

Long Term Functional Outcomes Following Free Anterolateral Thigh Flap with Rolled Fascia Lata for Achilles Tendon Reconstruction

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Introduction

- Achilles tendon injury with extensive soft tissue loss presents challenges to lower extremity (LE) reconstruction with functionally favorable results.
- The anterolateral thigh (ALT) flap with composite tissue using a rolled fascia lata (FL) is a reconstructive option in this population.
- This study evaluates the outcomes of microsurgical reconstruction for Achilles tendon and soft tissue defects.

Methods

- A retrospective review between January 2011 and September 2023 was performed of patients who underwent Achilles tendon reconstruction with simultaneous soft tissue coverage.
- Patients were included in the study if they (1) presented with Achilles tendon defects that also required soft tissue reconstruction and (2) underwent a single - stage Free Tissue Transfer (FTT) using an anterolateral thigh (ALT) flap with an attached fascia lata (FL) extension.
- Demographics, comorbid conditions, baseline functionality, reconstructive details, and wound characteristics were collected. Primary outcomes were flap success, return to functional ambulation, and complication rate.

Results

Table 1. Patient Characteristics.		Table 2. Flap Complications	
	Total		Total
	No. (%)		No. (%)
	22 (100.0)		22 (100.0)
Age, years (mean ± SD)	46.9 ± 16.1	Flap Complication Within 7 Days	1 (4.5)
BMI, kg/m2 (mean ± SD)	31.8 ± 5.2	Immediate Survival	21 (95.5)
Sex		Takeback	1 (4.5)
Male	17 (77.3)	Flap Salvage	0 (0.0)
Female	5 (22.7)	Infection	0 (0.0)
Hospital LOS, days (mean ± SD)	21.7 ± 7.0	Partial Flap Necrosis	0 (0.0)
Postoperative LOS, days (mean ± SD)	11.9 ± 4.1	Dehiscence	0 (0.0)
Comorbidities		Flap Hematoma	0 (0.0)
CCI (median [IQR])	0 [2]	Venous Congestion	0 (0.0)
Diabetes	5 (22.7)	Microvascular Thrombosis	1 (4.5)
Peripheral Vascular Disease	2 (9.1)	Anastomotic Revision	0 (0.0)
Active Smoker	3 (13.6)	Flap Complication Within 60 Days	6 (27.3)
Former Smoker	3 (13.6)	Infection	1 (4.6)
		Partial Flap Necrosis	0 (0.0)
		Dehiscence	5 (22.7)
		Flap Hematoma	0 (0.0)
		Venous Congestion	0 (0.0)
		Microvascular Thrombosis	1 (4.5)
		Anastomotic Revision	0 (0.0)
Table 3. Long term Outcomes			Total
			No. (%)
			22 (100.0)
Preinjury ambulation			22 (100.0)
Time to follow-up, months (median [IQR])	6.9 [16.5]		
Ambulatory at Final Follow-up	22 (100.0)		
Time to Ambulation and FWB, months (median [IQR])	2.3 [2.8]		
Patients with Physical Therapy Follow-up	12 (54.5)		
Return to Normal AROM Dorsiflexion	11 (91.7)		
Return to Normal AROM Plantarflexion	10 (83.3)		
Patients with completed Lower Extremity Functional Scale (LEFS) questionnaire	10 (45.5)		
Time to LEFS, months (median [IQR])	8.6 [5.0]		
LEFS Score (median [IQR])	53.0 [8.0], (66.3% of max function)		
(AROM) – Active range of motion, (LEFS) – Lower extremity function score, (IQR) – Interquartile range, (FWB) – Full-weight bearing			

Discussion

- This study evaluated the long-term outcomes of the ALT flap with FL extension for the use of single-stage reconstruction of Achilles tendon rupture, often concomitant with significant soft tissue defects. Our findings demonstrate that this technique effectively restores both tendon integrity and soft tissue coverage in a single procedure. With a high success rate and restoration of functional ambulation, the ALT with FL flap provides both the mechanical stability necessary for tendon repair and the adequate soft tissue coverage essential for healing. By eliminating the need for staged procedures, this approach presents a compelling surgical option to enhance functional outcomes while reducing the complications commonly associated with extensive Achilles tendon repairs.

Limitations

- As a retrospective analysis with a relatively small sample size, its generalizability is constrained. We acknowledge that the retrospective nature of this study limits our ability to directly compare pre- and post-operative functional status using standardized testing. While ambulatory function was qualitatively restored postoperatively, future studies should incorporate objective functional testing to quantify improvement.

Conclusion

The ALT free flap with an attached FL is a functional reconstructive technique for Achilles tendinous injury in the setting of large soft tissue defects. The composite free flap provides consistent operative success with robust patient return to ambulation and weight bearing. Further evaluation into patient reported outcomes can provide additional understanding of functionality.