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OLGU SUNUMU **CASE REPORT**

Proximal Tibiofibular Synostosis - 'Love of Tibia and Fibula'

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Abstract

Tibiofibular synostosis may manifest as proximal, diaphyseal, or distal tibiofibular synostosis, occurs before the closure of the physeal plates. Proximal tibiofibular synostosis is a very rare pathology and few cases have been documented in the literature. Our patient, aged 21, was admitted to our hospital's orthopedic clinic with right knee pain. The patient was first assessed using lateral and A-P knee radiographs. There was a bone protrusion that almost joins the tibia and fibula. The patient was then examined using non-contrast right knee MRI and extremity CT scans. The medullary continuity that connects the proximal ends of the tibia and fibula was seen on a CT scan, along with a partially sclerosed bone bridge. To summarize, Proximal Tibiofibular Synostosis is a pathology that interferes with the patient's daily life by causing chronic pain, muscle atrophy, or sensory problems in the knee and ankle. Early and accurate diagnosis strengthens our role as radiologists in referring patients to surgery, which remains the most effective treatment option.

Keywords: *Proximal, Synostosis, Tibiofibular*

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Proksimal Tibiofibular Sinostozis - 'Tibia ile Fibulanın Aşkı'

Özet

Tibiofibular sinostoz, proksimal, diyafizal veya distal tibiofibular sinostoz şeklinde ortaya çıkabilir ve fizyal plakaların kapanmasından önce meydana gelir. Proksimal tibiofibular sinostoz çok nadir bir patolojidir ve literatürde birkaç vaka belgelenmiştir. Hastamız, 21 yaşında, sağ diz ağrısı ile hastanemizin ortopedi kliniğine başvurdu. Hastaya ilk olarak lateral ve A-P diz radyografileri kullanılarak değerlendirildi. Tibia ve fibulayı neredeyse birleştiren bir kemik çıkıntısı vardı. Hastaya daha sonra kontrastsız sağ diz MR ve ekstremite BT taramaları yapıldı. CT taramasında, tibia ve fibulanın proksimal uçlarını birbirine bağlayan meduller süreklilik ve kısmen skleroze bir kemik köprüsü görüldü. Özetle, Proksimal Tibiofibular Sinostoza, hastanın günlük yaşamını etkileyen, diz ve ayak bileğinde kronik ağrı, kas atrofisi veya duyusal sorunlara neden olan bir patolojidir. Erken ve doğru teşhis, hastaları cerrahiye yönlendirmemizde radyolog olarak rolümüzü güçlendirir, ki bu da en etkili tedavi seçeneği olarak ön plana çıkar.

Anahtar Kelimeler: *Proksimal Tibiofibular, Sinostoz,*

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INTRODUCTION

Proximal tibiofibular synostosis is a very rare pathology and few cases have been documented in the literature. Both during adolescence and as an adult, this patient population can be diagnosed. A pathology that is a part of some syndromes and deformities is present in the diagnosed cases. Synostosis can also occasionally be diagnosed as a separate pathological entity (1,2).

CASE REPORT

A male patient, aged 21, was admitted to our hospital's orthopedic clinic with right knee pain. When the patient's complaint was questioned, it became clear that the knee pain was in the form of pain that spread to the prepatellar region, increased with walking, and had been present for approximately 5 years but had increased in the last year. No noteworthy feature was found in the patient's systemic examination and family history. Additionally, there was no muscle atrophy and no sensory loss, and the patient's lower extremities were all the same length. The patient's physical examination was also unremarkable. The patient was first assessed using lateral and A-P knee radiographs. There was a bone protrusion that almost joins the tibia and fibula (Figure 1,2). The patient was then examined using non-contrast right knee MRI and extremity CT scans. The medullary continuity that connects the proximal ends of the tibia and fibula was seen on a CT scan, along with a partially sclerosed bone bridge (Figure 3,4). In the later contrast-enhanced MRI of the right knee, the bone bridge was imaged to determine the presence of proximal tibiofibular synostosis (Figure 4).

