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Subtle bucket-handle tear of a discoid lateral meniscus in a 6 year old girl

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ÖZET

Bu yazıda, 6 yaşındaki bir kız hastada diz ekstansiyon kısıtlılığına yol açan, diskoid lateral menisküsün güç farkedilen bir kova sapı yırtığını sunmaktayız. Nadir görülen bu olgunun, özellikle artroskopik cerrahi ile ilgilenen tüm ortopedik cerrahlarca tanınabilmesi önemlidir.

Anahtar Kelimeler: *Artroskopi, çocuk, diskoid lateral menisküs, kova sapı yırtık*

SUMMARY

We report a subtle bucket-handle tear of discoid lateral meniscus causing knee extension blockage in a 6 year old girl. This rare presentation should be recognised by all orthopaedic surgeons practising arthroscopic surgery.

Key words: *Arthroscopy, child, discoid lateral meniscus, bucket-handle tear*

Introduction:

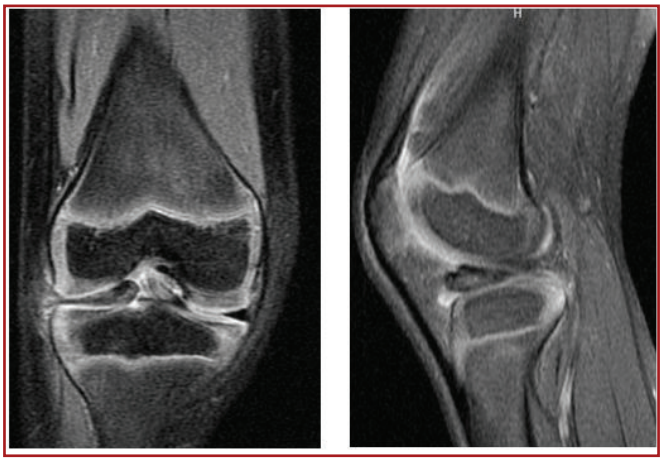
Discoid lateral meniscus is the most common meniscal variant in children. Normal “semi lunar” shaped meniscus becomes spherical and covers most of the tibial plateau [1]. Thickened meniscal rims and abnormal spherical morphology alters the joint mechanics and menisci are more prone to tears in these patients [2]. Young first reported it in a cadaver study in 1889 [3]. It is more common at the lateral side and the incidence at the pediatric population is between 1-3%. The incidence increases at the Asian populations up to 13% [4].

In this text, we report a case of 6-year-old girl with limited knee extension due to subtle bucket-handle tear and thickening of discoid lateral meniscus.

Case Report:

A 6-year-old girl presented with 6-week history of limited knee extension at the right side. She was limping, especially at the end of the day. She had no fever, history of recent illness and immunization. She and her mother denied any history of trauma or sports activity. She had no complaints, but her mother was anxious about her knee’s posture.

On physical examination, her right knee was at 30 degrees of flexion posture. There was no effusion, erythema or quadriceps atrophy. At palpation, there was no fever. Lateral joint line was slightly tender and there were no apparent “popping” or “snapping” with passive flexion and extension. In addition, Mc Murrey’s and Apley’s provocative tests were negative. Passive extension was painful and limited at last 30 degrees. Flexion more than 100 degrees was also painful. There were no abnormalities on bilateral anteroposterior and lateral knee radiographs. On magnetic resonance imaging, discoid lateral meniscus and thickening of anterior segment observed. There were not any evident tear. (Figure 1)



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Arthroscopic treatment applied after approval of informed consent. Surgery held under general anesthesia and a pneumatic tourniquet by using a 4mm, 30 degrees angled arthroscope. During diagnostic arthroscopy, we observed thickened ligamentum mucosum, pathologic medial plica and complete type [5] discoid lateral meniscus. After debridement of thickened ligamentum mucosum and pathologic medial plica, during intraoperative ROM examination, anterior horn of lateral meniscus was relatively thicker and impinging during extension. There was no evidence of meniscal tears at the first glance.

After achieving a semi lunar shaped, "normal" lateral meniscus with a 6mm residual rim, during intraoperative range of motion examination, we noticed that the anterolateral portion of the meniscus was bucket handling during extension. By careful probing, we identified the bucket-handle tear at the anterolateral side, which could not be observed at diagnostic arthroscopy and preoperative MRI. Afterwards, we repaired the tear with a nonabsorbable No. 2 suture by inside out technique. (Figure 2)

Postoperatively we applied a long leg splint for 3 weeks, followed by 3 weeks of passive and active knee ROM exercises. After 6 weeks, weight bearing as tolerated was allowed. At 9th week follow-up examination, she gained full range of motion and was able to walk with full weight bearing and without limping. Family was advised a long term follow up for complications and early degenerative changes.

Discussion:

Traditionally, treatment of the symptomatic discoid lateral meniscus was open or arthroscopic total menisectomy. Later on, many articles revealed early secondary osteoarthritic changes at long-term results [6]. Nowadays, most surgeons are treating this pathology with arthroscopic debridement, partial menisectomy and meniscal repair techniques [7]. The aim is to restore normal joint biomechanics and to prevent cartilage damage by sculpting menisci into a more "normal" shape. It has been reported that meniscal or cartilage injury rate increases at cases, which are not treated within 6 months [8].

In our case, the most evident symptom was limited knee extension, which is more commonly seen at children than adults [6,9,10]. According to Ahn et al, this finding is more commonly seen at patients who have thickened anterior horns at MRI [9]. On the contrary, some authors suggest that this is more common at patients who has unstable posterior peripheral attachments or unstable tears, which displaces anteriorly during knee extension and impinges [11]. Our case had a thickened anterior horn at MRI but we could not diagnose any meniscal tears neither at preoperative MRI, nor at diagnostic arthroscopy. After normalization of the meniscus, it was bucket handling during intraoperative ROM examination. By careful probing, we identified the tear. We believe that repetitive minor traumas to the thickened anterior portion of lateral meniscus lead to a bucket-handling tear. In addition, this pathology caused the extension blockage as well as the thick anterior portion and the fibrotic tissues filling the lateral compartment.

Arthroscopic procedures below the age 16 constitutes below 5% of the entire procedures [12]. Due to coverage of entire lateral compartment with a thickened meniscus and concomitant synovial hypertrophy at meniscal tears, it is generally difficult to maneuver the arthroscope. While working in the narrow lateral compartment, iatrogenic cartilage damage can be seen. In addition, recurrence of tears due to insufficient menisectomy, neurovascular damage, joint stiffness, permanent effusion, infection and complications about instruments could be seen [13]. In addition, osteochondritis dissecans of the lateral femoral condyle is a unique complication after total menisectomies of discoid lateral meniscus [14]. Additional to all of these technical demands, the arthroscopist should recognize subtle meniscal tears, peripheral instabilities and be able to restore the meniscal stability.

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