Ipsilateral Medial and Lateral Discoid Meniscus with Medial Meniscus Tear

Kengo Shimozaki[1], Junsuke Nakase[1], Yoshinori Ohashi[1], Hitoaki Numata[1], Takeshi Oshima[1], Yasushi Takata[1], Hiroyuki Tsuchiya[1]

What to Learn from this Article?

Readers learn about a rare experience of ipsilateral medial and lateral discoid meniscus.

Abstract

Introduction: Discoid meniscus is a well-documented knee pathology, and there are many cases of medial or lateral discoid meniscus reported in the literature. However, ipsilateral concurrent medial and lateral discoid meniscus is very rare, and only a few cases have been reported. Herein, we report a case of concurrent medial and lateral discoid meniscus.

Case Report: A 27-year-old Japanese man complained of pain on medial joint space in his right knee that was diagnosed as a complete medial and lateral discoid meniscus. In magnetic resonance imaging, although the lateral discoid meniscus had no tear, the medial discoid meniscus had a horizontal tear. Arthroscopic examination of his right knee similarly revealed that the medial discoid meniscus had a horizontal tear. In addition, the discoid medial meniscus also had an anomalous insertion to the anterior cruciate ligament, and there was also mild fibrillation of the medial tibial cartilage surface. We performed arthroscopic partial meniscectomy for the torn medial discoid meniscus but not for the asymptomatic lateral discoid meniscus. The latest follow-up at 18 months indicated satisfactory results.

Conclusion: We report a rare case of ipsilateral medial and lateral discoid meniscus with medial meniscus tear. The medial discoid meniscus with tear was treated with partial meniscectomy, whereas the lateral discoid meniscus without tear was only followed up.

Keywords: Ipsilateral medial and lateral discoid meniscus, arthroscopic partial meniscectomy, medial meniscus tear.

Introduction

Discoid meniscus is not only at peripheral attachments of the tibial plateau but it is also at the central sites. It is reported that discoid meniscus causes meniscus tear due to poor blood flow at the central sites, direct compression, and an unstable connection with posterior capsule. According to previous reports, discoid lateral meniscus is sometimes observed, but concurrent ipsilateral medial and lateral discoid meniscus is rare [1, 2]. We report a case of concurrent ipsilateral medial and lateral discoid meniscus with medial meniscus tear.

Case Report

A 27-year-old male patient complained of pain on medial joint space in his right knee after running on the road for few years. He attempted self-treatment, but the pain did not improve. He subsequently consulted a

Access this article online

Website: www.jocr.co.in

DOI: 2250-0685.546

Author's Photo Gallery


Dr. Kengo Shimozaki


Dr. Junsuke Nakase


Dr. Yoshinori Ohashi


Dr. Hiroyuki Tsuchiya

[1]Department of Orthopaedic Surgery, Kanazawa University, 13-1 Takara-Machi, Kanazawa-Shi, Ishikawa-Ken 920-8641, Japan.

Address of Correspondence
Dr. Junsuke Nakase,
Department of Orthopaedic Surgery, Kanazawa University, 13-1 Takara-Machi, Kanazawa-Shi, Ishikawa-Ken 920-8641, Japan.
E-mail: shimo_ne01@yahoo.co.jp

Journal of Orthopaedic Case Reports | pISSN 2250-0685 | eISSN 2321-3817 | Available on www.jocr.co.in | doi: 10.13107/jocr.2250-0685.546

nearby clinic and was diagnosed with medial and lateral discoid meniscus in his right knee with medial meniscus tear on magnetic resonance imaging (MRI). He was referred to our institution for operation.

Physical findings for his right knee showed that although the range of motion was not limited, there were swelling and pain on the medial joint space. In addition, the McMurray test revealed pain and clicking on the medial joint line with external rotation.

