

PERSISTENT PAINFUL BONE BRUISE AT THE MEDIAL MALLEOLUS: CARTILAGE LESION AT THE MEDIAL TIBIAL PLAFOND

Case Report

MEDİAL MALLEOLDE İNATÇI KEMİK İLİĞİ ÖDEMİ: MEDİAL TİBİAL PLAFONDDA KIKIRDAK LEZYONU

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ABSTRACT

A 35-years old male patient with chronic medial sided right ankle pain after a direct ankle trauma was evaluated. The patient had ankle pain during gait and kneels for three years and consecutive magnetic resonance imaging (MRI) detected bone bruise at the medial malleolus. His ankle-hind foot was well aligned and there was not instability at ankle-mortis radiography. Preoperative American orthopaedic foot and ankle society (AOFAS) ankle-hind foot and visual analogue scale (VAS) foot-ankle scores were 75 and 55, respectively. At ankle arthroscopy, 2x1 cm chondral defect with a flap lesion (Outerbridge grade 4, Noyes grade 3A) was detected at the medial malleolar border of the articular surface of tibial plafond and microfracture was performed. At the 3rd month postoperatively, AOFAS ankle-hind foot and VAS foot-ankle scores were 98 and 92, respectively. Diagnostic arthroscopy may be useful in cases with persistent pain and bone bruise of the medial malleolus after ankle trauma to detect the tibial cartilage lesions that even not detected on MRI.

Key words: ankle trauma; bone bruise,;ankle arthroscopy.

ÖZET

Üç sene önce geçirdiği direct ayak bileği travması sonrası sağ ayak bileği medialinde kronik ağrı şikayeti olan ve çekilen manyetik rezonans görüntülemelerde (MRG) medial malleolde kemik ilği ödemi görülen 35 yaşında erkek hasta değerlendirildi. Hastanın ayak bileği ve ard ayak dizilimi normaldi ve çekilen ayak bileği mortis grafisinde instabilite bulgusuna rastlanmadı. Operasyon öncesi hastanın Amerikan Ortopedi Ayak-Ayakkabı Cemiyeti (AOFAS) ayak bileği-ardayak skoru ve vizüel analog skala (VAS) ayak-ayak bileği (FA) skoru sırası ile, 75 ve 55 idi. Yapılan ayak bileği artroskopisinde

tibial plafond eklem yüzü medial köşesinde 2x1 cm boyutlarında flap tarzında kıkırdak lezyonu (Outbridge evre 4, Noyes evre 3A) olduğu görüldü.

Cerrahi sonrası 3. ayda AOFAS ayak bileği-ardayak skoru ve VAS FA (ayak-ayak bileği) skoru sırası ile, 98 ve 92 idi. Ayak bileği travmalarından sonra geçmeyen kemik iliği ödemi varlığında MRG ile tespit edilemeyen tibia eklem yüzündeki kıkırdak lezyonlarının tanı ve tedavisinde tanısız ayak bileği artroskopisi uygulaması faydalıdır.

Anahtar kelimeler: ayak bileği travması; kemik iliği ödemi; ayak bileği artroskopisi.

INTRODUCTION

Osteochondral defects of ankle are commonly seen after translational or direct ankle traumas and are frequent reasons of chronic ankle pain. They are commonly seen at talus, but also at tibial articular surface too, predominantly at medial aspect of tibial plafond (%37) (1). These defects can either heal or remain asymptomatic, or may progress to chronic ankle pain depending on the size and depth of the defect. The pain does not arise from the cartilage lesion, but is most probably caused by repetitive high fluid pressure during walking, which results in irritation of the highly innervated subchondral bone underneath the cartilage defect (2). Restoration or decrease in the intra-osseous pressure for the treatment of chronic pain can be accomplished by medullary decompression. We present a case with persistent bone bruise and pain at the medial tibial malleolus without any significant cartilage lesion detected at repetitive MRIs, but detected at arthroscopy.

