

A rare accessory bone, fracture of the os trigonum

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Section: Musculoskeletal system

Area of Interest: Musculoskeletal bone

Procedure: Imaging sequences

Procedure: Computer Applications-3D

Imaging Technique: Digital radiography

Imaging Technique: CT

Special Focus: Trauma Case Type: Clinical Cases

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Patient: 20 years, male

Clinical History:

A 20-year-old male patient presented to our emergency clinic with an ankle sprain after falling down the stairs. In the examination performed, the ankle posterior was swollen, oedematous and painful. Also achilles tendon was palpated intact. The pain was more intense when plantarflexing the ankle.

Imaging Findings:

Radiographs of the ankle were performed, which demonstrated the existence of an os trigonum, with the suspicion of a lucent fracture (arrow) line through its base (Fig 1). CT was performed and this demonstrated the fracture line in the os trigonum of the left ankle in axial, sagittal, and coronal imaging (Figure 2, 3, 4). There is heterogeneity in the surrounding soft tissues (blue arrow) adjacent to the os trigonum and fluid values ??at the joint distance (red arrow head) (Fig 5).

Discussion:

Os trigonum is an accessory bone observed in 7-13% of society and in some cases can be fragmented or bipartite [1, 2]. It appears between the ages of 8 and 11 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 os trigonum, but it is still connected to the lateral tubercle of the posterior process of the talus by a fibrocartilaginous synchondrosis [3, 5]. When fusion does occur and a large posterolateral process forms, it is referred to as a 'fused os trigonum', a 'Stieda's process', or a 'trigonal process'. [5, 6] This bone is often asymptomatic but can become symptomatic during, or after, strenuous physical activities or an acute injury to the ankle. We report an unusual case in which a fracture of the os trigonum was observed. In the literature, the fracture of this accessory bone is extremely rare [7]. Hyperplantarflexion of the ankle is the mechanism of injury, compressing the os trigonum between the posterior malleolus of the tibia and the tuber calcaneus [8]. Clinical symptoms include pain during forced plantarflexion of the ankle [8]. Os trigonum fractures can be skipped due to radiologically difficult detection. It may be radiographically confused with fractures of the posterior process of the

talus [4, 6]. Axial computed tomographic (CT) scanning is helpful for differentiating between true talar fractures and an os trigonum. CT scanning is the imaging choice in cases where posterior talus structure fractures, including an os trigonum fracture, are suspected. Fracture of the os trigonum is a rare entity, thus a high index of suspicion is necessary to diagnose an os trigonum fracture after severe plantarflexion to the ankle. A missed diagnosis can make the pathologies more complex and successful treatment more difficult. Conservative treatment is usually successful although nonunion has been reported [3]. In our case, direct lateral radiograph showed the os trigonum with the suspicion of a lucent fracture (Fig 11). CT axial, sagittal and coronal examinations of the ankle showed a fracture of the os trigonum (Fig 2, 3, 4). There is heterogeneity in the surrounding soft tissues (blue arrow) adjacent to the os trigonum and fluid values at the joint distance (red arrow) (Fig 5). It was distinguishable from an os trigonum bipartite by having remarkably sharp edges and discontinuity of the cortical lining, thus a fracture of the os trigonum was diagnosed.

Differential Diagnosis List: Os trigonum fracture, Os trigonum syndrome, Fracture of the posterior process of the talus, Os trigonum bipartite