Figure 1: Proximal Tibiofibular synostosis in anterior-posterior radiograph

Figure 2: Proximal Tibiofibular Synostosis in the lateral radiograph

Figure 3: Proximal Tibiofibular Synostosis on Axial/ Sagittal CT images

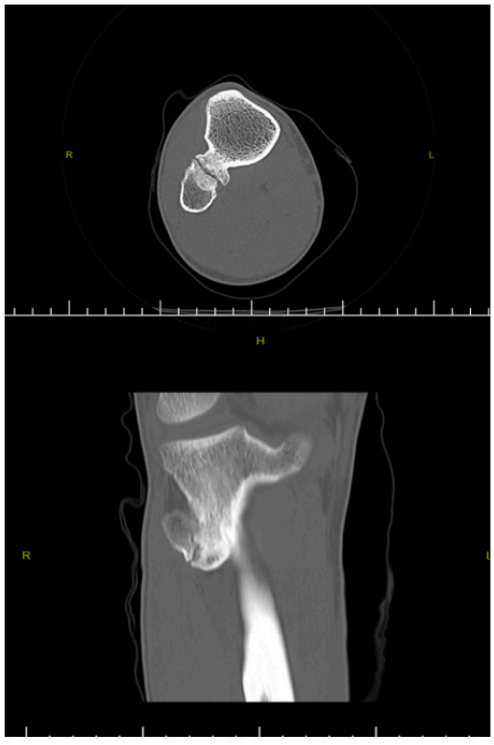
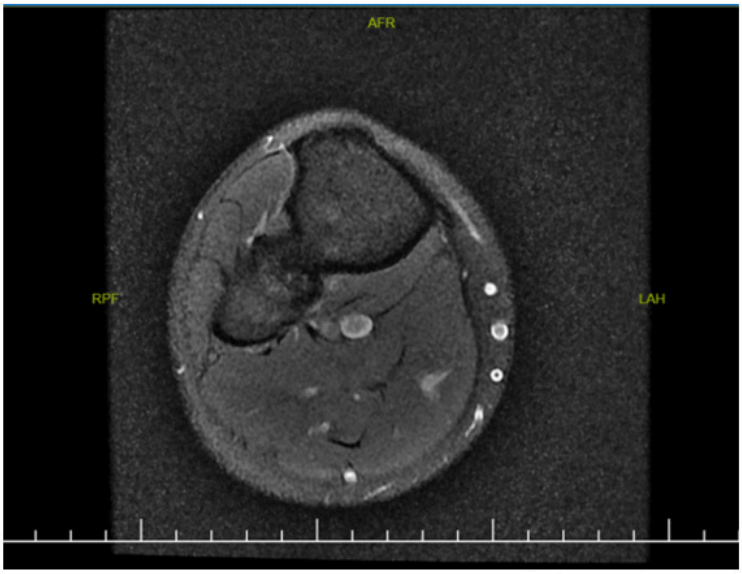


Figure 4: Proximal Tibiofibular Synostosis in Axial Contrast T1W Images



DISCUSSION

The concept of tibiofibular synostosis entered the literature with the first description of tibiofibular synostosis by Dahn in 1924 (3). The lateral malleolus, shortening of the ankle valgus, and prominence of the fibular head in the knee are typically complicating factors if the lesion, which may manifest as proximal, diaphyseal, or distal tibiofibular synostosis, occurs before the closure of the physeal plates. As synostosis obscures the normal movement between the tibia and fibula during weight bearing, these lesions may result in ankle pain. In our patient, the extremities were of equal length and the complaint had been present for the last 5 years. Although idiopathic cases have been the majority of those reported by the medical community to date, cases that result from posttraumatic processes or iatrogenic causes have also been described in the literature. Only cases of Distal Tibiofibular Synostosis have been reported in the literature for synostosis brought on by posttraumatic processes. Repetitive microtraumas (similar to those seen in soccer players or runners) were identified as a possible cause of Proximal Tibiofibular Synostosis. Genetic background is another possible cause of Proximal Tibiofibular Synostosis. In fact, some cases of Proximal Tibiofibular Synostosis have been linked to Multiple Hereditary Exocytosis Syndrome and 49, XXXXY Syndrome. However, very few cases of Proximal Tibiofibular Synostosis without a history of repetitive microtrauma or any syndrome have been reported. There was no remarkable information in the patient's background and family history. Furthermore, our patient's pain complaint, who did not engage in regular sports, was triggered even by walking activity in his daily life (3,6). As in our patient, very few cases of Proximal Tibiofibular Synostosis have been reported previously, the etiopathogenesis of which could not be attributed to known causes, and this situation shifted the focus away from congenital causes and toward possible intrauterine causes such as trauma and infection.

