

Assessing the Predictive Value of the Charlson Comorbidity Index in Lower Extremity Free Tissue Transfer for Limb Salvage: A 13-Year Retrospective Cohort Study

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Introduction

The Charlson Comorbidity Index (CCI), a weighted index that assesses a patient's risk of death based on their comorbidities, has shown value in predicting adverse events. This study investigates the utility of the CCI in the complex limb salvage population receiving lower extremity (LE) free tissue transfer (FTT).¹

Results

Patient Characteristics

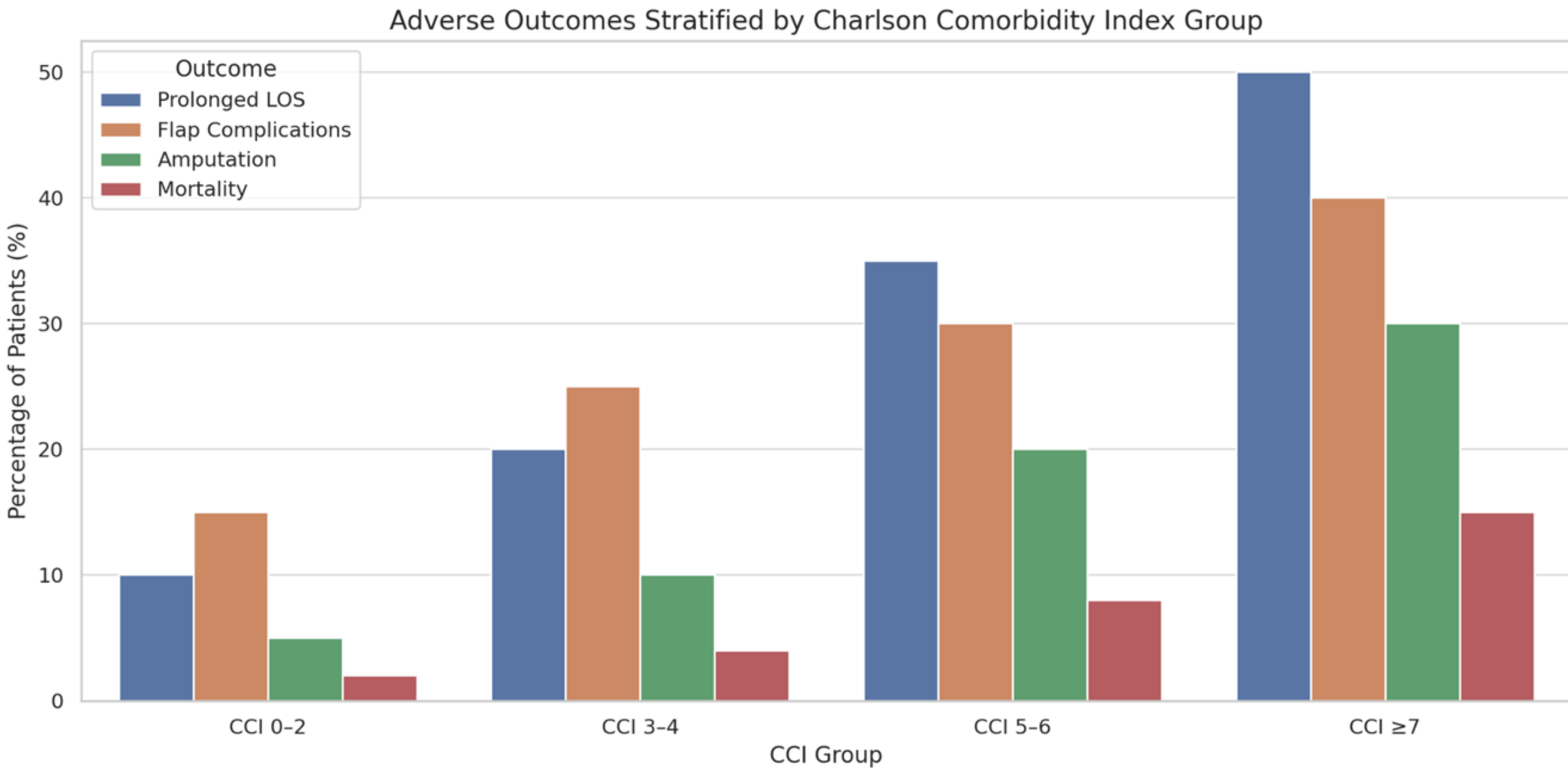
- 356 LE FTT iin 346 patients
- Median CCI: 4.0 [IQR: 3.0]

Clinical Outcomes

- Prolonged postoperative LOS (>75th percentile): 89 patients (25.0%)
- Flap complications: 103 patients (28.9%)
- Major amputation (e.g., below-knee or proximal): 46 patients (12.9%)
- Mortality: 20 patients (5.8%)
- Median follow-up duration: 15.7 [IQR: 27.5] months

Univariate and Multivariate Analysis

- Univariate analysis: Higher CCI significantly associated with prolonged LOS, flap complications, amputation, and mortality (p < 0.05)
- Multivariate analysis: CCI not independently predictive of any primary outcome after adjusting for covariates



Conclusion

This is the largest cohort study evaluating the utility of CCI in patients undergoing LE FTT for limb salvage. While a higher CCI may correlate with adverse outcomes, it is not an independent predictor when adjusting for other factors.

Methods

A retrospective review of LE FTT from July 2011 to October 2024 was conducted. Prolonged postoperative length of stay (LOS) was defined as greater than 75th percentile of the cohort. Major amputation was defined as below-knee and other proximal amputations after LE FTT.

Table 1. Charlson Comorbidity Index Comorbidity Weights¹

Conditions	Assigned weights for each condition
Myocardial infarction	1
Congestive heart failure	1
Peripheral vascular disease	1
Cerebrovascular disease	1
Dementia	1
Chronic pulmonary disease	1
Connective tissue disease	1
Peptic ulcer disease	1
Mild liver disease	1
Diabetes	1
Diabetes with end organ damage	2
Hemiplegia	2
Moderate or severe renal disease	2
Any tumor without metastasis	2
Leukemia	2
Lymphoma	2
Moderate or severe liver disease	3
Metastatic solid tumor	6
AIDS	6

References

- 1.Charlson ME, Pompei P, Ales KL, MacKenzie CR. A new method of classifying prognostic comorbidity in longitudinal studies: development and validation. J Chronic Dis. 1987;40(5):373-83. doi: 10.1016/0021-9681(87)90171-8. PMID: 3558716.