Lesser Metatarsophalangeal Joint Instability: Prospective Evaluation and Repair of Plantar Plate and Capsular Insufficiency

Foot & Ankle Category: Midfoot / Forefoot

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Introduction
Anatomical dissection of the second metatarsophalangeal (MTP) joint suggests that the plantar plate is the major stabilizing structure of the joint due to its central location and multiple important attachments. Many surgical procedures have been recommended when conservative treatment has failed, but some have had limited clinical success. The aim of our prospective study was to show the results obtained in the treatment of a group of patients with plantar plate tears by direct repair through a dorsal approach combined with a Weil metatarsal osteotomy with a minimum follow up of 12 months

Methods
From January 2010 to July 2011, we prospectively treated 28 patients (55 MTP joints) with lesser MTP joint instability, but only 22 patients (40 MTP joints) were treated by the direct repair of the plantar plate and were included in the study. All of them had initial complaints of acute forefoot pain with the subsequent development of deformity and instability of the MTP joints. All patients were evaluated clinically, radiographically, (plain radiographs and MRI exam), and by MTP joint arthroscopy. With this data, a direct correlation between the clinical staging and the anatomical grading for plantar plate dysfunction of each patient was determined (P<0.001)

Results
The plantar plate of the 2nd MTP joint was the most commonly affected joint (63%), and the Grade III type tear (transverse and/or longitudinal extension tear) was the most frequent type of tear. With the surgical treatment we performed, we were able to markedly improve the parameters studied (pain, medial or dorsomedial deviation of the toe, joint stability, muscle balance, and joint congruence) to acceptable levels, The AOFAS score improved substantially with this surgical treatment (from an average of 52 points preoperatively to 92 point postoperatively)

Conclusion
The direct plantar plate repair combined with a Weil osteotomy and lateral soft tissue reefing can restore the normal alignment of the MTP joint. We have demonstrated that the anatomic repair of the plantar plate can correct the deviation of the affected toe (medial, dorsal, dorsomedial or dorsolateral), which lead to diminished pain with improved functional scores