Radiographs showed nothing particular in his right knee. T2-weighted coronal and sagittal MRI of his right knee revealed medial and lateral complete discoid meniscus, which was confirmed by arthroscopic examination of his right knee. The medial meniscus had a complete discoid conformation with a horizontal tear, whereas the lateral meniscus had no tear (Fig. 1). Arthroscopic examination of his right knee similarly revealed that the lateral discoid meniscus had no tear, and the medial discoid meniscus had a horizontal tear. In addition, the discoid medial meniscus also had an anomalous insertion to the anterior cruciate ligament, and there was also mild fibrillation of the medial tibial cartilage surface (Fig. 2).

We performed arthroscopic partial meniscectomy of the medial discoid meniscus. We performed no surgical procedure for the lateral discoid meniscus because the patient had no clinical symptoms, and the lateral discoid meniscus had no tear. We also checked the stability of the connection between the meniscus and the posterior soft tissue both medially and laterally (Fig. 2).

Walking was allowed the day following the operation. Three months later, the patient had no pain or symptoms in his right knee and resumed playing sports. At the last follow-up, 18-month post-surgery, he had no limitation of motion, could play sports with full effort, and was satisfied with the result. The medial joint space in his right knee was observed clearly on MRI, and the lateral meniscus had no tear (Fig. 3).

Discussion

Yaniv and Blumberg [1] and Ikeuchi [3] reported that lateral discoid meniscus is more common in Asian countries than in other countries. The reported incident of discoid meniscus ranges from 0.4% to 17% for the lateral [1, 3, 4], 0.06-0.3% for the medial, and <0.012% for the medial and lateral in same knee [5]. The incidence of bilateral lateral discoid meniscus is up to 20% of the lateral discoid meniscus cases, whereas bilateral medial meniscus ranges from 0.01% to 0.03% [5, 6].

However, cases of ipsilateral concurrent medial and lateral discoid meniscus are rare. To the best of our knowledge, only five cases have been reported [4, 5, 7, 8].

Although the developmental formation process of the normal meniscus is unclear, the normal meniscus is clearly defined at the 8th week of gestation and assumes mature anatomical shape at the 14th week [9]. Smillie [2] reported that in many cases, the fetal meniscus has an oval shape and covers

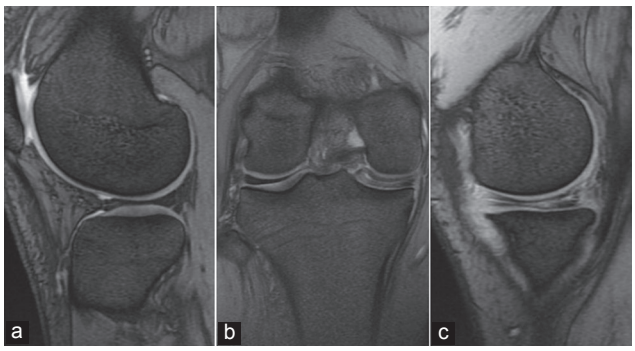

Figure 1: T2-weighted coronal and sagittal magnetic resonance imaging (MRI) of his right knee. (a) T2-weighted sagittal MRI at lateral side. It showed lateral meniscus had no tear, (b) T2-weighted coronal MRI. It revealed medial and lateral complete discoid meniscus. (c) T2-weighted sagittal MRI at medial side. It showed medial meniscus had a horizontal tear.

