

SURGICAL TREATMENT OF THE ACCESSORY NAVICULAR BONE: CASE REPORT

**Georgi P. Georgiev^{1,2},
Luben Stokov¹**

¹*University Hospital of Orthopaedics
Gorna Bania,
Medical University-Sofia*

²*Department of Anatomy,
Faculty of Medicine "Y. Filaretova",
Medical University-Sofia*

Corresponding Author:

Georgi P. Georgiev
Department of Anatomy
Faculty of Medicine "Y. Filaretova"
Medical University-Sofia
3, Y. Filaretova str.
BG-1431 Sofia
Bulgaria
e-mail: georgievgp@yahoo.com

Received: December 22, 2010

Revision received: January 12, 2011

Accepted: January 26, 2011

Summary

In this report we present an interesting case of a 52-year-old man suffering from medial ankle pain of the right foot due to a painful bony prominence on the medial aspect of the navicular bone. Roentgenograms demonstrated an accessory navicular type II. After conservative measures fail, surgery was indicated and excision of the aberrant ossicle was made. All symptoms relieved after surgery. We also discussed the historical description, frequency, morphological classification and clinical relevance of the accessory navicular bones.

Key words: accessory navicular, morphological classification, ankle, clinical symptoms

Introduction

The developing skeleton in the human body has numerous accessory bones that are commonly accepted as normal anatomical variations without definite clinical significance [1]. However, in the literature there are different reports describing various pathological conditions due to the presence of additional ossicles [1-9]. The accessory navicular bone, described as the most common complementary ossicle of the foot, is such a normal roentgenologic variant that may cause clinical symptoms [1-7].

In this report we presented a case of a symptomatic accessory navicular bone and briefly discussed its characteristics from anatomical and clinical point of view.

Case report

A 52-year-old man presented with a history of medial foot pain that had become progressively worse in the last five months was referred our hospital. There was no history of previous trauma and the pain aggravated by physical activity. Physical examination revealed a painful bony prominence on the medial aspect of the navicular on the right foot associated with inflammation of the

overlying soft tissues. Additionally, a flatfoot deformity of the same leg was established. Roentgenograms demonstrated a prominent medial margin to the right navicular and an accessory navicular, minimally displaced from the navicular bone (Fig. 1). After conservative measures fail, included shoe-wear modification, nonsteroidal antiinflammatory drugs and corticosteroid injections, surgery was indicated. The patient underwent excision by splitting the tendon of the posterior tibial muscle longitudinally and elevating dorsally and plantarly to provide exposure of the accessory triangular-shaped navicular without any attempt to reroute its tendon. The excision was confirmed on postoperative roentgenograms (Fig. 2) and all symptoms were completely relieved after surgery. A shoe-wear modification treatment for flatfoot was also prescribed. Follow-up after 8 months revealed normal clinical findings.



Fig. 1. Plain radiograph of the presented case before surgical procedure



Fig. 2. Plain radiograph of the presented case after surgical procedure

Discussion

The accessory navicular bone has been presented in 10-14% of normal feet [2, 8]. The first description is credited to Bauhin in 1605 [2]. Later Von Lushka, in 1858 depicted its close relation with the tendon of the posterior tibial muscle and its jointlike attachment with the navicular bone [8]. Over the years, numerous terms have been coined for an accessory navicular, including accessory scaphoid, os tibiale, os tibiale externum, prehallux, os naviculare secundarium, and navicular secundum [1, 5, 7, 8]. Three different types of the accessory navicular based on the radiological findings have been distinguished [11]. Type I presented approximately 30% of all accessory naviculars is described as a sesamoid bone within the distal part of the posterior tibial tendon. It measured between 1-6 mm in diameter and had no cartilaginous connection to the tuberosity of the navicular [3, 8, 10]. Type II is larger in size (8–12 mm), and had triangular or heart-shaped form. It represented an accessory ossification

center for the navicular tuberosity and was accounted for approximately 50–70% of the accessory naviculars [3, 8, 10]. Type III, is described as accessory navicular connected to the navicular by a bony bridge, producing a “cornuate navicular”. This variant resulted from bony fusion of the accessory ossification center with the tuberosity of the navicular [3, 8, 10].