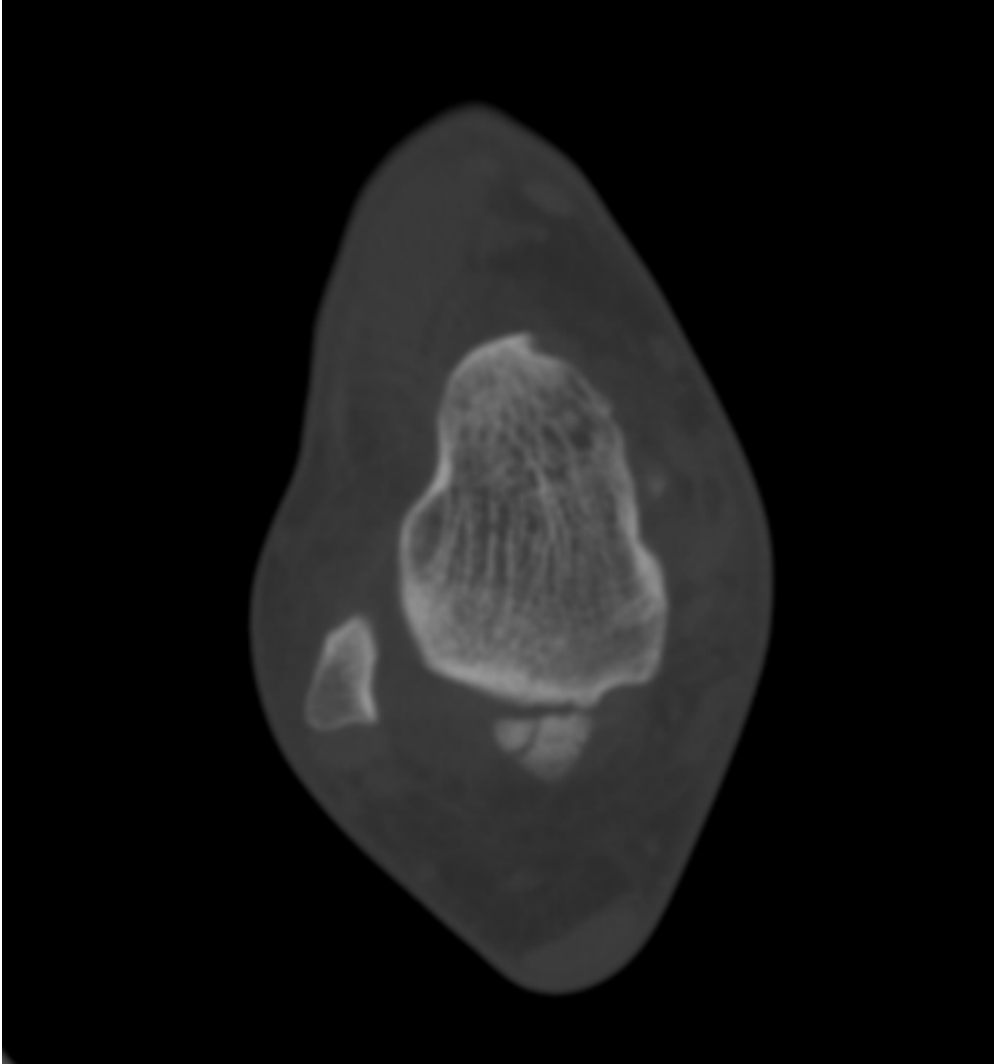
Final Diagnosis: Os trigonum fracture

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Figure 1

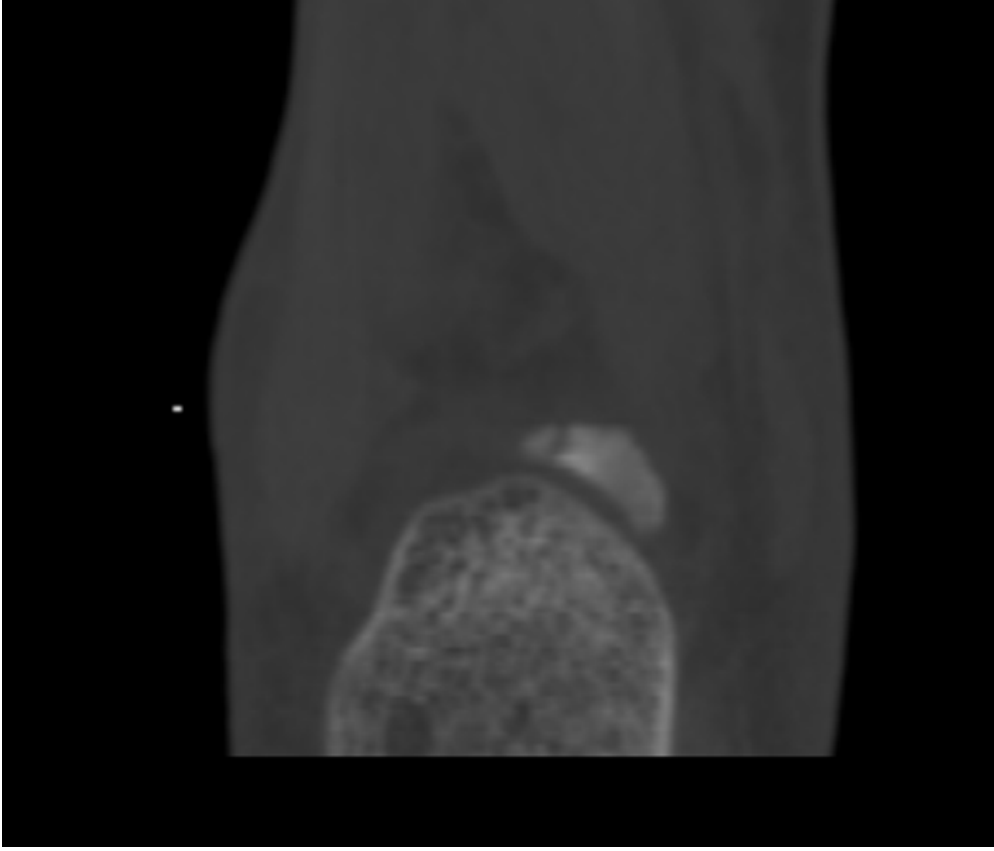
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Description: Axial computed tomographic examination of the left ankle showing the fracture line in the os trigonum. **Origin:** INCE S, Van Yüzüncü Y?l Üniversitesi, Radiology Department

