



An unusual complication after syndesmotic injury: retrotibial heterotopic ossification

Sindezmoz yaralanması sonrası sıradışı bir komplikasyon: Retrotibial heterotopik ossifikasyon

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A 27-year-old male patient sustained an isolated syndesmotic injury in the right ankle following a fall. His complaints subsided gradually within the first six weeks of conservative treatment. At the end of the third month, he returned to follow-up with posterior ankle pain. Radiological examinations revealed heterotopic ossification adjacent to the posterior inferior tibiofibular ligament and posterior capsule. His complaints disappeared only after local excision of the ossification. Heterotopic ossification may be a cause of persistent pain after ankle ligament injuries.

Key words: Ankle injuries/complications; ligaments, articular/injuries; ossification, heterotopic/surgery; sprains and strains/complications.

Yirmi yedi yaşında erkek hastaya düşme sonrasında sağ ayak bileğinde izole sindezmoz yaralanması tanısıyla altı hafta konservatif tedavi uygulandı. Üçüncü ay sonunda ayak bileği arkasında ağrı yakınması ile tekrar başvuran hastada posterior inferior tibiofibular bağ ve posterior kapsül komşuluğunda, atipik yerleşimde heterotopik ossifikasyon odağı saptandı. Hastanın yakınmaları ancak lezyonun cerrahi olarak çıkartılması sonrasında geçti. Ayak bileği bağ yaralanmaları sonrasında kronik semptomları olan hastalarda sindezmoz çevresi heterotopik ossifikasyon da akla getirilmelidir.

Anahtar sözcükler: Ayak bileği yaralanması/komplikasyon; ligaman, artiküler/yaralanma; ossifikasyon, heterotopik/cerrahi; burkulma ve incinme/komplikasyon.

Heterotopic ossification (HTO) of the interosseous membrane is a rare complication following syndesmotic injuries.^[1] It has been reported that the recovery period is longer and recurrence of the ankle ligament injury is more frequent after the development of HTO.^[2] Excision of the ossification has been recommended in symptomatic cases.^[3-5]

In this report we present a patient who developed HTO at the posteromedial aspect of the interosseous membrane following a syndesmotic injury of the ankle.

Case report

A 27-year-old male patient presented with pain and swelling in the right ankle and difficulty in walk-

ing. On physical examination, he had tenderness on the anterior tibiofibular ligament and external rotation and squeeze tests were positive. Ankle radiographs did not show pathology of the bone or tibiofibular diastasis (Fig. 1a, b). The patient was diagnosed as having a syndesmotic ligament injury and an Aircast ankle brace was applied for three weeks. The patient's symptoms gradually subsided within the following six weeks, but continued until the end of three months without causing significant limitations in daily activities. The patient presented again with pain at the posterior aspect of the ankle. Physical examination showed tenderness on the anterior and posterior tibiofibular ligaments.

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Fig. 1. (a) Anteroposterior and (b) lateral radiographs obtained on presentation do not show any abnormality. Control (c) anteroposterior and (d) lateral radiographs taken three months after the injury show heterotopic ossification at the posterior aspect of the ankle (arrows). (e) Axial and (f) sagittal computed tomography scans. The ossification is seen adjacent to the tibial insertion of the posterior tibiofibular ligament on the axial scan (arrow).

The patient was followed conservatively with physiotherapy and nonsteroidal anti-inflammatory medication. The complaints of the patient persisted for six weeks. Further investigation with radiographs and computed tomography of the ankle revealed a focus of ossification, 4x3x0.5 cm in size, in the posterior aspect of the distal tibia (Fig. 1c-f). The diagnostic test with a local anesthetic injection into the lesion resulted in improvement in his complaints, suggesting that the ossification was responsible for the symptoms; thus, surgical removal of the lesion was recommended.

Under a pneumatic tourniquet, the ossification was exposed with a posterolateral approach. Due to the

continuity of the periosteum, the borders of the lesion could only be determined with the help of a injection needle and the lesion was totally elevated with a periosteal elevator and excised (Fig 2). A compressive bandage was applied postoperatively and the patient was discharged on the following day.

On microscopic examination, the trabecular and cartilaginous bone surrounded by fibrotendinous tissue suggested the diagnosis of HTO (Fig. 3). Full weight bearing was allowed after the first postoperative week. He had no complaints at his follow-up visit at three weeks. Eighteen months after the operation, he had no complaints related to the ankle and there was no radiological recurrence of the ossification.

