Clinical Outcomes of the Modified Broström Procedure Using Distal Fibular Periosteal Flap Augmentation for Chronic Lateral Ankle Instability

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Introduction/Purpose: Modified Broström procedure (MBP) is the most widely accepted primary operative treatment for the operative treatment of chronic lateral ankle instability (CLAI). However, in cases of generalized ligament laxity, severe attenuation of the soft tissue, previous failed surgery, high demand activity, and obesity, unsatisfied results of the MBP have been reported. We hypothesized that if the soft tissue can be augmented enough to support body activity, the clinical outcomes are comparable with those of the anatomical reconstruction. The purpose of this study is to compare the clinical results between the MBP using a distal fibular periosteal flap augmentation and anatomical reconstruction using free tendon allograft for CLAI in cases of concerning poor outcome by MBP.

Methods: Thirty-eight patients [(39 ankles), (25 men, 13 women) (mean age: 27.6 years)] who underwent both procedures were retrospectively analyzed. The mean symptom duration before surgery was 31.7 months and the mean follow up duration was 21.6 months. The indications for operation were: (1) severe subjective ankle instability feeling and objective ankle instability, (2) previous failed MBP, (3) generalized joint laxity, (4) obesity, (5) severe attenuation of the ligament. The patients were divided into 2 groups: a group of anatomical lateral ligament reconstruction (reconstruction group, 17 ankles) and a group of MBP using distal fibular periosteal flap augmentation (augmentation group, 22 ankles). Radiographic assessments were made with weightbearing anteroposterior, lateral radiographs of the ankle, hindfoot alignment radiographs, and stress radiographs using a Telos device. Clinical evaluations were performed using the American Orthopaedic Foot and Ankle Society (AOFAS) ankle-hindfoot score and Karlsson-Peterson score.

Results: The mean AOFAS score significantly improved from 54.65 to 92.94 in the reconstruction group and from 60.14 to 94.86 in the augmentation group. (p=0.000, p=0.000) The mean Karlsson score also significantly improved from 46.41 to 92.65 in the reconstruction group and from 52.64 to 94.09 in the augmentation group. (p=0.000, p=0.000) There were no significant differences in the postoperative mean AOFAS and Karlsson score between the groups. (p=0.214, p=0.299)

Conclusion: If satisfied results can be expected with both procedures, we believe that surgeons will prefer the MBP using periosteal augmentation, which is more familiar and less invasive. The MBP using distal fibular periosteal flap augmentation is an alternative surgical option for CLAI in cases of generalized ligament laxity, severe attenuation of the soft tissue, previous failed surgery, high demand activity, and obesity.