Effect of First Ray Insufficiency and Metatarsal Index on Metatarsalgia in Hallux Valgus

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Category: Midfoot/Forefoot

Keywords: Metatarsalgia; hallux valgus; metatarsal length

Introduction/Purpose: There are two concepts that tried to explain the etiology of metatarsalgia in hallux valgus patients: First, the one that states that as the magnitude of hallux valgus increases, there is a mechanical overload of the lesser metatarsals. Second, that an increased relative lesser metatarsal length is a factor in the development of metatarsalgia.

However there is no current evidence that these facts predisposes for primary metatarsalgia.

The purpose of the study was to evaluate the factors associated with metatarsalgia in hallux valgus patients.

Methods: A cross-sectional study of 121 consecutive adult patients with non-arthritic hallux valgus was carried out. Binary logistic regression was performed to identify the effect of the clinical and demographic factors on the occurrence of metatarsalgia.

Results: One hundred twenty one patients (184 feet) with hallux valgus were analyzed. The median weight was 65 Kg (IQR 58 – 72). Metatarsalgia was present in 84 (45.6%) feet. The binary logistic regression showed that lesser toe deformity (OR 2.6 IC95% 0.2-0.5), gastrocnemius shortening (OR 5.8 IC95% 2.8-12.3), metatarsal index (OR 0.3 IC95% 0.2-0.5) and weight (OR 2.5 IC95% 1.2-5.3) were significantly associated.

Conclusion: Metatarsalgia occurs in almost a half of hallux valgus patients. It has a multifactorial etiology. Our finding questions the common theory that both the magnitude of hallux valgus deformity and an increased length of a lesser metatarsal by themselves, predisposes for primary metatarsalgia. Metatarsalgia was associated with Achilles shortening, excessive weight and associated lesser toe deformity. These factors should be addressed in order to treat this disorder adequately.