






Case Report / Olgu Sunumu

Isolated posterior cruciate ligament calcification: A case report

İzole arka çapraz bağ kalsifikasyonu: Olgu sunumu

Yavuz Şahbat¹ , Waziri Juma Msangi² , Erdem Koç² , Tolga Onay³ , Osman Mert Topkar² 

¹Orthopedics and Traumatology, Institut Català de Traumatologia i Medicina de l'esport, Barcelona, Spain

²Department Orthopedics and Traumatology, Faculty of Medicine, Marmara University, İstanbul, Türkiye

³Department of Orthopedics and Traumatology, Dr. Lutfi Kırdar Kartal Training and Research Hospital, İstanbul, Türkiye

ABSTRACT

Calcification around the knee joint is a rare condition in athletes. Medial collateral ligament (MCL) calcification is the most frequent post-traumatic ligament calcification. There is very limited information about the calcification of cruciate ligaments. In this study, we aimed to present a management scheme for the diagnosis and treatment process of a veteran athlete with isolated posterior cruciate ligament (PCL) calcification.

A 59-year-old female patient, who was formerly an athlete, admitted to emergency department with generalized right knee pain that aggravated with sports activities. Radiographic images revealed a calcification in line with the PCL contours. It was decided to perform arthroscopic debridement. After the operation, the patient's symptoms regressed rapidly.

Tendon calcifications may cause post-exercise pain in athletes with concomitant chronic diseases. Conservative treatment and non-steroidal antiinflammatory treatment should be tried first in all calcific tendinopathies. Although conservative treatment appears to be frequently satisfactory, arthroscopic excision may be a better option for the refractory or severe cases.

Keywords: Posterior cruciate ligament, calcification, arthroscopic debridement

ÖZ

Diz eklemi çevresinde kalsifikasyon sporcularda nadir görülen bir durumdur. Medial kollateral bağ kalsifikasyonu en sık görülen travma sonrası diz çevresi bağ kalsifikasyonudur. Çapraz bağlarla ilgili kısıtlı veri bulunmaktadır. Bu çalışmada egzersiz sonrası şiddetlenen akut diz ağrısı ile kliniğimize başvuran veteran bir sporcuda tespit ettiğimiz izole arka çapraz bağ kalsifikasyonunu ve hastamızın tanıdan tedavi sürecine kadar olan yönetim şemasını sunmayı amaçladık.

59 yaşında eski sporcu kadın hasta, koşu sonrası yaygın sağ diz ağrısı ile acil servisimize başvurdu. Görüntülemelerde arka çapraz bağ konturları ile uyumlu kalsifikasyon benzeri bir görüntü izlendi. Artroskopik debridman kararı aldığımız hastamızda operasyon sırasında posterior çapraz bağda yaygın kalsifiye odaklar saptadık. Operasyon sonrası hastanın semptomları hızlıca geriledi.

Kronik hastalığı olan sporcularda tendon kalsifikasyonları spor sonrası ağrılara neden olabilmektedir. Tüm kalsifik tendinopatilerde öncelikle konservatif tedavi ve nonsteroid antiinflatuar tedavi denenmelidir. Konservatif tedavi sıklıkla tatmin edici görünse de dirençli veya ağır vakalarda artroskopik ekizyon daha iyi bir seçenek olabilir.

Anahtar Sözcükler: Arka çapraz bağ, kalsifikasyon, artroskopik debridman

INTRODUCTION

Calcification around the knee joint is very rare in athletes. Intraarticular or periarticular knee calcifications have been reported after high-energy trauma or knee dislocation, and this trauma generally includes a single high-energy trauma and intra-articular hemorrhage due to the fracture. Alignment problems such as genu valgum and genu varum may result in repetitive traumas eventually leading to knee arthritis, but not intra-articular and extra-articular calcification of the knee joint.

MCL calcification is the most common post-traumatic ligament calcification around knee joint. There is very limited information about the calcification of cruciate ligaments. In

the literature, there is a single case report about isolated PCL calcification published in 2011 (1).

We would like to report the management scheme for the diagnosis and treatment process of a patient with isolated PCL calcification who was a veteran athlete.

CASE PRESENTATION

A 59-year-old female patient admitted to emergency department with generalized right knee pain after sportive activities, especially after running. The patient reported that she has been experiencing intermittently for 3 years and worsening after exercise bouts. Pain has been aggravated in the

Received: 07.12.2021 · Accepted: 30.12.2021 · Published: 28.04.2022 · Issue: September 2022

Correspondence / Yazışma: Yavuz Şahbat · Orthopedics and Traumatology, Institut Català de Traumatologia i Medicina de l'esport, Barcelona, Spain · yavuzsahbat@gmail.com

Cite this article as: Sahbat Y, Msangi WJ, Koc E, Onay T, Topkar OM. Isolated posterior cruciate ligament calcification: A case report. *Turk J Sports Med.* 2022, 57(3):161-3; https://doi.org/10.47447/tjism.0623

© 2022 Turkish Sports Medicine Association. All rights reserved.