Figure 2

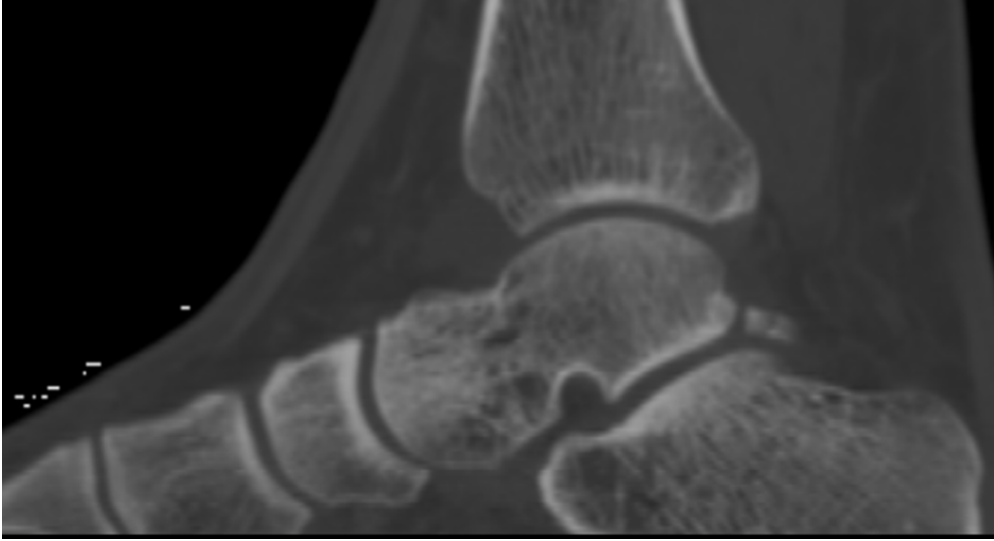
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Description: Coronal computed tomographic examination of the left ankle showing the fracture line in the os trigonum. **Origin:** INCE S, Van Yüzüncü Y?l Üniversitesi, Radiology Department

Figure 3

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Description: Sagittal computed tomographic examination of the left ankle showing the fracture line in the os trigonum. **Origin:** INCE S, Van Yüzüncü Y?l Üniversitesi, Radiology Department

Figure 4

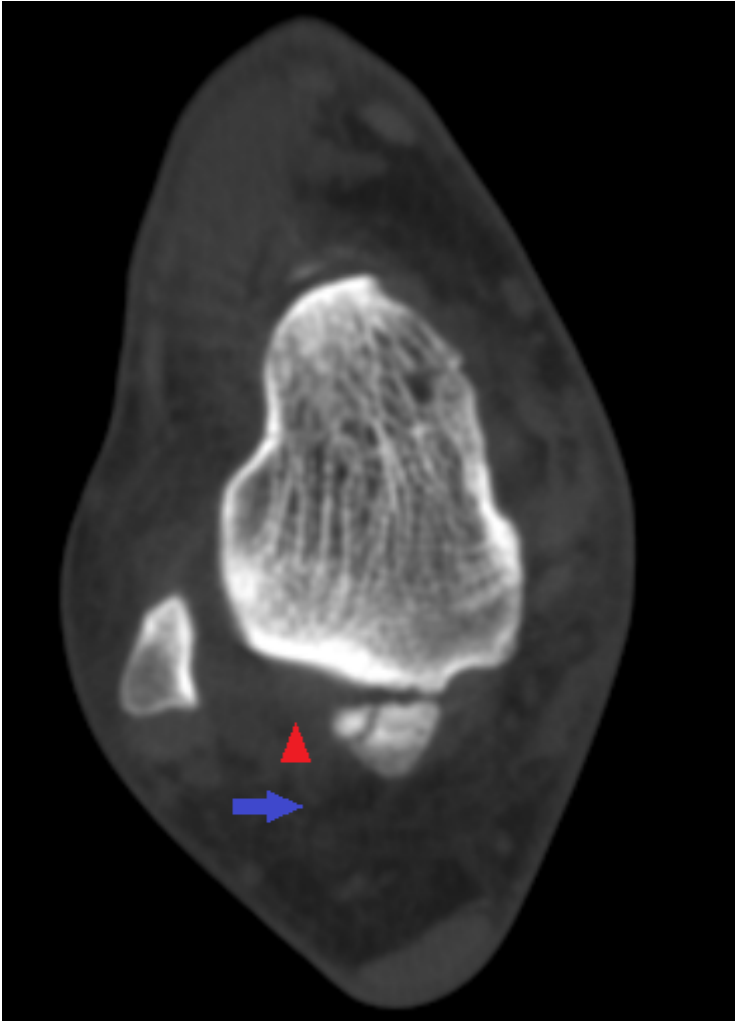
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Description: Lateral radiograph of the ankle demonstrated suspicion of a lucent fracture (arrow) line through os trigonum. **Origin:** INCE S, Van Yüzüncü Y?l Ünivesity, Radiology Departmant

Figure 5

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Description: There is heterogeneity in the surrounding soft tissues (blue arrow) adjacent to the os trigonum and fluid values ??at the joint distance (red arrow head). **Origin:** INCE S, Van Yüzüncü Y?l Üniversitesi, Radiology Department