Functional Outcomes of Primary Arthrodesis Versus Open Reduction and Internal Fixation in the Treatment of Lisfranc Injuries

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Purpose: The lack of data regarding functional outcomes of primary arthrodesis (PA) and open reduction and internal fixation (ORIF) contributes to significant debate regarding the optimal method of treatment for Lisfranc injuries. Although PA is associated with lower rates of secondary procedures and posttraumatic arthritis, its impact on foot functionality has come into question due to sacrifice of tarsometatarsal (TMT) mobility. The authors hypothesize that there is no significant difference between patient-reported outcome measures (PROMs) among patients receiving PA and ORIF for the treatment of Lisfranc injuries.

Methods: A retrospective cohort study of patients surgically treated for Lisfranc injuries between January 2010 and January 2019 at a Level I trauma center was undertaken. Retrospective chart review was utilized to obtain patient demographics, comorbidities, procedural information, complications, and additional treatments. Responding by survey, patients reported their functional competency in performing daily and sports-related activities via the validated Foot and Ankle Ability Measure (FAAM) instrument. For each patient, scores for the Activities of Daily Living (ADL) and Sports sections were calculated. Patients also reported their perceived current level of function on a percent scale with respect to functionality prior to TMT injury.

Results: 24 patients underwent PA, and 27 patients underwent ORIF. There were no significant differences between age ($P = 0.55$), incidence of high-energy injury mechanisms ($P = 0.14$), comorbidities, or time to surgical intervention from injury ($P = 0.25$) between PA and ORIF groups. There were no significant differences in FAAM scores between PA and ORIF groups. The average ADL scores for PA (72.42 ± 17.53) and ORIF (68.11 ± 28.24) were not significantly different ($P = 0.52$), nor were the average Sports scores for PA (47.92 ± 25.48) and ORIF (48.56 ± 29.44) groups ($P = 0.94$). However, patients in the PA group reported a significantly higher level of perceived ADL function ($77.96\% \pm 17.97\%$) compared to patients in the ORIF group ($60.04\% \pm 35.47\%$, $P = 0.03$); this was not the case for perceived Sports functionality ($P = 0.67$).

Conclusion: This analysis of PROMs revealed no significant difference in the ability to participate in ADLs and sports between PA and ORIF groups. These results align with our hypothesis and suggest that despite sacrificing TMT joint mobility, functional outcomes of patients receiving PA were not significantly different from those receiving ORIF for Lisfranc injuries.