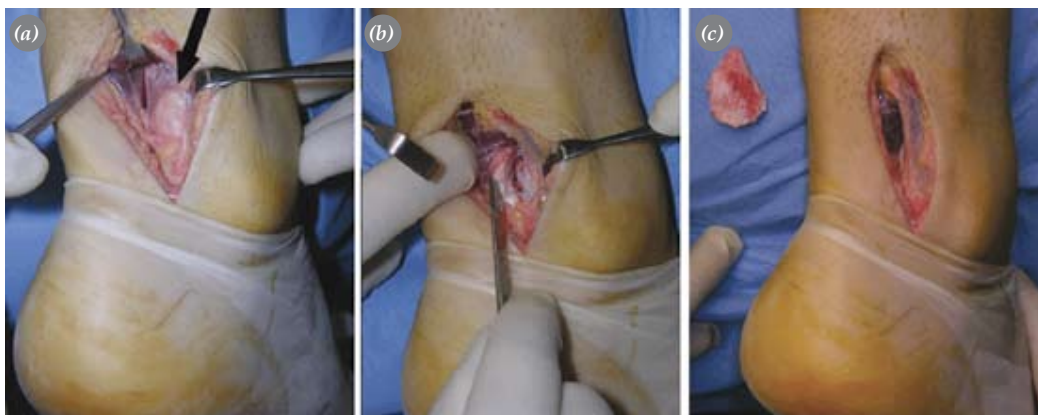


Fig. 2. Intraoperative images: (a) Due to periosteal continuity, the borders of the ossification could only be determined with the help of a needle. (b) Elevation of the ossification from the tibial cortex with a periosteal elevator. (c) Appearance of the ossification after excision.

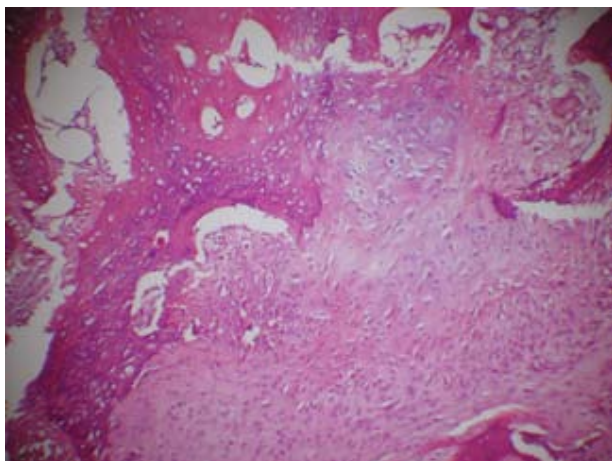


Fig. 3 Microscopic appearance of the excised ossification. Foci of ossification are seen as cartilaginous trabecular bone islets (H-E x 10).

Discussion

Isolated syndesmotic injuries without accompanying ankle fractures are rare and account for approximately 1% of all ankle ligament injuries.^[5,6] These injuries are important because healing takes longer than other ankle ligament injuries and they have a potential to cause tibiofibular diastasis and instability.^[2,7]

The diagnosis of syndesmotic injury is primarily based on physical examination and radiographic findings, though magnetic resonance imaging is the most sensitive and specific imaging modality.^[7] On physical examination, the presence of tenderness over the tibiofibular ligament is typical. In cases in which the posterior tibiofibular ligament is also involved, there may be tenderness on this ligament.

The majority of cases with syndesmotic injury do not develop tibiofibular diastasis.^[7] These cases can initially be managed by rest, ice, compression, and elevation, followed by cast immobilization for a duration of two to three weeks, after which gradual weight bearing can be allowed. Our patient had an isolated syndesmotic injury on his first presentation and, with this treatment, his complaints gradually improved within the first six weeks.

Following ligamentous injuries, calcification of the hematoma can cause HTO around the joints. Heterotopic ossification may also develop around the interosseous membrane following syndesmotic injury.^[2-6] This rare complication can result in delayed healing. Taylor et al.^[2] reported that healing time increased in parallel with the severity of HTO.

Syndesmotic injuries occur most frequently after external rotation sprains of the ankle.^[8] Guise^[9] reported that HTO occurred more frequently following pronation-external rotation injuries, suggesting that patients with syndesmotic ossification be inquired about the possibility of a pronation-external rotation injury.^[9]

Heterotopic ossification has been shown to develop at the level of the tibiofibular ligament and also more proximally, near the interosseous membrane.^[2-5] In our case, ossification occurred near the tibial insertion of the posterior tibiofibular ligament and posterior capsule. To the best of our knowledge, this location of HTO has hitherto not been reported.

Tibiofibular immobilization and adhesions have been implicated as the cause of late pain in ossifications close to the syndesmosis.^[3] In our case, pain regressed within the first six weeks and continued without an increase in severity till the end of three months, after which it recurred at the posterior aspect of the ankle where HTO had developed.

Excision of HTO is recommended in symptomatic patients unresponsive to conservative treatment. A review of the literature showed that symptoms resolved following surgical removal of the ossification in eight soccer players reported by three case presentations.^[3-5] All cases were able to return to their sport activities. The complaints of our patient also resolved following excision of the ossification.

In conclusion, HTO near the syndesmotic ligament should be kept in mind as a rare complication in patients with chronic symptoms following ankle sprain injuries. In our case, HTO occurred in an unusual retrotibial location and the complaints of the patient resolved only after surgical removal of the lesion.

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