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Case report

Arthroscopy assisted steida process excision in a case of posterior ankle impingement

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ABSTRACT

Hindfood pain can result from bony and soft tissue causes and can be traumatic or non-traumatic. Here we present a rare case of hindfoot pain due to impingement from an elongated lateral tubercle (Stieda's process) of the posterior process of the talus in a 40 year old man and its management. The patient underwent hindfoot arthroscopy, with excision of the Stieda's process and decompression of Flexor hallucis tendon. It was followed by immobilisation in POP SLAB for a week and Cam boot walker mobilisation for three weeks. On follow up His AOFAS scores improved from 45/100 points to 94/100 points.

1. Introduction

Hindfoot pain can be caused by traumatic and non-traumatic pathologies. Some of the causes of non-traumatic hindfoot pain include Tenosynovitis, tarsal tunnel syndrome, Haglund's deformity, a prominent lateral process (Stieda's process) and Os trigonum can be termed as the non-traumatic causes.[1,2]

Stieda's process, which is an elongated lateral process of talus is also sometimes considered an anatomical variant.[2–4] It usually forms from the fusion of a secondary ossification center at the posterolateral aspect of the talus with rest of the talus where the fused segment remains longer than usual, usually this occurs between 7 and 13 years.[5] L. Stieda described it in 1869.[6] It is often identified in lateral views of the ankle and in sagittal sections of CT and MRI.[2] Stieda's process can produce symptoms if it is acutely fractured or if it causes impingement between tibia and posterior aspect of calcaneum, especially in plantar flexion. It needs to be differentiated from an os trigonum (particularly if partially fused): which refers to a seperate bony ossicle at the lateral tubercle of the talus.[2]

Impingement due to an Stieda's process is often treated by excision by open or arthroscopic techniques after failure of conservative measures.[2]

Here we present a case of hindfoot pain due to a Stieda process managed successfully by arthroscopic excision.

2. Materials and methods

A 40 year old gentleman presented to our out-patient department with history of right hindfoot pain for over four years. There was not history of any trauma. The pain was insidious in onset and was gradually progressive. The pain aggravated on activity and was relieved at rest. He used to play badminton occasionally, which he was unable to do. He was not a smoker or alcoholic and there were no other constitutional symptoms. He had a history of three injections to the ankle wherein the last injection to the posterior part of the ankle gave good improvement of symptoms for a period for three months. Clinical examination revealed tenderness in the posterior compartment of the ankle, which aggravated with plantarflexion of the ankle. There were no signs of inflammation. His ankle showed a five degrees decrease in plantar flexion and inversion as compared to the contralateral ankle and nearly normal comparable dorsiflexion and eversion. His American Orthopaedic Foot and Ankle Society's (AOFAS) ankle-hindfoot scale[7] was noted to be 45/100 points. The lateral radiographs of the ankle and MRI revealed an elongated lateral tubercle of the talus (Stieda's process) [Figs. 1 and 2]. He was advised arthroscopic excision as he was significantly disabled.

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Fig. 1. Lateral radiograph of the right ankle showing an elongated lateral tubercle of the posterior process of the right talus, marked by the circle.

Fig. 2. Pre-operative MRI of the right ankle showing the elongated lateral tubercle of the posterior process (Stieda's process) marked by the red arrow.

Under general anaesthesia, tourniquet control and prone position, with ankles free outside the table, a horizontal line connecting the tips of medial and lateral malleoli was marked on the posterior ankle. At this level, posteromedial portal was made just anterior to the medial border of tendoachilles and the trocar was inserted at right angle, to prevent injury to the neurovascular structures. The posterolateral portal was made at the same level, but a cm anterior to the lateral border of the tendoachilles. The posterior process was found to be right in front of the scope [Fig. 3]. Soft tissue was cleared around the talar process by shaver and radiofrequency probe. Tibiotalar joint could be identified above the process after debriding a bit of the posterior capsule and subtalar joint could not be identified because of the prominence of the process. The talar process was excised using burrs, chiselling and shavers to ensure a flat surface posteriorly and the subtalar joint line could be visualised after the excision [Fig. 4]. The portals were switched and the flexor hallucis longus tendon was identified and even though the mobility was normal, a decompression was performed. An erosive irregular area was noted on the superior aspect of the calcaneum due to the impingement of the Stieda process. Smoothening of this area was done with the burr [Figs. 5 and 6].

Fig. 3. Intra-operative image, within the circle is the Stieda process and the arrow marking the flexor hallucis longus tendon.

