

Lisfranc ligament anatomical reconstruction surgery is beneficial for chronic Lisfranc injuries

Takaaki Hirano, MD, Akiyama Yui, MD, Hisateru Niki, MD

Category: Midfoot/Forefoot

Keywords: Lisfranc, chronic, injuries, anatomical, reconstruction

Introduction/Purpose: Chronic Lisfranc fracture dislocation had been commonly treated with arthrodesis, but were these treatments suitable? The Lisfranc joint has sagittal motion with articular cartilage and functioning as a shock absorber. We reported the middle-term outcomes after performing Lisfranc ligament anatomical reconstruction surgery (LARS), using an optimal route of reconstruction based on anatomical measurements of and biomechanical experiments with cadavers. The purpose of this study is to determine the usefulness of LARS for chronic Lisfranc injuries to preserve the joint function.

Methods: We underwent LARS for 8 cases of Chronic Lisfranc injuries (6 males, 2 females) from May 2012 to June 2017. Average age at surgery 26.1 years (18-38), average follow-up period is 28 months (2-46). The reconstruction route was via a burr hole created at a position 6 mm distal to the tarsometatarsal joint on the 2nd metatarsal, and at a depth of 10 mm. A burr hole was then created from the medial cuneiform bone to the 2nd metatarsal bone in a plantar and horizontal direction. The graft tendon was guided through the burr hole from the medial cuneiform bone to the 2nd metatarsal (double-layered side), was looped, and was guided back around the dorsum of the medial cuneiform (single layer) to reconstruct the dorsal ligament. We examined Myerson classification, Kaar evaluation and the postoperative clinical evaluation using Japanese Society for Surgery of Foot (JSSF) midfoot scale.

Results: In Myerson classification, Type B2 6 cases and Type C1 2 cases. In Kaar evaluation, transverse instability (TI) 6 cases, longitudinal instability (LI) 2 cases. The average time from injury to surgery is 156 days on average (37-404). JSSF scores averaged 95 points (90-100). X-ray evaluations were almost good, but in 2 cases with weight bearing, a slight diastasis between the base of the first cuneiform and second metatarsal was observed. But there were no clinical symptoms such as pain. In the surgical procedure, scar is mediated in chronic cases. Therefore, we had to take time to obtain the reduction.

Conclusion: Arthrodesis is gold standard for chronic Lisfranc joint injuries, but decline in foot flexibility is inevitable. LARS is beneficial for maintaining anatomical reduction, preserving the joint function, and shortening the post-therapy period. LARS gave stable results against Chronic Lisfranc joint injuries. LARS for chronic Lisfranc joint injuries is a useful procedure.