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Case Report

Os Trigonum syndrome – A case report

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Abstract

The ostrigonum is a small bone present on the posterolateral aspect of the talus. It is formed from a separate ossification center which fails to unite with the talus itself. Incidence is about 3-15%. 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 hallucislongus, posteriortibialis, or peroneal tendons, arthritis involving the posterior tibiotalar or subtalar joints, or ostrigonum syndrome. Misdiagnosis of such injuries may result in inadequate management including immediate weight bearing and prolonged symptoms

Keywords: ostrigonum, talus, ankle pain, diagnosis

1.Introduction

The developing human skeleton has several ossification centers that, when fails to fuse with the main body of their corresponding bone, are commonly accepted as normal anatomical variations without definite clinical significance. The ostrigonum is a small bone present on the posterolateral aspect of the talus formed from a separate ossification center which fails to unite with the talus itself[1][2].

It appears between the ages of 8 and11 years as a secondary centre of ossification and usually fuses with the talus within one year of its appearance[3][4]. When the ossification centre remains separate from the talus it is referred to as the ostrigonum. When fusion does occur and a large posterolateral process forms, it is referred to as a 'fused ostrigonum', a 'Stieda's process', or a 'trigonal process'[5][6].

The incidence of the ostrigonum has been reported to be 3-15% [2][7][8] and it is more often bilateral than unilateral[3]. The ostrigonum syndrome is characterized by pain, and sometimes swelling, in the posterolateral aspect of the ankle. The two mechanisms of injury originally described by McDougal involve either micro trauma from repetitive hyperplantar flexion or an episode of acute forced hyperplantarflexion[9]. This syndrome is most often seen in runners, soccer players, ballet dancers, and football players.

The diagnosis of ostrigonum syndrome can be suspected from the clinical examination findings but is confirmed by radiographs showing the ostrigonum and by magnetic resonance imaging (MRI), computed tomography, and bone scans used to identify other bony and soft-tissue involvement[10][11]. Initial treatment is conservative. It includes rest, use of ice and anti-inflammatory medications, cortisone injections, and physical therapy. When conservative care is unsuccessful, surgical excision of ostrigonumis recommended.

2.Case History

A 33 year old businessman presented with left ankle pain of 7 months duration. The pain started suddenly while he was playing badminton. He was unable to walk or run the following day and also noticed swelling of left ankle for which he consulted a local doctor and was treated with analgesics and reduced activity for 2 weeks. After 2 week the pain had subsided and the patient returned to playing badminton, when he again noticed pain in the left ankle.

He then consulted an orthopedic surgeon, where x rays were takenand was told that he had an undisplaced fracture of left talus for which he was treated with a crepe bandage for 3 months. During this time the patient was ambulating with full weight bearing and no physical therapy was initiated at that time.

The pain persisted during this time for which he used to take oral analgesics. When the patient tried to resume his pre injury activity of playing badminton, he again noticed similar symptoms in the ankle. After this the patient consulted various local doctors and orthopedic surgeons and same treatment was advised. At the time when he presented to our institution, he was taking oral analgesics and was using crepe bandage for his left ankle. He was walking with full weight bearing.

3.Clinical Findings

Seven months after the initial trauma and the onset of symptoms, he was evaluated by one of the authors. He presented with posterolateral aspect left ankle pain which aggravated on walking. The pain started as a dull aching pain in the posterolateral part of the left ankle, which slowly aggravated as the patient walked further. The pain reduced by rest and medication.

On physical examination, normal range of motion of ankle, subtalar and midtarsal joint was noted. Tenderness was present on palpation of Achilles tendon, posterolateral ankle region. Pain was elicited on forced plantar flexion. Considering the failure of previous modalities of therapy and the inconsistent nature of ankle pain which increased on plantar flexion, he was advised an x ray of both ankle joint in anterioposteriorand lateral view