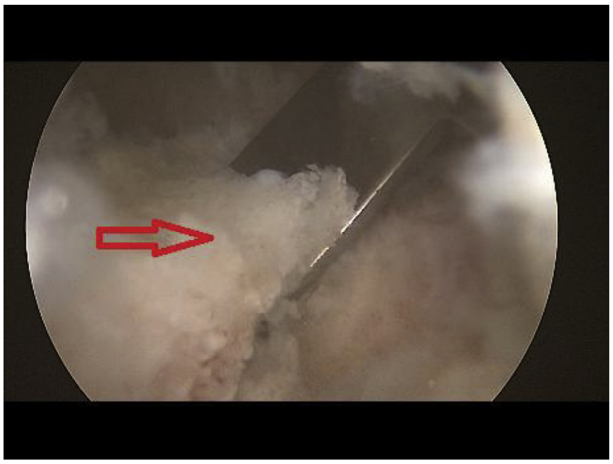

Fig. 4. Intra-operative image, during resection of the Stieda process using a chisel. The arrow indicating the Stieda process being osteotomized.

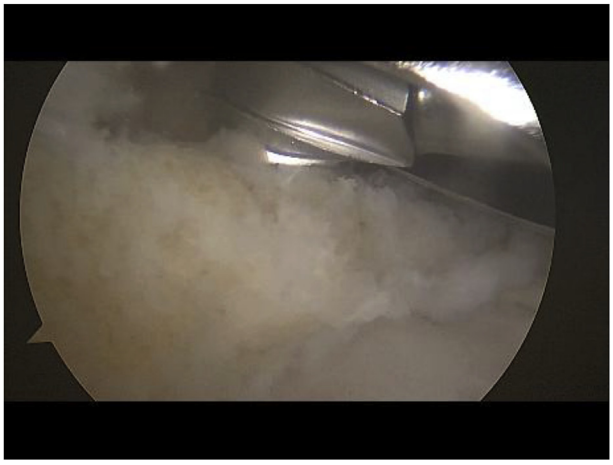

Fig. 5. Intra-operative image, smoothening of the rough surfaces of the calcaneum with a burr after osteotomy.

Post operatively, the ankle was immobilised in a below knee POP slab for a week and then a cam walker boot was applied. Ankle

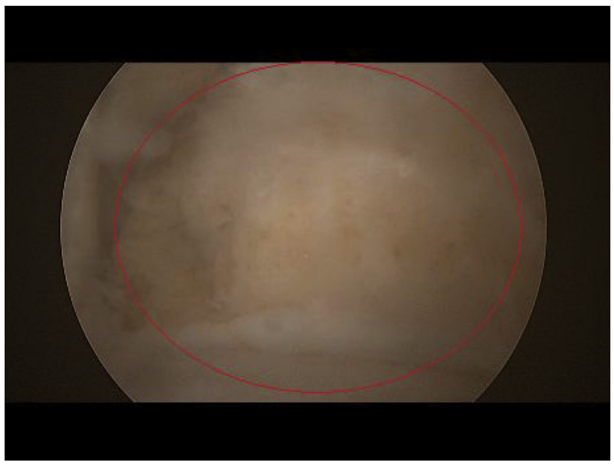

Fig. 6. Intra-operative image, after osteotomy of the Stieda process.

mobilisations were started after first week and the patient was allowed partial weight bearing for three weeks after which the walker boot was discontinued. Post-operative radiographs showed a satisfactory excision of the process with no irregularities [Fig. 7]. He was reviewed at regular intervals and range of motion exercises were started at three weeks. The AOFAS scores consistently improved to 74, 87 and 94 at one, two and three months followup respectively with significant resolution of symptoms.

3. Discussion

Impingement syndromes around ankle, though common anteriorly (footballer's ankle), can occur posteriorly also. Impingement could result from soft tissue or bony causes.[8,9] Posterior impingement could be acute due to a fracture or an avulsion of the posterior process of talus and subacute or chronic injuries due to repetitive overuse injury.[10] An elongated lateral tubercule could produce impingement between the posterior tibial margin and calcaneum producing pain on running and walking on uneven surfaces.[2] Forced plantarflexion may be painful and swelling on either side of tendoachilles may be observed in some patients.[2] Magnetic Resonance Imaging has been the major modality of investigation.[8,9] Local anaesthetic infiltration under image guidance around the process will relieve the pain and serve as a diagnostic tool as well as a positive predictive indicator for surgical outcome as seen in this patient.[11] Cortisone infiltrations can result in short term temporary pain improvement.[11]

Arthroscopy assisted debridement and excision of the bony deformity cause less morbidity as compared to open surgery [10]. Injury to the posteromedial neurovascular bundle can be avoided by careful placement of the posteromedial portal and careful usage of the burr.[10]

C. Dijk reported reduced recovery time, complications and excellent results in 83% of the patients in 5–8 years of follow with arthroscopic management.[12] Lee and colleagues reported encouraging results after arthroscopic excision of os trigonum in bilateral ankles in a 32 year old adult.[13] Arthroscopic excision of Stieda process can result in good clinical improvement as seen in this patient and it is easy and reproducible, provided care is taken not to injure the neurovascular bundle.[10]

Good outcomes in terms of patient satisfaction are noted in both open and arthroscopic techniques. However, lower complication rates and quicker return to activity and sports were found with arthroscopic techniques.[14]

Fig. 7. Post-operative radiograph after the excision of the Stieda process marked by the empty circle.

Conflicts of interest

We hereby declare that there is no conflict of interest.

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