MATERIAL METHOD

A 35-years-old male patient admitted for medial sided chronic right ankle pain during activity. He had a direct sports trauma to his medial malleolus 3 years

ago. He had been treated conservatively at another center by using a below knee cast and NSAID's for one month. However his ankle pain did not recover. Consecutive MRIs demonstrated persistent bone bruise at the medial malleolus without any regression.

At physical examination, he had full range of motion, but feel pain at dorsal flexion, inversion and medial drawer test. He was plantigrade and his ankle-hind foot was well aligned. There was no instability at ankle-mortis, and no gait abnormalities. Preoperative AOFAS ankle-hind foot and VAS FA (foot-ankle) scores were 71 and 55, respectively (3), (4). Initial MRI after trauma demonstrated bone bruise at medial malleolus. Additionally subchondral cystic formations could also be seen near the bone bruise on MRI's at the 3rd year of the intial trauma (**Figure 1a-b**).

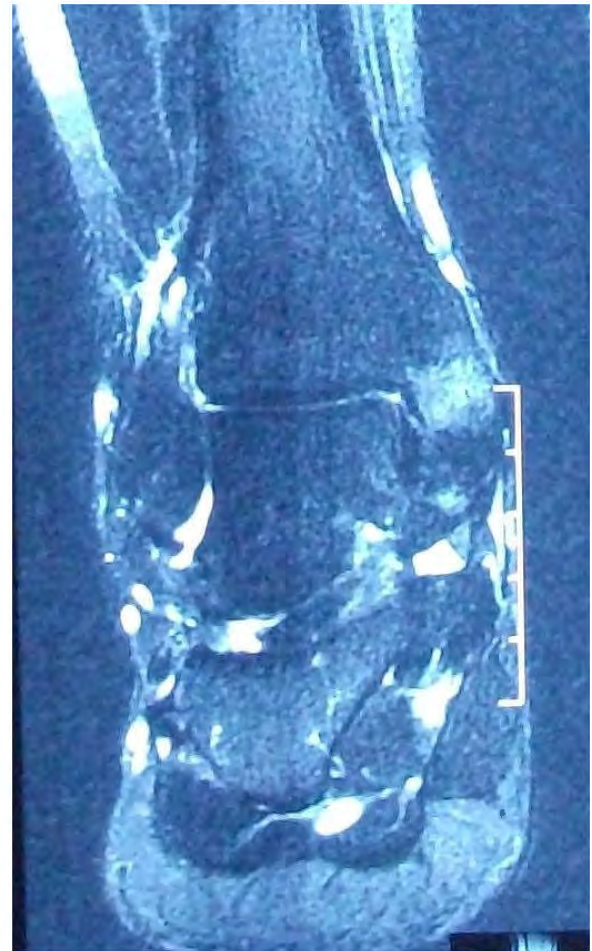




Figure 1a-b: (a) Initial MRI after trauma demonstrated bone bruise at medial malleolus, (b) but subchondral cystic formations can be seen additional to bone bruise at late MRI at 3 years after trauma.

We planned diagnostic ankle arthroscopy and drilling for the medial malleolus for the treatment of chronic bone bruise. At ankle arthroscopy, there was Outerbridge grade 4, Noyes grade 3A, 2x1 cm chondral defect with a flap lesion at the medial malleolar border of the articular surface of tibial plafond. Delaminated cartilage was debrided with shaver, and microfracture procedure was applied to the defected area (**Figure 2a-b**).

