Case report

Brachymetatarsia with accessory navicular in right foot: A rare coincidental finding

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A B S T R A C T

A 33 years old female patient presented with posttraumatic pain in the right foot for which radiographs of the right foot was advised. No fracture was detected on radiographs and patient was managed conservatively on medications and posterior splint immobilization. We found coincidentally a short fourth metatarsal and an accessory navicular bone in the right foot radiographs. After 3 weeks of immobilization, she underwent mobilization of the right foot, weight bearing and intensive physiotherapy for 6 weeks. After two months of injury she was still complaining of pain on the plantar aspect of right foot which was diagnosed as metatarsalgia and operated on by excision of the neuroma present in the 3rd web space of the right foot. After surgery she was completely relieved of pain and could do activities well related to the right foot.

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Introduction

Brachymetatarsia also known as congenital short metatarsus is a rare condition that develops from early closure of the growth plate. Females are almost exclusively affected (F:M = 25:1). It typically involves the 4th ray or, less frequently, more than one metatarsal bone. Brachymetatarsia can be related to several genetic conditions and syndromes. An accessory navicular also known as os tibiale externum is a large ossicle adjacent to the medial side of the navicular bone. The tibialis posterior tendon often inserts with a broad attachment into the ossicle. Most cases are asymptomatic but in a small proportion it may cause a painful tendinosis due to traction between the ossicle and the navicular. An accessory navicular bone is present in 10% (range 4%–21%) of the population and is usually first detected near adolescence. This is more commonly seen in female patients with reported bilateral prevalence of 70% (range 50%–90%). In our case, this co-occurrence of short fourth metatarsal and an accessory navicular in a foot is never reported before in the literature which prompts us to report this case. All procedures performed in our case report involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from the patient included in our case report.

Case report

A 33 years old female presented to orthopaedic outpatient department with pain and swelling of right foot after twisting of the foot while walking on stairs. She was advised to have a radiograph of right foot. No fracture or major injury detected on radiographs. She was advised to take analgesics, anti-inflammatory medication and immobilization for 3 weeks in posterior below knee splint. We found coincidentally a short fourth metatarsal and an accessory navicular in the right foot radiographs. After 3 weeks of immobilization, she underwent mobilization of the right foot, weight bearing and intensive physiotherapy for 6 weeks. After two months of injury she was still complaining of pain on the plantar aspect of right foot which was diagnosed as metatarsalgia and operated on by excision of the neuroma present in the 3rd web space of right foot. Postoperatively, she was advised not to wear footwear with narrow toe-box to avoid recurrence. After surgery she was completely relieved of pain and could do activities well related to the right foot.
The pathology of brachymetatarsia may result in abnormal pressure distribution of the forefoot causing excessive load and pain at adjacent metatarsals. In addition, the digit of the shortened metatarsal may be dorsally displaced, resulting in callous and shoe-wear problems. Lastly, some patients may be concerned exclusively with the appearance of the foot.

Patients seeking treatment commonly have cosmetic concerns. However, many may also complain of pain in the forefoot or toes, callosities, or problems with shoe wear due to toe malalignment. Multiple surgical techniques have been reported for the management of brachymetatarsia. These include acute lengthening with internal fixation and gradual lengthening by the manner of distraction osteogenesis. Several articles regarding brachymetatarsia are reported in the literature. In our case, patient is not having any complaint related to short fourth metatarsal and related to its appearance.

An accessory navicular is an extra bone that is on the inner center arch of the foot. Up to 2.5% of individuals are born with the accessory navicular. Throughout early childhood, this condition is not noticed. 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. This extra cartilage, which is turned into bone, is found attached to the tibialis posterior tendon, just at medial (inside) navicular bone. The accessory navicular can affect the insertion of the posterior tibial tendon. This tendon is responsible for 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.

In most of the patients it is asymptomatic and found incidentally on radiographs. Although medial side foot pain is the 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. An accessory navicular bone is located posterior to the posteromedial tuberosity of the tarsal navicular bone. Radiographs show a medial navicular eminence which is best visualised on the lateral-oblique view. A symptomatic accessory navicular may appear as a ‘hot spot’ on a bone scan and bone marrow oedema can be seen on an MRI. Acute pain can be managed by corticosteroid injection and immobilization of the foot for 2–3 weeks. For refractory cases surgical management can be considered.

In our case, we used radiographs to detect that the patient had an accessory navicular bone in the right foot coincidentally after falling on some stairs. Patient was having no symptoms related to short fourth metatarsal and related to its appearance.

In review of the literature, we found several cases of short fourth metatarsal and accessory navicular bone in the foot reported separately in articles. But, we did not find a single case with co-occurrence of a short fourth metatarsal and accessory navicular bone in a foot of a single patient.

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