Primary Arthrodesis Compared with Open Reduction and Internal Fixation for Lisfranc Injuries with the First Tarsometatarsal Joint Dislocation: a Multicenter Study

Mingzhu Zhang, MD, PhD, Guang-Rong Yu, MD

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Introduction/Purpose: Retrospective analyses of treatment for the first tarsometatarsal joint dislocation with Lisfranc injury. Comparison of open reduction internal fixation (ORIF) and primary arthrodesis was conducted for the injury.

Methods: This was a multi-center study, involving nine clinical institutions in different area of China. From January 2003 to June 2015, 126 Lisfranc injuries with first tarsometatarsal joint dislocation underwent surgical intervention. Of this group, 41 (32.5%) feet were first tarsometatarsal joint dislocation only. 85 feet were first tarsometatarsal joint dislocation and fractures. They were 76 males (60.3%) and 50 females (39.7%) with a mean age of 45.5 (range, 20-87) years. The duration from injury to surgery is 11.7 (range, 4-26) days. Two groups were divided by surgery methods as open reduction internal fixation (ORIF) group and primary arthrodesis group. Ninety two patients were performed by ORIF, while primary arthrodesis group including 34 cases. Outcome measures included clinical examination, radiographs, AOFAS ankle-hindfoot scores, visual analogue scale (VAS) and SF-36 scores. Complications and revision rate were analyzed as well.

Results: 126 patients were followed up for average of 29.5 months. At 1.5 years, the mean AOFAS Midfoot score at latest follow-up was 79 points and 85 points separately in ORIF and arthrodesis group (P<0.05). The VAS score was 3.1 and 2.2 separately (P<0.05). The BP score of SF-36 was 76.1 points and 84.6 points (P<0.05). Five patients in the open-reduction group had loosen or broken hardware. Redislocation of first tarsometatarsal joint were observed in 16 cases among ORIF group. 36 patients in ORIF group had pain in midfoot, eight of them had persistent pain, and they were eventually revised with arthrodesis. Two patients had painful hardware and the symptom disappeared after removal of the hardware. No redislocation and no hardware failure was identified in arthrodesis group.

Conclusion: Primary stable arthrodesis of the first ray gives a better short and medium term outcome than open reduction and internal fixation for Lisfranc injury with the first ray dislocation. Possible complication and revision could be avoided by primary arthrodesis for dislocated first ray injuries.

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