X ray of left ankle revealed, a hypertrophied and irregular posterolateral process of talus (**Figure 1**). An MRI was advised to rule out other causes of posterolateral ankle pain. The MRI revealed, a thickening of tibialis posterior tendon with PD and STIR hyperintense signal and fluid surrounding tibialis posterior, flexor halluces longus, flexor digitorum tendon, which suggested peritendinitis (**Figure 2**). A STIR hyperintense signal was noted within the anterior talofibular ligament and anterior tibiofibular ligament suggesting a partial tear. The MRI also revealed the presence of a well corticated osseous structure posterior to the talus, suggestive of an ostrigonum (**Figure 3**). X ray of right ankle revealed, a fused ostrigonum or a 'Stieda's process'. (**Figure 4**)

Figure 1: X- ray of left ankle

Figure 2: MRI

Figure 3: MRI

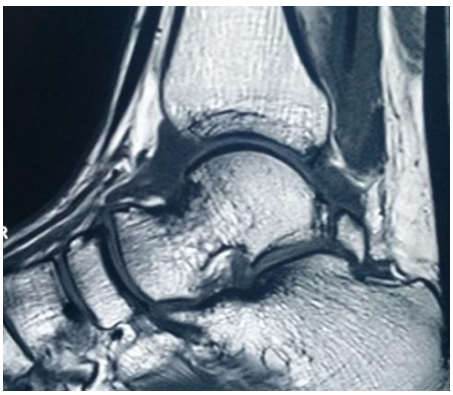

Figure 4: X-ray of right ankle

4.Treatment

Patient was treated with a below knee plaster cast in neutral position of ankle for 3 weeks. After 3 weeks of immobilization, the cast was removed and active ankle motion along with weight bearing and physical therapy for range of motion, strengthening and functional rehabilitation was initiated.

After 2 weeks of physical therapy, the patient has normal ankle and subtalar range of motion. There was no tenderness on palpation of posterior tendons. Muscle strength testing of ankle revealed 5/5 strength of inversion, eversion, dorsiflexion, plantarflexion. The patient was followed up for 2 months. He now has no complaints of pain or swelling while walking and has now started playing badminton comfortably using high ankle support shoes

5.Discussion

The ostrigonum is the most common accessory bone of the foot and is located posterolateral to the talus[6]. Although it is usually asymptomatic, it may be associated with persistent posterior ankle pain known as ostrigonum syndrome[12]. It may be misdiagnosed as a fracture of the posterior process of the talus[3][4][6].

Hyperplantar flexion of the ankle is the mechanism of injury, compressing the ostrigonum between the posterior malleolus of the tibia and the tuber calcaneus[13]. Clinical symptoms include pain during forced plantarflexion of the ankle, the so-called ‘nutcracker sign’, which was positive in our case. In this case hyperplantar flexion of ankle was the cause of injury.

CT scan is the imaging of choice for ostrigonum as well as posterior talus structure fractures[4][6]. Technetium bone scan has been reported to be helpful in diagnosing both symptomatic ostrigonum and un united posterior process fracture by demonstrating increase uptake in the region of os trigonum[14][15]. MR imaging can identify a disruption of the cartilaginous synchondrosis by demonstrating fluid between the os-trigonum and the lateral talar process. Associated flexor hallucislongus tenosynovitis, often stenosing can be assessed, as well as degerative joint changes about the synchondrosis or between the ostrigonum and the adjacent calcaneus. Hyperplantarflexion ankle injuries may result in posterior ankle compartment fractures, but these are commonly missed and mistreated as simple ankle sprains[15]. Fracture of the ostrigonum is a rare entity, thus a high index of suspicion is necessary to diagnose anostrigonum fracture after severe plantarflexion to the ankle. Conservative treatment is usually successful although nonunion has been reported[3][12].

Though in this case ostrigonum fracture was not present and the cause of pain was probably due to tendinitis and painful ostrigonum syndrome. Clinicians should be aware of the painful ostrigonum syndrome and should suspect it as a possible source of recalcitrant posterolateral ankle pain. The index of suspicion should be high when the patient's symptoms are reproduced with passive plantar flexion of the foot or palpation of the posterior aspect of the subtalar joint between the Achilles tendon and the lateral malleolus. As demonstrated by this case, the painful ostrigonum can be effectively managed by conservative method and appropriate physical therapy.

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