

Os Trigonum - A Case Report

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Abstract: *Os trigonum may develop as a separate bone adjacent to the lateral tubercle of the posterior process of talus, having a fibrous, fibrocartilaginous or cartilaginous articulation, or it may fuse becoming a part of the posterior process of talus [1]. Radiological studies reported the prevalence of os trigonum between 2.3 and 23.5% [2]. During routine dissection in a male cadaver os trigonum was identified as a separate triangular piece of bone of 2cm maximum width and 1.5 cm thickness with smooth edges adjacent to the lateral tubercle of the posterior process of talus.*

Keywords: Os trigonum, talus

1. Introduction

There are two processes on the posterior surface of talus, medial and lateral. The larger lateral process and may develop in different ways [3]. Steida's process is a rather large, bony posterolateral process of the talus that is contiguous with the main body of the talus [4]. Os trigonum is a separate ossicle that is present and is attached to the posterior body of the talus by fibrocartilagenous tissue [4]. Various studies indicate that 8-13% of the population have been found to possess either the os trigonum or Steida's process, usually without symptoms except when subjected to repeated, forcible plantar flexion. The relationship of the os trigonum to the posterior portion of the talus varies from complete separation to fusion. The ossicle is known to originate from a secondary center of ossification, which usually appears between 8 to 10 years of age [4]. The os trigonum may develop due to failure of the fusion between the secondary ossification center and the body of the talus or as a result of the fracturing of a fibrocartilagenous union [5].

2. Case Report

During the routine dissection classes of lower limb, in the department of Anatomy, Government Medical College, Thrissur, Kerala, India, os trigonum was identified when the left ankle joint was explored in an unidentified dark-skinned male cadaver with an apparent age of between 40 and 50 years.

3. Observations

Os trigonum was identified as a separate triangular piece of bone of 2cm maximum width and 1.5 cm thickness with smooth edges adjacent to the lateral tubercle of the posterior process of talus. It was not fused to the talus by any fibrocartilaginous tissue. It was present unilaterally. No other muscle or ligament was found attached to it [Fig.1].

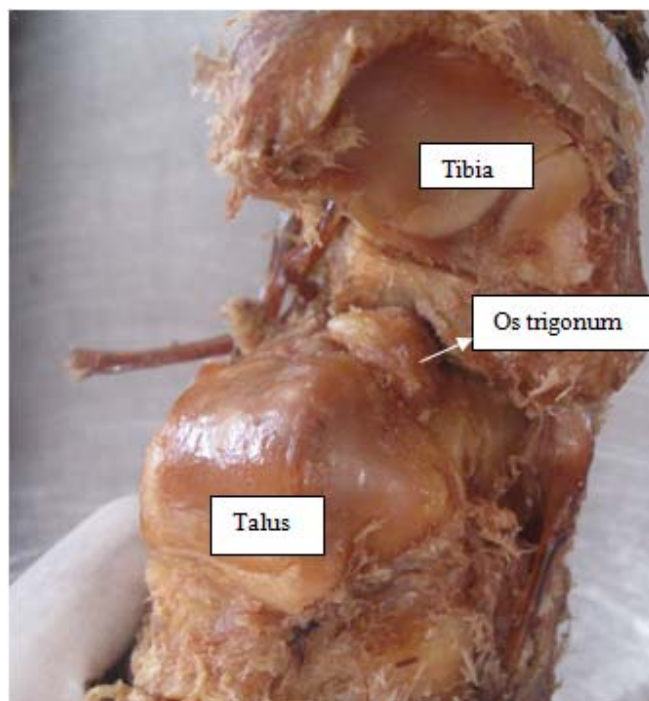


Figure 1: os trigonum seen as a separate bone posterior to talus

4. Discussion

Os trigonum when symptomatic presents in a young, active individual with pain in the posterolateral aspect of the ankle. The onset of symptoms may be either gradual and increase over time with activity or it may follow an acute injury, such as an ankle sprain. This syndrome is most often seen in runners, soccer players, ballet dancers, and football players, especially linemen [4, 5]. Clinicians should be aware of the painful os trigonum syndrome as a possible source of posterolateral ankle pain [3]. Osteoid osteoma of calcaneus may sometimes mimic os trigonum [6].

Os trigonum may also have a fibrocartilaginous articulation with posterior process of talus. This articulation may be misdiagnosed as a fracture of the posterior process of talus [1] Ankle sprains with hyperplantarflexion injuries with

posterior ankle pain and positive 'nut cracker sign' should raise the suspicion of fracture of os trigonum. Misdiagnosis of such injuries may cause inadequate management including immediate weight bearing and prolonged symptoms [2].

High levels of uric acid cause accumulation of monosodium urate crystals as masses called tophus. Intraosseous tophus deposits are rare, even for patients with gout. Still cases of intraosseous tophus deposits in the os trigonum were also reported. When a patient with hyperuricemia presents with posterior ankle impingement symptoms, intraosseous tophus deposits should be included in the differential diagnosis [7]

Even though X-ray & CT helps in the diagnosis of Os trigonum, Technetium 99 methylene diphosphonate showed intense focal uptake at the posterior talus pointing to the os trigonum as the site of symptoms. Johnson et al recommend bone scanning as a procedure that is helpful in delineating obscure pain in the ankle that may be due to chronic irritative nonunion of the os trigonum[8]

MRI may show only fluid between the synchondrosis and can be helpful with excluding other causes of posterior ankle pain. Injection of local anesthesia under fluoroscopic guidance into the area of the trigonal synchondrosis has been suggested as a method of confirming the diagnosis in isolated cases [9-11]. This is done under radiographic visualization, with less than 0.5cc of 1% lidocaine infused at the junction of the os trigonum and the posterior aspect of the talus.

5. Conclusion

Clinicians should thoroughly investigate all cases of posterolateral pain. The diagnosis can be difficult to make as symptoms and physical exam findings mimic those that occur with problems related to an accessory soleus muscle, flexor hallucis longus, posterior tibialis, or peroneal tendons, arthritis involving the posterior tibiotalar or subtalar joints, or os trigonum syndrome. Misdiagnosis of such injuries may cause inadequate management including immediate weight bearing and prolonged symptoms.

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