Coronal Plane Subtalar Joint Axis in Patients with Symptomatic Peritalar Subluxation

Foot & Ankle Category: Hindfoot

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Introduction
Peritalar subluxation (PTS) encompasses a wide spectrum of foot deformities and symptoms. It is largely accepted that the acquired planovalgus deformity develops as a consequence of many factors acting on the aging foot and ankle complex. However, a comprehensive understanding of the etiology of PTS remains poorly understood. The aim of the current study was to investigate if there was an underlying anatomic predisposition that facilitates subluxation at the subtalar joint.

Methods
A 2-year review of patients undergoing surgery for symptomatic PTS that had a simulated weight-bearing CT (SWBCT) scan was performed. A control group of SWBCT scans in asymptomatic patients with normal radiographic foot alignment was used for comparison. Patient demographics were reviewed. Patients were excluded if they had a diagnosis other than acquired peritalar subluxation, were skeletally immature, had advanced subtalar arthritis, had misalignment of tibial plafond > 5 degrees or varus or valgus tilt of the talus in the mortise. SWBCT scans were reviewed to determine the mean coronal STJA as well as the trend from anterior to posterior across the posterior facet.

Results
Twelve feet in 11 patients with symptomatic PTS were compared to 10 controls. The study group consisted of 7 males and 5 females. The mean age was 59 (range 15-83) and the mean BMI was 29.6 +/- 7.0. The mean STJA in patients with PTS was 18.4 degrees valgus compared to 4.1 degrees valgus in normal controls, this finding was statistically significant (p < 0.001). The progression of the STJA from anterior to posterior across the posterior facet of the subtalar joint was reviewed. The PTS group had a more valgus orientation at the anterior limit of the posterior facet and progressed into further valgus towards the posterior limit of the posterior facet compared to normal controls which began in varus and made a less pronounced transition towards valgus at the posterior limit of the joint.

Conclusion
Patients with PTS have an increased valgus STJA angle as compared to normal controls. This provides an anatomic predisposition to posterolateral subluxation of the calcaneus and adds to the understanding of the etiology of PTS. This finding should be considered when planning surgical intervention for symptomatic PTS.