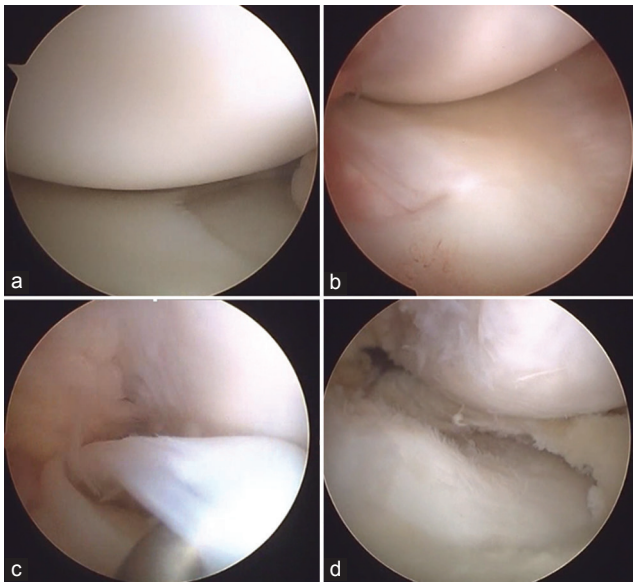

Figure 2: Arthroscopic examination of his right knee. (a) At lateral side, the lateral meniscus had a complete discoid conformation without tear. Hence, we did not perform surgery, (b and c) at medial side, the medial meniscus had a complete discoid conformation with a horizontal tear, (d) we performed arthroscopic partial meniscectomy of the medial discoid meniscus.

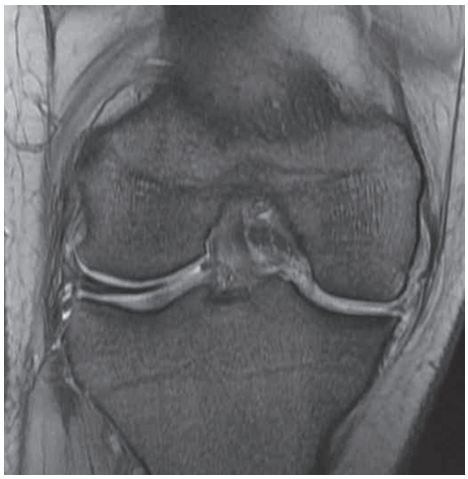

Figure 3: 18-month post-surgery, T2-weighted coronal magnetic resonance imaging of his right knee. The medial joint space was observed clearly, and the lateral meniscus had no tear.

the central zone of the tibial plateau. The shape of a normal meniscus is the result of gradual absorption of the central zone by stimulation of the knee joint during the latter half of fetal life. It is considered that errors in this absorptive process result in a discoid meniscus. Differences in the occurrence rate of the error result in differences in the incidence rate between medial and lateral discoid meniscus.

Recently, Fukazawa *et al.* [10] reported a difference in collagen deposits between the medial and lateral meniscus during fetal life. Histology of the meniscus in human fetuses, at the 14th week of gestation, showed spindle-shaped cells aligned in parallel in the lateral meniscus but randomly arranged cells in the medial meniscus. Collagen deposits formed wavy bundles-like structure in the lateral meniscus, whereas those in the medial meniscus were distributed relatively randomly. It was suggested that the strength of the medial meniscus is weaker than that of the medial meniscus in human fetuses.

In response to this report, Yujiro *et al.* [6] suggested that the medial meniscus likely forms due to absorption of the central zone as the result of kinematic load at the knee joint; therefore, medial discoid meniscus is not likely to occur because of the difference in collagen deposits between the medial and lateral meniscus. However, we did not investigate collagen deposits in the current case, so further studies are needed to confirm this.

The treatment of discoid meniscus is controversial. In adults, many discoid meniscus cases, both medial and lateral, normally have no symptoms and should be regularly followed up. Surgery should not be performed unless patients have clear symptoms. Early surgery is important when symptoms are clear. Because total meniscectomy has a high risk of osteoarthritis, partial meniscectomy or meniscoplasty should be performed. In younger patients, it is best to perform auxiliary meniscorrhaphy whenever possible [1].

In a case of lateral discoid meniscus in a child under 8 years old, Stilli *et al.* [11] reported that subtotal meniscectomies are preferable when the meniscal tissue is degenerated as some adaptation of the knee to stress activity may occur. In children older than 8 years, they recommend preserving as much meniscal tissue as possible.

