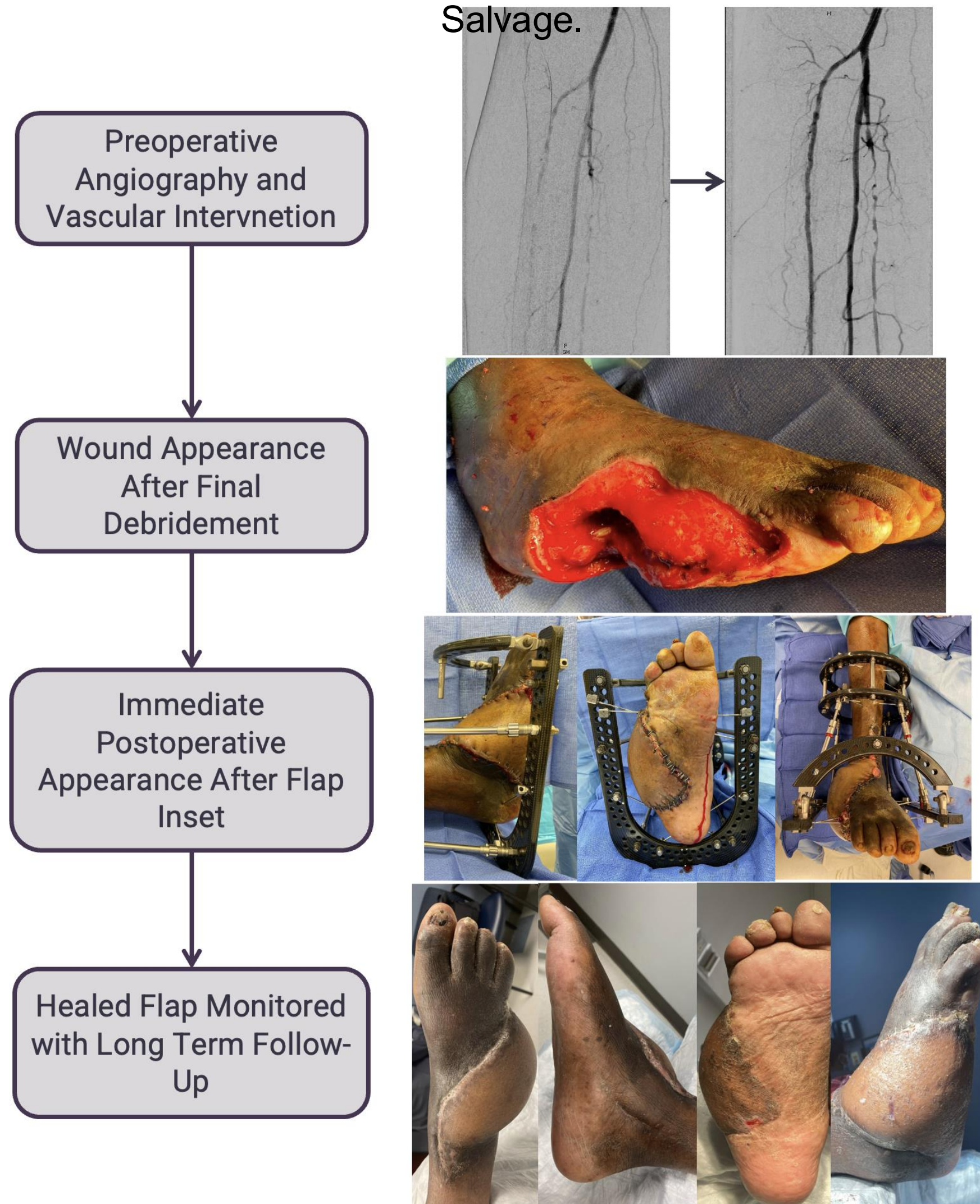
Takeback occurred in 14 (4.1%) cases, of which 11 (78.6%) were salvaged. Other complications included partial flap necrosis (n=12, 3.3%), hematoma (n=30, 5.9%), dehiscence (n=56, 16.6%), and infection (n=46, 13.6%).

Long-Term Outcomes

Patients were followed for a median of 12.1 (IQR: 23.9) months. Postoperative ipsilateral amputation rate was 12.1% (n=41) and mortality rate was 6.6% (n=22). Limb salvage rate was 87.9% (n=297) overall at median of 12 months.

	Total (No.%)
	339 (100.0)
Patient Characteristics	
Age, years (mean ± SD)	55.9 ± 14.1
BMI, kg/m2 (median [IQR])	28.8 [8.1]
Charlson Comorbidity Index (median [IQR])	4 [3]
Diabetes	188 (55.5%)
Peripheral Vascular disease	112 (33.9%)
Chronic Kidney Disease	35 (10.6%)
Preoperative Angiography	294 (89.1%)
Preoperative Endovascular Intervention	56 (18.7%)
Flap Outcomes	
Takeback Cases	14 (4.1%)
Partial Flap Necrosis	12 (3.3%)
Hematoma	30 (5.9%)
Dehiscence	56 (16.6%)
Infection	46 (13.6%)
Long-Term Outcomes	
Follow-Up Duration, months (median [IQR])	12.1 [23.9]
Ipsilateral Amputation	41 (12.1%)
Mortality	22 (6.6%)

Figure 1 (below). Stepwise Management of LE FTT for Limb Salvage.



Discussion

- Our twelve year, single-surgeon experience with LE FTT yields excellent limb salvage (**87.9%**) with minimal flap complications
- A multidisciplinary approach to limb salvage with **close collaboration between vascular and plastic surgery** should be taken to optimize outcomes and preserve limb length in this complex patient population
- Long-term follow-up demonstrates successful limb preservation with durable flap healing, even in patients with significant comorbidities and vascular disease

Limitations

- Retrospective design
- Single-surgeon series may introduce selection and performance bias
- Lack of patient-reported outcome measures.

Conclusion

LE FTT, when supported by a multidisciplinary approach, achieves excellent limb salvage outcomes and durable long-term success in complex patient populations with atraumatic wounds.

References

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