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes (<http://creativecommons.org/licenses/by-nc/4.0/>).

last month that occasionally awoken her at night which subsides with non-steroidal anti-inflammatory (NSAID) medication.

The patient had type 2 diabetes mellitus (DM) and was taking oral antidiabetic and insulin for 6 years as well as L-thyroxine for 1 year due to hypothyroidism.



Figure 1. Anteroposterior (AP) X-ray imaging revealed no findings suggestive of fracture

There was 5° of limitation in extension and 90° of limitation in flexion of the right knee with no significant effusion. The varus/valgus stress tests were normal and the collateral ligaments were found to be intact in the physical examination. The anterior drawer and posterior drawer tests, Lachman test were in normal limits.

Anteroposterior (AP) X-ray imaging revealed no findings suggestive of fracture (Figure 1). There were signs of stage 1 arthrosis. No bone defects or fractures were observed on the coronal plane evaluation in (CT) imaging. On the sagittal plane sections of the CT scan, a calcification was observed in line with the PCL contours (Figure 2).

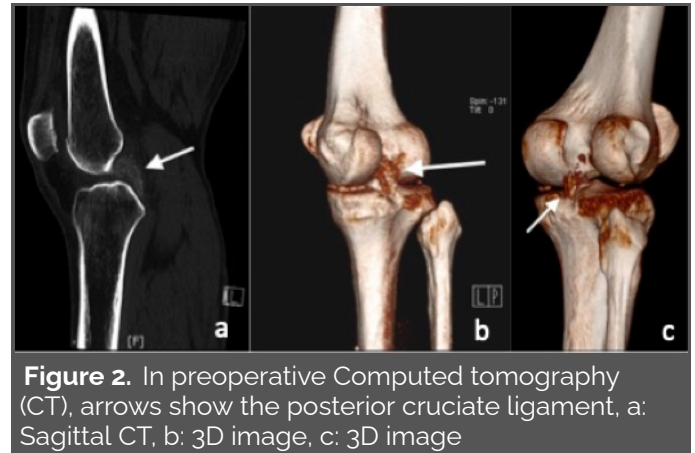


Figure 2. In preoperative Computed tomography (CT), arrows show the posterior cruciate ligament, a: Sagittal CT, b: 3D image, c: 3D image

Blood tests revealed; C-reactive protein (CRP): 4.48 mg/L, sedimentation rate: 32 mm/h, calcium: 8.9 mg/dL, phosphor: 5.4 mg/dL, magnesium: 1.8 mg/dL, 25-OH vitamin D: 32.12 ug/L, parathormone: 26.54 ng/L, and osteocalcin: 5.81 ug/L. which were all within the reference ranges.

Magnetic resonance imaging (MRI) showed osteochondral lesion on medial femoral condyle, patellar chondromalacia, and widespread calcification in the posterior cruciate ligament (PCL) from the femoral condyle to the tibial footprint. Arthroscopic debridement was recommended to the patient, whose pain did not regress after 1 month of immobilization, cold compression, and NSAID treatment.

Knee arthroscopy was performed through the standard anterolateral and anteromedial portals. We also used accessory lateral portal. During the operation, osteochondral damage was observed in the lateral facet of the patella. Fibrillar structure of ACL was damaged and partially ruptured from the attachment site on the lateral femoral condyle. The PCL was found to be hypertrophied, and there were calcified tissues surrounding the PCL on examination with the probe. The calcification was more prominent at the femoral origin and middle third of the PCL. A 70° lens was used for imaging of the posterior fibers of the PCL. The calcified tissue surrounding the PCL was debrided using a shaver and the PCL was exposed along all of its borders. Extra care was taken not to damage the PCL fibers. After debridement, both cruciate ligaments were tested, and their tension was found to be sufficient for knee instability (Figure 3).

Early functional rehabilitation was started at 2 weeks postoperatively, with full weight bearing activities, quadriceps strengthening and ankle pumping exercises were started in an effort to restore patient's preoperative level of activity. In the 1st month postoperatively, running exercises were started, the patient's knee pain complaints, especially the night pain had regressed. The patient was completely pain free at the first postoperative year and she was able to return to sports activities (Figure 4).

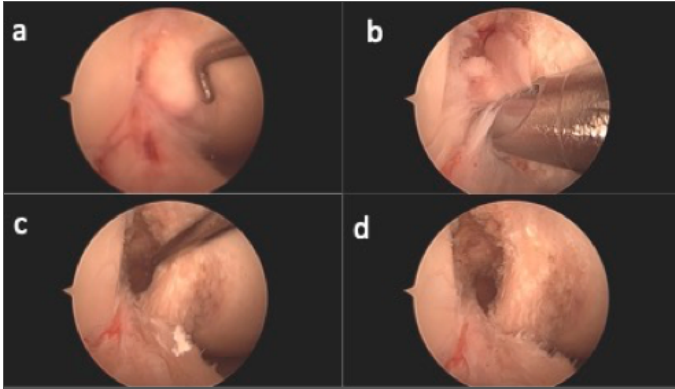


Figure 3. Arthroscopy photos of the operation, a: The calcified posterior cruciate ligament is visible, b: Debridement of calcifications in the posterior cruciate ligament with Shaver, c: Evaluation of PCL tension with probe, d: PCL after debridement

