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Subtalar Coalitions: Does the Morphology of the Subtalar Joint Involvement Influence Outcomes After Coalition Excision?

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ABSTRACT

Posteromedial subtalar (PMST) coalitions are a recently described anatomic subtype of tarsal coalitions. We compared with clinical patient-based outcomes of patients with PMST and standard middle facet (MF) coalitions who had undergone surgical excision of their coalition. The included patients had undergone surgical excision of a subtalar tarsal coalition, preoperative computed tomography (CT), and patient-based outcomes measures after surgery (including the American Orthopaedic Foot and Ankle Society [AOFAS] scale and University of California, Los Angeles [UCLA], activity score). Blinded analysis of the preoperative CT scan findings determined the presence of a standard MF versus a PMST coalition. The perioperative factors and postoperative outcomes between the MF and PMST coalitions were compared. A total of 51 feet (36 patients) were included. The mean follow-up duration was 2.6 years after surgery. Of the 51 feet, 15 (29.4%) had a PMST coalition and 36 (70.6%) had an MF coalition. No difference was found in the UCLA activity score; however, the mean AOFAS scale score was higher for patients with PMST (95.7) than for those with MF (86.5; $p = .018$). Of the patients with a PMST, none had foot pain limiting their activities at the final clinical follow-up visit. However, in the group with an MF subtalar coalition, 10 (27.8%) had ongoing foot pain limiting activity at the final follow-up visit ($p = .024$). Compared with MF subtalar tarsal coalitions, patients with PMST coalitions showed significantly improved clinical outcomes after excision. Preoperative identification of the facet morphology can improve patient counseling and expectations after surgery.

Tarsal coalition is often the cause of activity-limiting foot pain in adolescents and young adults. The 2 most common types of tarsal coalition are calcaneonavicular and talocalcaneal (or subtalar). Treatment of tarsal coalitions typically starts with conservative measures, but in the case of recalcitrant pain, surgery is often recommended. Surgical treatment includes excision of coalition the (1,2), osteotomies, or completion of fusion (3). Several pediatric orthopedic centers have recently reported their clinical results after treatment of subtalar coalition, including San Diego (1), Toronto (4), and Boston (2). The clinical outcomes have been encouraging; however, in all centers, a few patients remain who continue to experience pain and limitation of activity after surgery.

Bixby et al (5) determined that in subtalar tarsal coalitions, the middle facet (MF) is variably involved, with some forms entirely sparing the MF. Although the MF coalition is the most common form of subtalar coalition (97 of 138 coalitions in their series [70.2%]), they also described a posteromedial subtalar (PMST) coalition (39 of 138 [28.2%]), which lies entirely posterior to the MF (5). These PMST coalitions are characterized by longer sustentaculum tali with a shorter, although otherwise normal, MF.

Mahan et al (2) found that 70% of patients with subtalar coalitions treated by excision of the coalition had no pain limiting their activity 2 years after surgery. Although most patients reported no limitations, 30% reported some pain that limited their activity. This is similar to data from other centers (1,4). It is not clear which factors are most important in determining whether a foot will be free of pain several years after excision of a subtalar coalition. Differences in the pattern of MF involvement in patients with subtalar coalition, as demonstrated by Bixby et al (5) might influence the long-term success of the foot. A better understanding of facet morphology and its relationship to the

