

Bilateral Calcaneonavicular Coalition

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Section: Musculoskeletal system

Case Type: Clinical Cases

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Patient: 10 years, female

Clinical History:

A young female presented with gradual onset pain in both feet and ankles and multiple episodes of ankle sprain in past.

Imaging Findings:

A 10 year old female patient presents with 2 month history of gradual onset and worsening pain in both feet. She has had multiple episodes of ankle sprain in past few months. Pain in both feet is worst with activity and relieved with rest. On examination there is tenderness on anterolateral aspect of both feet. Plain radiograph AP, lateral, medial oblique view and CT scan were performed of both ankles.

Discussion:

Calcaneonavicular coalition (also known as calcaneonavicular bar) is a connection between Calcaneum and navicular bone. This bridge may be bony, cartilaginous, fibrous or a combination of these. The overall incidence of tarsal coalition in general population is unknown, most studies report it to be less than 1% though a study in Australia on cadaveric feet report the incidence to be 8.8% (5). Of all the tarsal coalitions, calcaneonavicular coalition was found to be the most common, followed by talocalcaneal coalitions. The exact incidence of bilateral tarsal coalition was not found in the literature though a study in New York, USA reported the true incidence of multiple coalition around 0.03% (4). Etiology is unclear but appears to be as a result of the failure of differentiation and segmentation of the foetal mesenchyme. Presentation is usually at 8-12 years of age. Most patients present at the time when the coalition begins to ossify. Clinical symptoms of the tarsal coalition frequently follow a sequence of sprains or other minor injuries to the involved foot. The pain is gradual onset and worst after continued activities. Physical examination usually reveals tenderness at the anterolateral aspect of the foot. Pes planus and heel valgus may be present. Calcaneonavicular coalition is best visualized in Medial Oblique view (ie foot obliqued approximately 45 degrees relative to the x-ray film). In this view the osseous coalition presents as continuity of the superomedial aspect of the anterior calcaneal beak and inferolateral aspect of the navicular as one bony structure. In the more frequently encountered fibrous/cartilaginous coalition the two bones appear to articulate with one another. Lateral radiograph demonstrates the 'Anteater' sign. There is elongation and enlargement of the anterior calcaneal process superiorly and has a blunt tip like anteater's snout. CT and MRI are now recommended for confirmation of tarsal coalition. Treatment initially is symptomatic and consists of pain relief, shoe modification and change in activity. Surgical resection of coalition is undertaken on failure of conservative treatment.

Differential Diagnosis List: Bilateral Calcaneonavicular Coalition

Final Diagnosis: Bilateral Calcaneonavicular Coalition

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Figure 1

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Description: Oblique views of both ankles showing sclerosis and irregularity at the calcaneonavicular joints suggesting the possibility of a fibrous coalition. **Origin:**

Figure 2

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Description: Magnified view of the right calcaneonavicular joint. **Origin:**

Figure 3

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Description: Magnified view of the left calcaneonavicular joint. **Origin:**

Figure 4

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Description: Sagittal reformat CT of right ankle confirming the fibrous coalition between the calcaneum and the navicular bone. **Origin:**

Figure 5

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Description: Sagittal reformat CT of the left ankle confirming coalition at the calcaneonavicular joint.

Origin: