Treatment of Low-Energy Lisfranc Joint Injuries in a Young Athletic Population: Primary Arthrodesis Compared with Open Reduction and Internal Fixation

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Purpose: Primary arthrodesis (PA) has been shown to have comparable or better outcomes than open reduction and internal fixation (ORIF) in high-energy Lisfranc injuries. There is a lack of comparable data investigating injuries associated with low-energy mechanisms. The objective of this study was to retrospectively compare primary arthrodesis with ORIF of low-energy Lisfranc injuries in a young athletic population.

Methods: All surgically managed low-energy (sustained during athletic activity, ground level twisting, or fall from less than 3 feet) Lisfranc injuries were identified at a single military tertiary referral center from July 2010 to June 2015. The injury pattern, time to diagnosis, and method of treatment were reviewed. Complication rates, secondary procedures, military fitness test scores, return to full military activity (defined as the ability to perform their primary job functions and participate in mandatory athletic activity), and Foot and Ankle Ability Measure (FAAM) scores were compared.

Results: 32 patients were identified with the average age of 28 years. 69% were primarily ligamentous injuries and the lateral column was never involved. PA was performed in 14 patients with ORIF in 18. Minor complications occurred in 10 patients. Implant removal was performed in 15 (83%) in the ORIF group and 2 (14%) in the PA group ($P = 0.005$). Visual analog scale (VAS) pain at final evaluation averaged 1.6. 29 of 32 (91%) were able to return to full military activity. The PA group returned to full duty at an average of 4.5 months while the ORIF group returned at an average of 6.7 months ($P = 0.0066$). The PA group ran their fitness test an average of 9 seconds per mile slower than their preoperative average while the ORIF group ran it an average of 39 seconds slower per mile ($P = 0.032$). There were no differences between the 2 groups in the FAAM scores at an average of 35 months.

Conclusion: In this study, low-energy Lisfranc injuries treated with primary arthrodesis had a lower implant removal rate, an earlier return to full military activity, and better fitness test scores, but there was no difference in FAAM scores at an average of 35 months.

See pages 401 - 442 for financial disclosure information.