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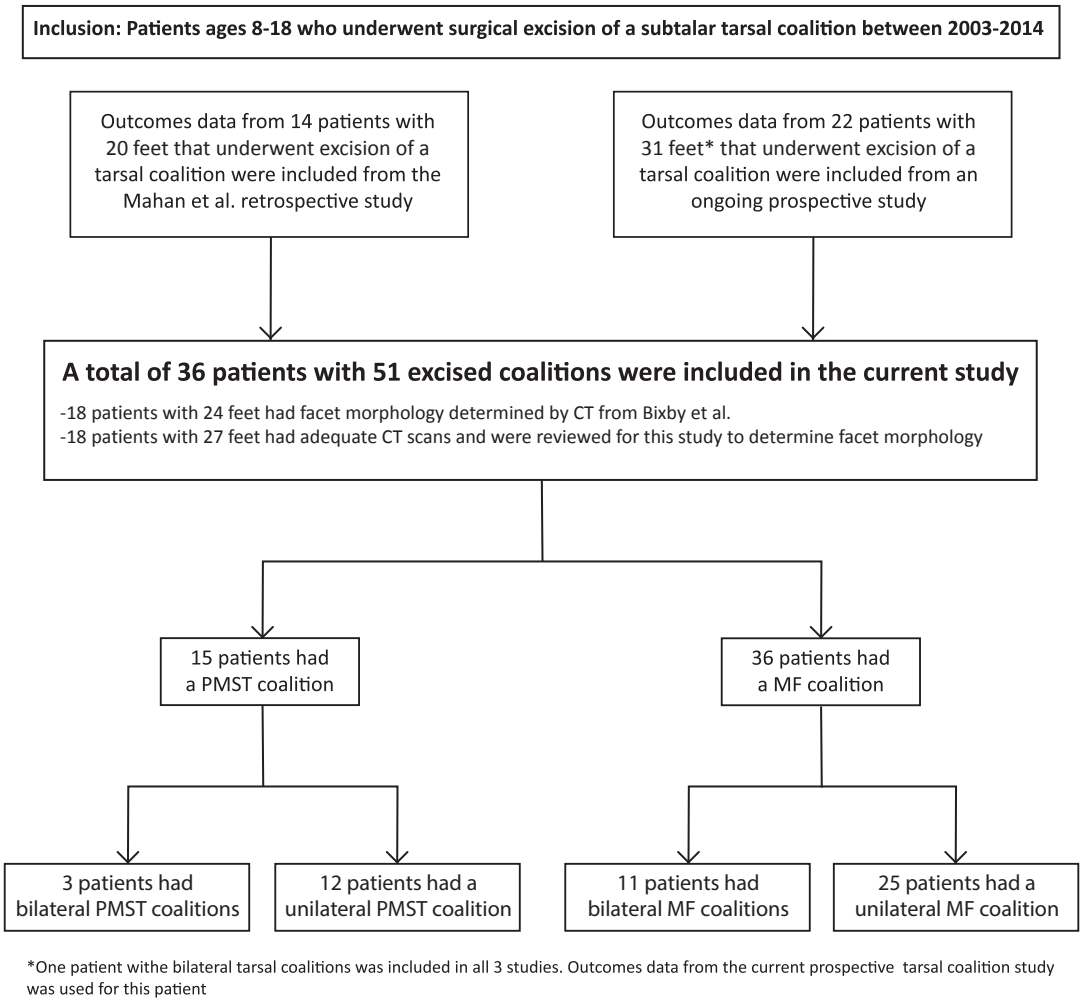

Fig. 1. Schematic showing the inclusion of various patients in the study and their involvement in 3 other studies. All patients had subtalar coalitions treated at our institution. Some patients were also included in a study by Mahan et al (2), and some patients were also included in a study by Bixby et al (5). CT, computed tomography; MF, middle facet; PMST, posteromedial subtalar.

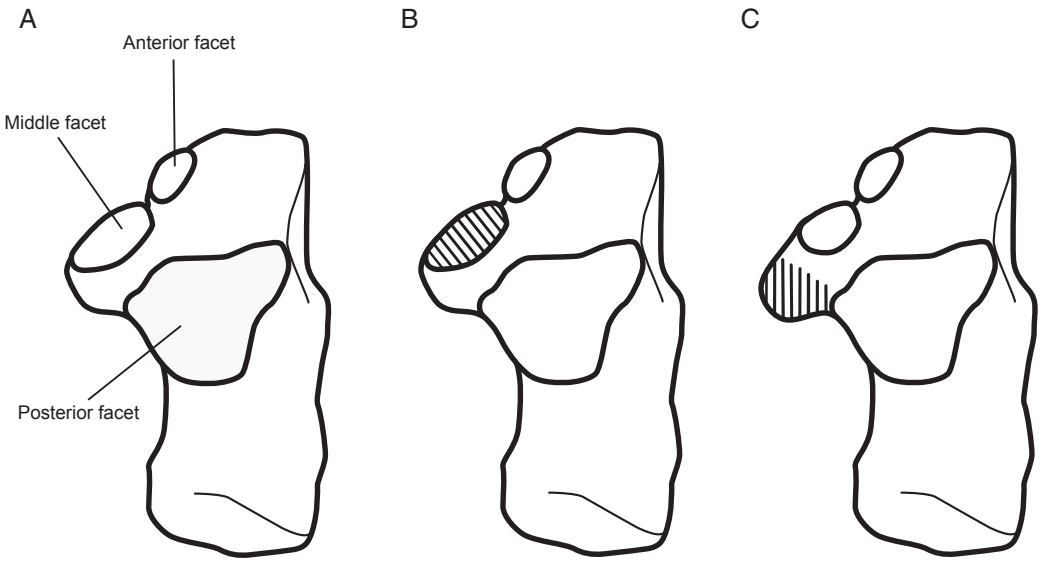

Fig. 2. Comparison of (*A*) normal calcaneus with (*B*) standard medial facet coalition and (*C*) posteromedial subtalar coalition. The 3 calcaneal facets are labeled on the normal calcaneus (*A*).