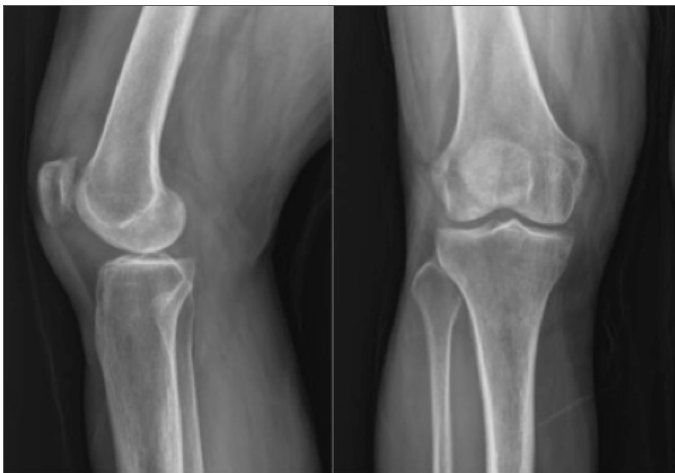


Figure 4. Three months follow-up anteroposterior and lateral x-rays

DISCUSSION

Intra-articular and extra-articular calcifications of the knee have been extensively studied before in literature, but those were usually seen after a high-energy trauma or systemic diseases (2-4).

Koukoulis reported that a patient with isolated PCL calcification had thyroid pathology (1). Harvie et al. stated that patients with thyroid pathologies and metabolic diseases had higher risks for tendon calcification. The reported patient had type 2 DM and hypothyroidism, which might have been the possible causes of PCL calcification.

Loss of knee range of motion on examination was suggestive of an intra-articular pathology. Calcification of the PCL seems to limit flexion rather than extension of the knee joint (1, 2).

Cesarec et al. showed that the functional results of patients with fragmented, cloudy calcifications were significantly worse and the patients experienced more pain (6). In the current case, the patient regained full range of motion after debridement of the calcified tissues around the PCL so that the mechanical block and the pain-causing calcification deposits were removed.

Conservative treatment with NSIAD should be the first choice in all ligament and tendon calcifications. Although conservative treatment appears to be frequently satisfactory, arthroscopic excision may be a better option for the refractory or severe cases (7-9).

Conflict of Interest / Çıkar Çatışması

The authors declared no conflicts of interest with respect to authorship and/or publication of the article.

Financial Disclosure / Finansal Destek

The authors received no financial support for the research and/or publication of this article.

Author Contributions / Yazar Katkıları

Concept: YŞ,OMT; Design: YŞ,TO; Supervision: OMT,TO; Materials: EK,WJM;Data Collection and/or Processing: EK,YŞ; Analysis and Interpretation:YŞ,WJM; Literature Review: YŞ,WJM; Writing Manuscript: YŞ,OMT; Critical Reviews: YŞ,TO

REFERENCES

1. Koukoulis NE, Papastergiou SG. Isolated posterior cruciate ligament calcification. *BMJ Case Rep.* 2011 Dec 8;2011: bcr1020114916
2. Li C, Huang Z, Anil K, Lao C, Wu Q, Jiang H. Heterotopic ossification in the post cruciate ligament of the knee: a case report and literature review. *BMC Musculoskelet Disord.* 2021;22(1):304.
3. Tsujii A, Tanaka Y, Yonetani Y, Iuchi R, Shiozaki Y, Horibe S. Symptomatic calcification of the anterior cruciate ligament: a case report. *Knee.* 2012;19(3):223-5.
4. Stannard JP, Wilson TC, Sheils TM, McGwin Jr G, Volgas DA, Alonso JE. Heterotopic ossification associated with knee dislocation. *Arthroscopy.* 2002;18(8):835-9.
5. Harvie P, Pollard TC, Carr AJ. Calcific tendinitis: natural history and association with endocrine disorders. *J Shoulder Elbow Surg.* 2007;16(2):169-73.
6. Cesarec G, Martinec S, Čičak N. Calcific tendinopathy: calcium deposit morphology directly affects pain and function of the shoulder. *Acta Clin Croat.* 2020;59(2):270-6.
7. Song K, Dong J, Zhang Y, Chen B, Wang F, Zhao J, et al. Arthroscopic management of calcific tendinitis of the medial collateral ligament. *Knee.* 2013;20(1):63-5.
8. Tennent TD, Goradia VK. Arthroscopic management of calcific tendinitis of the popliteus tendon. *Arthroscopy.* 2003;19(4):E35.
9. Karaman İ, Güney A, Gürbüz K, Bilal Ö, Güney B. Calcific mediopatellar plica: a case report. *Eklemler Hastalık Cerrahisi.* 2013;24(2):117-20.