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RESEARCH ARTICLE

CO-OCCURRENCE OF OS PERONEUM AND ACCESSORY NAVICULAR BONE IN A FOOT: A RARE PRESENTATION

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ABSTRACT

Accessory ossicles most of the times found incidentally in the foot and they vary widely in their appearance, combinations and prevalence. Accessory ossicles are mostly asymptomatic but sometimes these may become symptomatic due to trauma, degeneration, inflammation, infection etc. Knowledge of their presence and variations is required among clinicians to prevent misinterpreting them as fractures—a common error. Os trigonum, os perineum and accessory navicular are the most commonly seen accessory ossicles in the foot. In review of literature, we didn't find a single case with co-occurrence of os perineum and accessory navicluar in a foot which prompts us to report our case 35 years/male who found to have incidental finding of os peroneum and accessory navicular both in his right foot on radiographs after a fall on stairs.

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INTRODUCTION

Accessory ossicles of the foot are usually small, well-corticated, ovoid or nodular, may be bipartite or multipartite, and are found close to a bone or a joint. Presence of these osseous structure is usually found incidentally with unilateral or bilateral occurrence and are subject to significant anatomical variation. Os trigonum, os perineum and accessory navicular are the most commonly seen accessory ossicles in the foot. The os peroneum is an oval or round accessory ossicle located within the substance of the peroneus longus tendon at the level of the calcaneo-cuboid joint. Technically speaking it is a sesamoid as it is embedded within the peroneus longus tendon. The prevalence of this ossicle is 4.7-31.7% in its fully ossified form (Tsuruta *et al*., 1981; Coskun *et al*., 2009; Cilli and Akcaoğlu, 2005; Peterson and Bancroft, 2001). The accessory navicular bone is the second most common accessory bone of the foot, with reported prevalence from 2 to 21 % (Lawson, 1994; Stoller, 2007).

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It is located on the postero-medial aspect of the foot adjacent to the postero-medial tuberosity of the navicular bone. There are reported three types of accessory navicular bone based on morphology. Of the three variations, type II is most commonly symptomatic (Miller, 2002; Miller, 1995). Accessory ossicles of the foot remain most of the times asymptomatic and goes unnoticed upto adulthood until they become symptomatic due to trauma, degeneration, inflammation, infection etc. Radiological studies including radiography, ultrasound, scintigraphy, computed tomography and magnetic resonance imaging provide useful information which should be used in concert with clinical findings to guide patient management. In review of literature, we didn't find a single case with co-occurrence of os perineum and accessory navicular in a foot which prompts us to report our case 35 years/male who found to have incidental finding of os peroneum and accessory navicular both in his right foot on radiographs after a fall on stairs. Case report- A 35 year old male patient presented to orthopaedic emergency with pain and swelling right foot after fall on stairs. He was advised radiograph of right foot with two views (Antero-posterior and oblique views). Radiographs showed fracture proximal phalanx fourth toe right foot. We have done buddy strapping of fourth toe with third toe for immobilization and advised restricted activity, analgesics, anti-inflammatory medication for 3 weeks.

After doing buddy strapping, on re-evaluation of patient's radiograph, we found two coincidental findings 1) oblong ossified os peroneum and 2) type 2 Accessory navicular in radiograph of right foot. Clinically he was having no pain and tenderness over these areas. After 3 weeks of immobilization, buddy strapping was removed and patient recovered completely in 6 weeks. This asymptomatic co-occurrence of Os peroneum and an accessory navicular bone in a foot is never reported before in literature which prompts us to report this case.