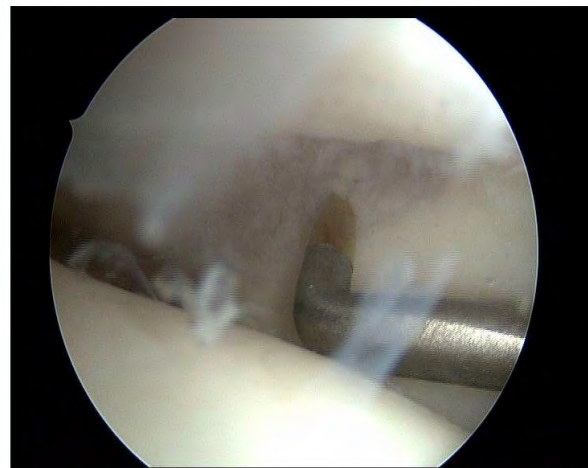
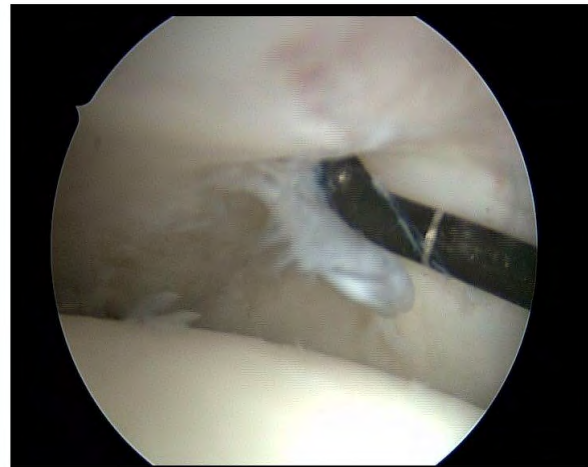


Figure 2a-b: (a) Arthroscopic view of the chondral defect with a flap lesion at the medial malleolar border of the articular surface of tibial plafond; (b) Delaminated cartilage was debrided with shaver, and microfracture procedure was applied to the defected area.

The patient was allowed partial weight bearing with two crutches for 6 weeks, at the end of the postoperative 6th week; he could walk with full weight bearing without pain. At the 3rd month postoperatively, AOFAS ankle-hind foot and VAS foot-ankle scores were 98 and 92, respectively.

DISCUSSION

Bone bruises are trabecular microfractures that result from traumatic injuries to bone. Isolated lesions have favorable short term recovery with restricted weight bearing and initial activity modification. Miller et al. (5) showed in their study that complete

resolution of bone bruises at knee joint as a result of gradual diffusion observed in all patients over a period of 2-4 months. Existence of bone bruises and pain may be an evidence of underlying ligamentous, chondral or other soft tissue pathologies. The development of an osteochondral defect may have a sudden onset, but the development of a subchondral cyst is often a slow process. Fluid from the damaged cartilage can be forced into the microfractured subchondral bone plate underneath during loading. The smaller the diameter of the defect in the subchondral plate is associated with the higher the fluid pressure. This intermittent local rise in high fluid pressure will cause osteolysis and the eventual formation of a subchondral cyst **(2)**.

If there are subchondral cystic formations seen at follow-up MRIs, underlying osteochondral lesion should be considered even not detected at consecutive MRIs. Although talar articular surface is the most common site for chondral lesions at ankle, distal tibial plafond should also be evaluated. In the present case the patient had been treated for medial malleolar bone bruise for three years at different centers. We also focused on the chronic bone bruise. There was no other lesion at repetitive MRI's. We planned decompression for medial malleolar bone bruise. O'Neill et al.**(6)** showed that, chondral defects at ankle are commonly missed at preoperative MRI investigations. Radiologists detected %40 (15 of 38), and attending surgeons detected %47 (18 of 38) of all cartilage lesions at preoperative MRIs that were seen at arthroscopy. In our case, the concavity of the defected area should be the reason for missing the cartilage lesion at radiological investigations.

Cartilage defects can lead to subchondral cystic formations, but cartilage defects and bone bruise both can be the reason of the other. Repetitive MRI's and characteristics of the defects seen at surgery could be evaluated to find the primary pathology.

If the underlying cartilage defect is missed, medullary decompression techniques for recurrent bone bruise can only be salvage procedures without treatment of cartilage defect and the patient would have ankle pain again after a recovery period.

CONCLUSION

Traumatic bone bruises commonly regress after conservative therapy by using rest, activity modifications and NSAID's. Traumatic osteochondral lesions can be seen at distal tibial plafond even through with a lesser percentage than talus. Diagnostic arthroscopy could be performed for diagnose and treatment of a possible underlying cartilage lesion at distal tibial plafond even couldn't detected at MRI for patients with persistent bone bruise.

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