

Double-layered lateral meniscus

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Abstract A case of double-layered lateral meniscus in which an accessory proximal hemimeniscus was overlying the body and posterior horn of the lateral meniscus is here reported. The accessory hemimeniscus lays marginal and parallel to the normal lateral meniscus with its periphery dissociated from the capsule and was significantly thinner and more mobile than its underlying counterpart. It was resected arthroscopically, and the patient's symptoms were significantly improved. This case demonstrates an interesting and extremely rare anatomical abnormality of the lateral meniscus.

Level of evidence IV.

Keywords Abnormality · Double layered · Lateral · Meniscus

Introduction

Meniscal abnormalities are rare and tend to more commonly affect the lateral meniscus [1]. Cases of accessory lateral menisci resulting in double-layered menisci are extremely uncommon and, when they do occur, are thought to have the potential to contribute to the patients' symptoms [1, 4–6]. There are only a few published reports of double-layered meniscus in English [2, 4–6] and none in Chinese. Here, a further case of this extremely rare entity is reported.

Case report

A 46-year-old woman presented with a month long history of mainly lateral, but also medial and infrapatellar pain, and occasional swelling and clicking in her left knee. Radiograph examination showed a slightly more widening of the lateral joint space. MRI showed injury of the medial femoral condyle and an abnormal signal above the posterior horn of the lateral meniscus in the sagittal plane. Knee arthroscopy revealed grade 3 changes on the articular surface of the medial femoral condyle. Arthroscopic microfracture surgery was therefore performed. During arthroscopy, a double-layered lateral meniscus was found. More specifically, an accessory proximal hemimeniscus was found to be overlying the body and posterior horn of a normal lateral meniscus. It lays marginal and parallel to the normal lateral meniscus with its periphery dissociated from the capsule and was significantly thinner, looser and more mobile on probing than its underlying counterpart (Fig. 1). Because it could easily be trapped between the lateral femoral condyle and lateral tibial plateau by twisting movements, it was resected arthroscopically. Macroscopically, there was no evidence of degeneration on the excised accessory meniscus, and its surface and margin were smooth and glossy. Because of the microfracture of the medial femoral condyle, weight-bearing on the left leg was forbidden for 4 weeks. There were no symptomatic complications and no pain during functional exercise. Four weeks after surgery, ambulation with partial weight-bearing was permitted, and the previous symptoms of pain, swelling and clicking were found to have improved significantly. Three months after surgery, the patient was walking freely and had returned to normal life without any discomfort.

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Fig. 1 Arthroscopic view of double-layered lateral meniscus showing the anterior aspect and body of the hemimeniscus

Discussion

Reports of congenital abnormalities of the lateral meniscus include discoid meniscus, accessory meniscus, double-layered meniscus and ring-shaped meniscus [3]. Each anomaly is rare. In the literature, there were only four cases reported. Suzuki et al. [5] reported two cases of adolescents of Japanese origin with double-layered lateral menisci, while Okahashi et al. [4] described a similar case in a Japanese adult and Karataglis et al. [2] a similar case in a 37-year-old man of Indian origin. In 2009, Takayama et al. [6] reported a case of double-layered meniscus with bucket-handle tear. In all these cases, upper accessory

hemimenisci overlaid normal lateral menisci and were considerably thinner and more mobile than the latter.

Menisci differentiate directly from blastemal cells connected to the capsule. It is thought that aberrations such as the one reported here represent an anomaly in the differentiation process. The presence of abnormally shaped menisci may lead to significantly altered biomechanics of the lateral compartment. Their clinical significance is not always clear, but they may have often been associated with pain and clicking. In addition, it is clinically important to differentiate them from old bucket-handle tears.

References

1. Clarke HD, Scott WN, Insall JN (2001) Anatomic aberrations. In: Insall JN, Scott WN (eds) *Surgery of the knee*, 3rd edn. New York: Churchill-Livingstone, New York, pp 77–94
2. Karataglis D, Dramis A, Learmonth DJ (2006) Double layered lateral meniscus. A rare anatomical aberration. *Knee* 13:415–416
3. Komatsu N, Yamamoto K, Chosa E (2008) Bilateral congenital separation of the lateral meniscus. A case report. *Knee* 15:330–332
4. Okahashi K, Sugimoto K, Iwai M et al (2005) Double layered lateral meniscus. *J Orthop Sci* 10:661–664
5. Suzuki S, Mita F, Ogishima H (1991) Double layered meniscus: a newly found anomaly. *Arthroscopy* 7:267–271
6. Takayama K, Kuroda R, Matsumoto T et al (2009) Bilateral double-layered lateral meniscus: a report of two cases. *Knee Surg Sports Traumatol Arthrosc* 17:1336–1339