Most symptomatic accessory naviculars are of type II [3, 8, 10]. Symptomatic accessory naviculars are more common in females [1]. The majority of patients become symptomatic in the second decade although isolated patients may present up to the sixth decade [1]. The most frequent complaint from accessory navicular is pain and tenderness, often associated with erythema and swelling of the overlying soft tissues on the medial midfoot region [1, 8, 10]. The pain is localized to the medial aspect of the navicular and increased by physical activity [1, 8, 10]. Sometimes accessory navicular could be mistaken as a fracture of the tuberosity of navicular bone [1]. An association has been made also between accessory navicular and pes planus deformity [8], as in our case. When accessory navicular is suspected as the cause of chronic medial foot pain, plain radiographs should be acquired to confirm its presence [12]. In addition ultrasound, magnetic resonance, computed tomography, bone scintigraphy imaging techniques could confirm the diagnosis [1, 8, 10–14].

Conclusions

In conclusion, orthopedics should be aware with the presence of additional ossicles, and born in mind that medial foot pain occurring after stress or physical exercise with or without flatfoot should be also examined for painful accessory navicular, especially type II.

References

1. Lawson JP, Ogden JA, Sella E, Barwick KW. The painful accessory navicular. *Skeletal Radiol*. 1984;12(4):250-62.
2. Geist ES. The accessory navicular bone. *J Bone Joint Surg*. 1925;7:570-4.
3. Zadek I, Gold A. The accessory tarsal scaphoid. *J Bone Joint Surg Am*. 1948;30(4):957-68.
4. Mygind HB. The accessory tarsal scaphoid. *Acta Orthop Scand*. 1953;23(2):142-51.
5. Ugolini P, Raikin S. The accessory navicular. *Foot Ankle Clin*. 2004;9(1):165-80.
6. Angelova MV, Marinova DM, Hristov VI. Os naviculare accessoria – a case report. Types, frequency and clinical significance. *J Biomed Clin Res*. 2009;2(1):185-86.
7. Coskun N, Yuksel M, Cevener M, Arican RY, Ozdemir H, Bircan O, et al. Incidence of accessory ossicles and sesamoid bones in the feet: a radiographical study of the Turkish subjects. *Surg Radiol Anat*. 2009;31(1):19-24.
8. Leonard ZC, Fortin PT. Adolescent accessory navicular. *Foot Ankle Clin*. 2010;15(2):337-47.
9. Salekzamani Y, Shakeri-Bavil A, Nezami N, Houshyar Y. Ankle patella: a report of a large accessory bone in the ankle: a case report. *Cases J*. 2009;2:8512.
10. Issever AS, Minden K, Eshed I, Hermann KG. Accessory navicular bone: when ankle pain does not originate from the ankle. *Clin Rheumatol*. 2007;26(12):2143-4.
11. Mellado JM, Ramos A, Salvadó E, Camins A, Danús M, Saurí A. Accessory ossicles and sesamoid bones of the ankle and foot: imaging findings, clinical significance and differential diagnosis. *Eur Radiol*. 2003;13(6):164-77.
12. Romanowski CA, Barrington NA. The accessory navicular-important cause of medial foot pain. *Clin Radiol*. 1992;46(4):261-64.
13. Mosel LD, Kat E, Voyvodic F. Imaging of the symptomatic type II accessory navicular bone. *Australas Radiol*. 2004;48(2):267-71.
14. Bernaerts A, Vanhoenacker FM, Van de Perre S, De Schepper AM, Parizel PM. Accessory navicular bone: not such a normal variant. *JBR-BTR*. 2004;87(5):250-2.