Is a Flatfoot Associated with a Hallux Valgus Deformity?

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Introduction/Purpose: An arch collapse model has been described for a multitude of foot and ankle problems that is based on a gastrocnemius equinus contracture producing a predictable collapse that has been described in five distinct phases. Previous studies have evaluated the presence of pes planovalgus in hallux valgus patients and concluded that this is a rare occurrence. The Grand Rapids arch collapse model reviews adult foot pathology and believes there is a link between bunions and flatfeet. We wanted to evaluate patients with flatfeet and determine if they had an associated bunion deformity. Based upon the arch collapse model, there should be a significant number of flatfeet with an associated bunion deformity and our goal was to see if this proved to be true.

Methods: We retrospectively reviewed the radiographs of patients diagnosed with a flatfoot based upon their ICD 9 and 10 codes in the senior author’s practice. For each patient, we used standard anteroposterior and lateral foot radiographs obtained on all new patients. Initially, we had 254 feet but had to exclude 93 feet due to inadequate radiographs, normal radiographs (normal meary’s angle and talonavicular coverage angle) or in patients who already had surgical procedures to the foot. This left 161 feet radiographs for review. We then measured the Meary’s angle on the lateral images and the talonavicular coverage angle, hallux valgus angle, intermetatarsal angle and sesamoid position on the anteroposterior radiographs.

Results: Of the 161 feet that remained in the study, only 6 feet (3.7%) had no radiographic evidence of a bunion based upon sesamoid position, hallux valgus angle or the intermetatarsal angle. We did find a correlation with the severity of the flatfoot based upon the Meary’s angle and the talonavicular coverage angle with the severity of the bunion deformity defined by the sesamoid position, hallux valgus angle and the intermetatarsal angle. As the flatfoot got worse, the bunion did so as well.

Conclusion: Our findings would seem to fit with the Grand Rapids arch collapse model. The hypermobility of the first ray that creates the bunion deformity then allows the arch to ultimately collapse. It also does not seem to contradict what has been found previously. Earlier studies showed a low association between patients with bunions who also had flatfeet. This would make sense as the deformity may not have progressed to the flatfoot yet. However, in our study the deformity has already progressed to a flatfoot and almost all have some radiographic evidence of a bunion.