DISCUSSION

Accessory ossicles of the foot occurs in various combinations and have varied prevalence. These ossicles remains aymptomatic most of the times and goes unnoticed until adolescence. The os peroneum is a common accessory ossicle of the foot which usually found at the level of the calcaneo-cuboid joint and located within the substance of the peroneus longus tendon at the level. Technically speaking it is a sesamoid as it is embedded within the peroneus longus tendon. Os peroneum can be found in cartilagenous, fibro-cartilagenous or ossified forms (Muehleman *et al*., 2009). The prevalence of this ossicle is 4.7-31.7% in its fully ossified form (Tsuruta *et al*., 1981; Coskun *et al*., 2009; Cilli and Akcaoğlu, 2005; Peterson and Bancroft, 2001). On radiographs, it is best identified in an oblique lateral view of the foot. It may appear round or oval. It is bipartite in 30 % and bilateral in approximately 60 % of cases (Sobel *et al*., 1994). Os peroneum should be distinguished from os vesalianum and avulsion fractures of the fifth metatarsal.

Finally, fracture of the cuboid bone may resemble the os peroneum. In the case of cuboid fracture, marginal cortical continuity of the cuboid is disrupted, but os peroneum appears as a separate corticated ossicle without obliterating the borders of the cuboid bone. In our case, we found os peroneum in his right foot which was located besides cuboid bone, oblong in shape, fully ossified and asymptomatic. An accessory navicular is an extra bone that is on the inner centre arch of the foot. Up to 2.5% of individuals are born with the accessory navicular. Throughout early childhood, this condition goes unnoticed. However, in adolescence, when the accessory navicular begins to calcify, the bump on the inner aspect of the arch becomes noticed. This is more commonly seen in female patients with reported bilateral prevalence of ~70% (range 50-90%). For most, it is never symptomatic. However, for some, there is some type of injury, whether a twist, stumble, or fall, that makes the accessory navicular symptomatic.

There are three different types of accessory navicular. Type I (30%) is considered to be a sesamoid bone lying within the insertion of the posterior tibialis tendon. Type II (50%) results from a secondary ossification center adjacent to the navicular bone; it is the insertion site of the posterior tibialis tendon and is connected to the navicular tuberosity by a synchondrosis. Type III (30%) accessory navicular bone is the result of fusion of the secondary ossification center with the navicular bone and is also called cornuate navicular (Perdikakis *et al*., 2011). The accessory navicular can affect the insertion of the posterior tibial tendon. This tendon has a job of keeping your foot aligned and helping to maintain an arch. The accessory navicular can be associated with a normal foot posture and alignment, or sometimes with a flat (pes planus) foot as seen in our patient. Most of the time it is asymptomatic and found incidentally on radiographs, although medial side foot pain is most common presenting feature of accessory navicular bone, the pain is aggravated by walking, running and weight bearing activities. When large, it can protrude medially and cause friction against footwear. Radiographs show a medial navicular eminence which is best visualised on the lateral-oblique view. Acute pain can be managed can be achieved by corticosteroid injection and immobilisation of the foot for 2-3 weeks. For refractory cases surgical management can be considered. Avulsion fractures of the navicular tuberosity may be confused with Type II accessory navicular or separation of a Type-II accessory navicular may clinically and radiographicaly mimic an avulsion fracture (Hunter *et al*., 1996 and Chen *et al*., 1997). In our case, patient is having type 2 accessory navicular bone in the right foot detected coincidentally after radiographs done post-fall on stairs. Patient was having no symptoms related to presence of accessory navicular bone but having pes planus in his right foot.

In review of literature, we found several cases of os peroneum and accessory navicular bone in foot reported separately in articles with various combinations of other accessory ossicles. But, we didn't find a single case with co-occurrence of os peroneum and accessory navicular bone in a foot of a single patient. This co-occurrence of unilateral os peroneum and accessory navicular bone in right foot of our patient which was found co-incidentally post fall on stairs prompts us to report this case.

Conclusion- In the emergency department, foot and ankle trauma represents one of the most common reasons for radiographs. Therefore, emergency physicians should be familiar with abnormal and normal variants of the foot and ankle and their radiographic appearances. Initially, a detailed clinical history and a complete physical examination should be performed. During radiographic evaluation, compatibility between tender points and radiographic findings should be carefully checked. In case of doubt, advanced imaging modalities such as CT and MRI may be used for further investigation.

Conflicts of interest: Author 1 to 4 declares that they have no conflict of interest.

Informed consent: informed consent was obtained from the patient.

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