Flouzat-Lachaniette *et al.* [12] reported clinical results of four cases of medial discoid meniscus and showed that meniscoplasty provided satisfactory but imperfect results in all cases while avoiding total meniscectomy. They also reported that residual pain and knee snapping may persist after treatment; thus, careful follow-up is needed.

Both Kim and Lubis [4] and Choi *et al.* [7] reported clinical results of ipsilateral concurrent medial and lateral discoid meniscus, the same as the present case. They performed arthroscopic partial meniscectomy for the torn discoid meniscus and no surgical procedure for the asymptomatic discoid meniscus, reporting good clinical results for each case.

Our patient also had no complaints and has been satisfied with the result of his surgery.

However, a longer follow-up period is needed because discoid meniscus and partial meniscectomy have been reported as risk factors for articular cartilage lesions, so we will continue to follow the patient for a long time.

Conclusion

We report a rare case of ipsilateral concurrent medial and lateral discoid meniscus with a medial meniscus tear. We performed arthroscopic partial meniscectomy for his torn medial discoid meniscus and no surgical procedure for the asymptomatic lateral discoid meniscus. For 18-month post-surgery, the patient has had no limitation of the motion and is satisfied with the result.

Clinical Message

Although medial or ipsilateral medial and lateral discoid are rare cases, we should know this presence. The treatments of this meniscus are blow two patterns. If there is torn discoid meniscus, we should perform arthroscopic partial meniscectomy. However, if there is asymptomatic discoid meniscus without tear, we should continue long time follow-up.

References

1. Yaniv M, Blumberg N. The discoid meniscus. J Child Orthop 2007;1(2):89-96.
2. Smillie IS. The congenital discoid meniscus. J Bone Joint Surg Br 1948;30B(4):671-682.
3. Ikeuchi H. Arthroscopic treatment of the discoid lateral meniscus. Technique and long-term results. Clin Orthop Relat Res 1982;167:19-28.
4. Kim SJ, Lubis AM. Medial and lateral discoid menisci: A case report. Sports Med Arthrosc Rehabil Ther Technol 2010;2:21.
5. Dickason JM, Del Pizzo W, Blazina ME, Fox JM, Friedman MJ, Snyder SJ. A series of ten discoid medial menisci. Clin Orthop Relat Res 1982;168:75-9.
6. Yujiro K, Yasunari O, Eiichi N, Hiroaki N, Nobukazu O, Azusa T. A case of complete discoid medial menisci in the bilateral knees. Orthop Traumatol 2012;61(1):161-165.
7. Choi NH, Kim NM, Kim HJ. Medial and lateral discoid meniscus in the same knee. Arthroscopy 2001;17(2):E9.
8. Yáñez-Acevedo A. Bilateral discoid lateral menisci and unilateral discoid medial menisci. Arthroscopy 2001;17(7):772-775.
9. Andrish JT. Meniscal injuries in children and adolescents: Diagnosis and management. J Am Acad Orthop Surg 1996;4(5):231-237.
10. Fukazawa I, Hatta T, Uchio Y, Otani H. Development of the meniscus of the knee joint in human fetuses. Congenit Anom

(Kyoto) 2009;49(1):27-32.
11. Stilli S, Marchesini Reggiani L, Marcheggiani Muccioli GM, Cappella M, Donzelli O. Arthroscopic treatment for symptomatic discoid lateral meniscus during childhood. Knee Surg Sports Traumatol Arthrosc 2011;19(8):1337-1342.
12. Flouzat-Lachaniette CH, Pujol N, Boisrenoult P, Beaufils P. Discoid medial meniscus: report of four cases and literature review. Orthop Traumatol Surg Res 2011;97(8):826-832.

Conflict of Interest: Nil
Source of Support: None

How to Cite this Article

Shimozaki K, Nakase J, Ohashi Y, Numata H, Oshima T, Takata Y, Tsuchiya H. Ipsilateral Medial and Lateral Discoid Meniscus with Medial Meniscus Tear. Journal of Orthopaedic Case Reports 2016 Sep-Oct;6(4):9-12.