

A Patient Who Attended The Emergency Department For Posttraumatic Pain In Mid-Foot

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Abstract – A practical approach to patients with a specific radiographic finding, the foot's accessory navicular bone, resembles a bony fracture.

Keywords: foot; pain; radiology; emergency department.

I. CLINICAL CASE

A 28-year older man attended our emergency department complaining of post-injury pain in the right foot, mid-dorsal area. A machine about 5 kg weight fell on his foot yesterday. Pain not much better despite Ibuprofen 400 mg TDS.

A patient comes limping, with mild bruising in the mid-dorsal area of the right foot. On examination, moderate pain when pressing on the navicular bone area.

XR of the right foot was requested (Figure 1 and Figure 2).



Figure 1. Right foot. Lateral view. Looks unremarkable



Figure 2. Right foot. Anteroposterior view. Query fracture of the navicular bone

There was a linear image in the navicular bone, suggesting a fracture.

Assessed with radiologist consultant, it was informed as an accessory navicular bone. No fracture lines were identified.

This brief paper will speak about the basic knowledge that emergency doctors (and by extension, primary care doctors who deal with trauma and X-rays) should know about this accessory navicular bone.

II. DEFINITION

The accessory navicular bone is also known as Os Tibiale Externum (tibial external bone), Prehallux, and Navicular Secundum (secondary navicular).

The accessory navicular bone is an accessory (extra) bone of the foot that may develop abnormally on some occasions. When this happens, it causes an enlargement of the medial plantar area of the navicular bone. It presents in



the posterior tibial tendon as a sesamoid, articulating with the navicular bone, or enlargement of the navicular bone. [1]

III. CAUSE

The high heritability of accessory navicular bone found in a large family study suggests that the accessory navicular bone determines a substantial genetic influence. [2]

IV. CLASSIFICATION

The Geist classification mentions three different types of accessory navicular bone:

Type 1: the accessory navicular bone is a sesamoid bone measuring 2-3 mm in the distal posterior tibial tendon. This type is usually asymptomatic.

Type 2: the accessory navicular bone is a heart-shaped or triangle-shaped bone that can measure up to 12 mm. It is represented by a secondary ossification center that is connected to the tuberosity of the navicular bone. On some occasions, a section of the posterior tibial tendon inserts into the accessory navicular bone; this may cause an alteration of the normal function/mechanism and subsequently symptoms because of this.

Type 3: the accessory navicular bone is represented as an enlarged tuberosity of the navicular, and this may be a fused Type 2 accessory bone. Because of the bunion formation, it may cause symptoms. [3]

V. PREVALENCE

In patients with foot pain on the navicular bone region, the accessory navicular bone was found in 20.9%. Of the patients who had an accessory navicular bone, Type 1 was identified in 25.5%, Type 2 in 42.5%, and Type 3 in 32.0%. [4]

VI. CLINICAL PRESENTATION

In most cases, the accessory navicular bone is asymptomatic and is diagnosed as an incidental finding on x-rays, even though foot pain located on the internal area (called accessory navicular syndrome) is the most common symptom the accessory navicular bone. The pain is worsened by any activity involving weight bearing, running, or simply walking. If the accessory navicular bone is large enough, it can cause friction against the footwear, worsening the symptoms. [5]

VII. DIAGNOSIS

Foot X-rays with anteroposterior and lateral views of the patient standing are enough to diagnose accessory navicular bone. Sometimes, the oblique view of the foot may also be requested to have a full picture of the navicular accessory bone abnormality. X-rays of both feet may be requested to look for accessory navicular bone on the other foot because of the high bilateral prevalence.

On the lateral view of the foot X-ray with the patient weight-bearing/standing, the navicular, talus, cuneiform, and first metatarsal bone alignment must be examined.

A CT or MRI can be requested to exclude fracture, oedema of the bone marrow, or tumor. However, this is not often done. [6]

VIII. CONSERVATIVE TREATMENT

Conservative treatment is the first option for treatment, consisting of physiotherapy and oral nonsteroidal anti-inflammatory drugs. Oral or injected steroids can be used with immobilization (plaster) in some patients to reduce the pain and inflammation. [7]

IX. SURGICAL TREATMENT

Conservative treatment, as a rule, should be maintained for a period of at least four to six months before any surgical intervention is considered.

Two surgical procedures can be performed. The choice depends on the symptoms. The first option is by performing a simple surgical excision. When this procedure is done, the most common is removing the accessory navicular bone together with its prominence. A skin incision is done dorsally to the prominence of the accessory navicular bone. The bone is removed to the point where the foot's medial aspect has no bony prominence over the navicular bone, between the talus and first cuneiform bone. This is the procedure of choice, especially for patients with no flatfoot deformity and old sprain injury. [8]

The second surgical option is called the Kindler procedure. By doing this procedure, the navicular accessory bone is removed with the navicular prominence as in simple excision and involving the affected area of the posterior tibial tendon. The posterior tibial tendon is split and advanced along the foot's internal area; this is to provide proper support to the longitudinal arch. [9]

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