Symptomatic Bipartite Medial Cuneiform: A Case Report

STATEMENT OF PURPOSE
Symptomatic bipartite medial cuneiforms are a rare pathology. Presented here is a case of successful treatment consisting of arthrodesis of the bipartite medial cuneiform and first metatarsal cuneiform joint.

LITERATURE REVIEW
Although rare, the most frequently observed bipartition among tarsal bones is the medial cuneiform with a reported incidence ranging from 0.33% to 2.4% [1,2]. Barlow is credited with documenting the classic anatomic description of the medial cuneiform having a horizontal partition into a larger dorsal and smaller plantar piece [3]. Etiology of a bipartite medial cuneiform is felt to be due to failure of two primary ossification centers to fuse [1,4].

A literature search revealed only three case reports of treatment for a symptomatic bipartite medial cuneiform [1,2,5]. Azurza and Sakellaris reported a case of a 34 year old male Soldier with a three year history of symptomatic bipartition following a soccer injury. Successful treatment consisted of arthrodesis [1]. Chiodo and Parentis reported a case of a 32 year old female Olympic marathon runner with a medial to lateral partition. Successful treatment consisted of excision of the medial segment [2]. Bismil and Foster reported a case of a 22 year old professional rugby player who became symptomatic following a rugby injury. Successful treatment consisted of a single injection of 40mg of methylprednisolone into the bipartition [5].

Given this paucity of literature and variation in treatment plans, the optimal treatment for a symptomatic bipartite medial cuneiform is still unknown. Presented here is a case of a symptomatic bipartite medial cuneiform initially diagnosed as ankle pain. A CT guided injection was utilized in pre-operative planning to determine the optimal surgical procedure.

CASE REPORT
A 33 year old active duty Caucasian female presented with a 10 year history of pain to the left midfoot. The pain began during a run and was described as a constant burning worse with pressure and shoe gear. The patient was previously diagnosed with ankle pain, to include MRI of the ankle, which was read as negative for any pathology. Conservative treatment consisted of custom orthotics, immobilization, and physical therapy all of which provided minimal pain relief.

Physical examination revealed neurovascular status intact to the left foot. Ankle, subtalar, midtarsal, and tarsometatarsal joint range of motion was painless, soft, and not limited. There was focal tenderness to palpation over the dorsal and medial aspect of the medial cuneiform. Weight-bearing radiographs revealed a bipartite medial cuneiform. This finding was also seen on the ankle MRI previously performed.

LEGEND: A: Pre-operative lateral radiograph; B: T1 lateral and axial (inset) MRI; C: CT-guided injection to the bipartite medial cuneiform articulation; D: Intra-operative picture, freer denotes articulation of the dorsal and plantar medial cuneiform; E: Intra-operative preparation of the joint; F: Intra-operative final fixation; G: AP, oblique and lateral radiographs at 15 months post-operative.

DISCUSSION
Bipartite medial cuneiforms are a rare anomaly. When present, the condition is often bilateral and has a predilection for the male gender [6]. It is theorized that the area becomes symptomatic due disruption of their fibrocartilaginous union [7]. This is supported by the cases reported in the literature as well as the case presented here as all of the patients were highly active individuals [1,2,5]. The condition is easily recognizable on standard radiographs as well as advanced imaging. Elias et al described the “E-sign” as a useful way to diagnosis the condition via MRI [4].

No consensus on optimal treatment can be made from the three case reports in the literature or the case reported here. CT guided injection is felt to be beneficial in terms of pre-operative planning as isolated arthrodesis of the medial cuneiform segments would not have provided complete resolution of pain in the case presented here. This injection can also be therapeutic as noted by the case report by Bismil and Foster [5].

REFERENCES