Osteoarthritis of Lateral Lisfranc Joint After Lateral Column Lengthening in Flatfoot

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Introduction/Purpose: Lateral column lengthening (LCL) procedure is commonly optional treatment as one of reconstruction surgery for the adult acquired flatfoot deformity (AAFD) due to posterior tibial tendon insufficiency in stage II. However, it had been confirmed that lateral forefoot pressures increase after LCL in previous studies. We may occasionally encounter some cases who have pain in the lateral aspect of the foot associated with osteoarthritis of Lisfranc joint after the surgery (Fig.). In this study, we retrospectively assessed lateral Lisfranc arthritis as postoperative complications after LCL.

Methods: 17 feet in 15 patients who underwent operation including LCL for AAFD due to posterior tibial tendon insufficiency in stage II (two patients male and 13 were female). The mean age at the time of surgery was 64.2 years (52-80). All cases had LCL by calcaneocuboid distraction arthrodesis. The amounts of LCL achieved were 12.7 mm on average (8.0-15.0). The average duration of follow-up after the surgery was 21.8 months (4-97). We divided the subjects up into two groups: (1) pain group (n=7), were experiencing pain in the plantar-lateral aspect of the foot and/or tenderness at fourth and/or fifth tarsometatarsal (TMT) joint postoperatively; and (2) no-pain group (n=10), did not have that pain nor tenderness until the latest follow-up. Two groups were compared in age, body mass index (BMI), the American Orthopaedic Foot and Ankle Society (AOFAS) score, the amounts of LCL and several parameters on the radiograph.

Results: In the pain group, all cases had osteoarthritic changes of the lateral Lisfranc joint (41.2%) on radiographs (grade II or more on the Kellgren-Lawrence grading scale). In overall subjects, 11 feet (65%) were revealed lateral Lisfranc arthritis. There were no significant differences in age, BMI, AOFAS scale, the LCL amounts between both groups. The medial column height was lower than lateral preoperatively, it became higher postoperatively by the reconstruction. In the pain group, the postoperative differences between medial and lateral tend to be greater than in no-pain group (P = 0.17). Patients with pain had significantly lower postoperative first talometatarsal angle (p < 0.05).
However, no significant differences were found in terms of the other radiographic parameters such as calcaneal pitch angle, talonavicular coverage angle and hindfoot alignment by Cobey’s view.

**Conclusion:** This study indicated a high possibility of Lisfranc arthritis in patients who have pain of the lateral aspect of the foot after LCL. We suggest that this osteoarthritic change is one of the causes of such pain, and attribute the arthritis to increased lateral column pressures by excess calcaneocuboid distraction. As a preventive measure had reported previously, we may have to keep LCL within less than 10 mm, and may have to add the stabilization of medial column such as the first TMT fusion or Cotton osteotomy.