Title: Incidence of Thyroid Disease in Patients with Forefoot Deformity

Introduction: The goal of this study was to determine whether a relationship exists between thyroid disease and forefoot deformities.

Methods: All new patients presenting to our institution’s orthopaedic foot and ankle clinic during a three month period were prospectively surveyed for a diagnosis of thyroid disease, the nature of the thyroid disease, and whether the patient was taking medication for thyroid disease. Additionally, a national insurance database was queried for patients diagnosed with forefoot pathologies with and without a concomitant diagnosis of thyroid disease using ICD-9 codes for each condition.

Results: 350 initial visit patients were surveyed with an average age of 49.1 years. The majority of patients were female (246 patients, 70.3%). A diagnosis of thyroid disease was present in 74 patients (21.1%). Primary hypothyroidism was the most common diagnosis (67 patients), followed by hyperthyroidism (3 patients) and unspecified thyroiditis (4 patients). Thyroid medication was taken by 65 patients (18.6%) (Table 1). Thyroid disease was most frequently present in patients with a diagnosis of hallux valgus (16 of 26 patients, OR 7.3 [3.16-16.99] p<0.0001), lesser toe deformities (8 of 16 patients, OR 5.45 [1.83-16.26], p=0.002), and metatarsalgia (6 of 21 patients, OR 1.53 [0.57-4.101], p=0.41) (Table 2). The national database revealed a total of 905,924 patients with a diagnosis of forefoot pathology. A diagnosis of thyroid disease was present in 321,656 of these patients (OR 2.1 [2.0975-2.1159], p<0.0001).

Conclusion: There appears to be a significant association between forefoot disorders and thyroid dysfunction, especially hallux valgus and lesser toe deformities. Given the prevalence of forefoot disorders, their significant functional consequences, and the rates and cost of surgical correction, preventing these disorders offers an important opportunity in population health management. While further studies with long-term outcomes are necessary, the early diagnosis of thyroid disease may provide an opportunity to predict and alter the course of forefoot pathology. Additionally, with such a high rate of thyroid dysfunction associated with certain foot pathologies (21.1%), it may be prudent to screen certain groups of patients for thyroid disease based on foot pathology. Further studies are needed to better understand the relationship between thyroid disease and foot and ankle pathology.

Summary Account: The incidence of thyroid disease was significantly higher in patients with forefoot deformities compared to patients with other diagnoses, which may help elucidate pathology of forefoot deformities.