Middle-term Clinical Evaluations of Lisfranc Ligament Anatomical Reconstruction Surgery

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Introduction/Purpose: We report 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.

Methods: Subjects included 20 patients (8 female and 12 male, mean age: 35.5 years, mean follow-up period: 35 months) who were diagnosed with Lisfranc joint injury and underwent surgical treatment from 2012 to 2015. Acute case were fourteen cases, chronic cases were 6 cases. The optimal anatomical route of reconstruction was calculated from anatomical measurements obtained from 78 legs of cadavers. The Myerson’s classification and the Kaar’s classification based on stress X-rays were used to classify the injuries at the time of their occurrence. Furthermore, the Japanese Society for Surgery of the Foot (JSSF) Midfoot scale and Stein’s radiographic assessment were used for clinical evaluation postoperatively.

Results: According to the Myerson’s classification, Type B1 was one case, Type B2 was 15 cases, Type C1 and Type C2 were each 2 cases. According to the Kaar’s classification, 17 patients had transverse-type injuries and 3 patients had longitudinal-type injury. Partial weight bearing was encouraged within 6 week and return to exercise within 12 weeks. Average JSSF scores at final follow-up were 93.8 points in both examples (85-100) respectively. Joint congruities on X ray were appropriate in most cases but admitted a little diastasis by one case of chronic and one acute case.

Conclusion: LARS achieves both static and dynamic stability, does not require removal of the internal fixation material, and enables all patients to support a full load 8 weeks postoperatively. LARS is beneficial for maintaining anatomical reduction, preserving the joint, and shortening the post-therapy period. Our newly developed ligament reconstruction is not only able to acute injuries but also to the chronic injuries.

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