The interosseous membrane can cause synostosis of the middle tibiofibular joint, also known as diaphyseal tibiofibular synostosis, which can occur between the proximal and middle thirds of the tibia or between the middle and distal thirds. Any cause that leads to new bone formation that bridges the tibia and fibula, such as repetitive trauma (stress injuries), bleeding, or severe injury causing subperiosteal dissection across the interosseous membrane, could be the pathogenesis. Although most patients are asymptomatic, some may experience disabling pain and discomfort during exercise. Magnetic

resonance imaging with paramagnetic contrast is recommended, especially in pediatric cases, to rule out primary bone tumors and determine the relationship of synostosis with neurovascular structures (7).

Distal tibiofibular synostosis is a syndesmosis formed by two bones and four ligaments. The distal anterior tibiofibular ligament, distal posterior tibiofibular ligament, transverse ligament, and interosseous ligament connect the distal tibia and fibula, which form the bony part. Synostosis of the tibia and fibula causes limited rotation and translation of the fibula, resulting in painful and restricted ankle movement, most commonly during weight-bearing and pushing. Synostosis of the distal tibiofibular joint is usually acquired but can also be idiopathic or congenital (7,8).

To summarize, Proximal Tibiofibular Synostosis is a pathology that interferes with the patient's daily life by causing chronic pain, muscle atrophy, or sensory problems in the knee and ankle. Early and accurate diagnosis strengthens our role as radiologists in referring patients to surgery, which remains the most effective treatment option.

Authors's contribution
Idea – PÖA, BS; Design – PÖA, BS, NÇ; Data Collection and/or Processing – PÖA, BS, NÇ; Analysis and/or Interpretation – PÖA, BS; Literature Review – PÖA, BS, NÇ; Materials – PÖA, NÇ.

Conflict of interest
We declare no conflict of interest. We received no financial support for the research, authorship, or publication of this article.

REFERENCES

1. Sferopoulos NK. Synostosis of the Proximal Tibiofibular Joint.Medicine. Case Rep Med 2010;2010:794594 PMID: 20592991 DOI:10.1155/2010/794594
2. Leninbabu V, Shenbaga N, Komarasamy B, Paul A. Proximal tibiofibular synostosis as a source of ankle pain: a case report. Iowa Orthop J. 2006;26:127-9.
3. Rahm H. Die Tibiofibulare Synostose. Zeitschrift Orthop Chir 1924;.43:64-69.
4. Takai S, Yoshino N, Hirasawa Y. Unusual proximal tibiofibular synostosis. International Orthopedics 1999;23:363-365.
5. Pisecky L, Großbötzl G, Stevoska S, Stadler C, Ziernhöld M, Noack P, Gotterbarm T, Luger M. Bilateral Proximal Tibiofibular Synostosis Caused by Osteochondroma in a 21-Year-Old Highly Active Male-First in Literature. Medicina (Kaunas) 2021 Oct 18;57(10):1126.
6. Sureka J, Jakkan RKi, Ahmed M, Panwar S, Shanker S. Congenital distal tibiofibular synostosis. Radiol Case Rep 2015 Dec 7;7(2):555.
7. Sferopoulos NK. Tibiofibular Synostosis. ARC Journal of Orthopedics. 2018; 3: 5-10.
8. Yuen CP, Lui TH. Distal Tibiofibular Syndesmosis: Anatomy, Biomechanics, Injury and Management. Open Orthop J. 2017; 11: 670-677.