Arthroscopic Radiofrequency of the Plantar Plates Combined with a Weil Osteotomy to Repair Grades 0 and I Lesser MTP Joints Instability

Foot & Ankle Category: Midfoot / Forefoot

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Introduction
At the present time, it is becoming a common sense that the fibro-cartilaginous Plantar Plate (PP) plays an important role in the stabilization of the lesser metatarsophalangeal (MTP) joints. The accurate observation of the natural story of these lesions led us to propose a Grading System focused on clinical and radiological findings. The second natural step is trying to find correlations between each type of lesion with the best therapeutic option and prognosis. The aim of this prospective study is to show the results obtained in the treatment of a group of patients with Grade 0 and Grade 1 plantar plate lesions by arthroscopic radio-frequency shrinkage and sealing of the PP lesions combined with a Weil metatarsal osteotomy with an average follow-up of 16 months.

Methods
From January 2010 to July 2011, we prospectively treated 28 patients (55 MTP joints) with lesser MTP joint instability, but only 8 patients (17 MTP joints) were treated by the arthroscopic radio-frequency shrinkage and sealing of the plantar plate lesions combined with a Weil metatarsal osteotomy and were included in this study. All of them had initial complaints of acute forefoot pain with the subsequent development of light deformity and instability of the MTP joints. All patients were evaluated clinically, radiographically, (plain radiographs and MRI exams), 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
In our sample, there are 8 patients - 7 (88%) females and 1 male (12%) – with 12 feet and 17 MTP’s affected. The second MTP was involved 8 times (47%); the third, 7 times (41%) and the fourth MTP only 2 times (12%). Nine MTP were classified as Grade 0 (Attenuation) lesions (53%) and eight as Grade I (partial, short transverse) lesion (47%). After the arthroscopic inventory of the joint, the plantar plates were submitted to shrinkage or the sealing of the tear with the help of a radiofrequency mini-wand. The surgical procedure was completed with a metatarsal Weil osteotomy to reduce the mechanical tension over the articular soft tissues. With the surgical treatment we performed, we were able to markedly improve the parameters studied (pain, dorsal deviation of the toe, joint stability, muscle balance, and joint congruence) to acceptable levels. The AOFAS score improved substantially with the surgical treatment (from an average of 58 points preoperatively to 93 point postoperatively).
Conclusion
The arthroscopic radiofrequency shrinkage or sealing of the plantar plate attenuation/lesion combined with a Weil osteotomy can restore the normal alignment of the MTP joint in Grade 0 and Grade I lesions. This method can correct the deviation of the affected toes, which leads to pain reduction with improved functional scores.