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Arthroscopic Partial Meniscectomy in Adult Patient with Symptomatic Discoid Lateral Meniscus: A Case Report

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ABSTRACT

Introduction: For many years, the discoid meniscus was synonymous with snapping knee syndrome. incidence of discoid lateral meniscus is estimated to be 0.4% to 17%, whereas the discoid medial meniscus is extremely rare (0.1% to 0.3%). It has been reported that about 20% of cases are bilateral. Patients with discoid lateral meniscus (DLM) often show normal plain radiography findings but may also show subtle indirect signs.
Case Presentation: Female, 59 years old, complained of pain on her left knee after walking and climbing stairs for the last two months. On examination, the range of motion of knee joint was limited due to the pain for flexion more than 90°. Patient had medial joint line tenderness, and a McMurray test elicited pain on the lateral joint line. Radiographs of the left knee showed lateral joint space widening and high fibular head. Arthroscopic examination of the left knee confirmed the presence of discoid lateral menisci (DLM).
Discussion: Discoid lateral meniscus (DLM), often referred to as "popping knee syndrome," is an abnormal variation of the meniscus, primarily affecting the lateral side and more common in young individuals. This condition increases the risk of knee injury, especially if the ligament attachment to the tibia is absent. In our case, radiographic findings and a positive McMurray test led to the diagnosis, confirmed by arthroscopy showing a complete DLM. While some recommend for total meniscectomy, studies suggest that partial meniscectomy can offer good initial results, though long-term outcomes may vary.
Conclusion: In symptomatic DLM, surgical treatment is necessary to treat the patient. Arthroscopic partial meniscectomy is the preferred surgical procedure to treat symptomatic DLM.

Keywords: *Discoid lateral meniscus, arthroscopic menisectomy, WOMAC score*

INTRODUCTION

The discoid meniscus was first observed in a cadaver specimen by Young in 1889. For many years, the discoid meniscus was considered to be synonymous with snapping knee syndrome, which was first described by in 1936. The incidence of discoid lateral meniscus is estimated to be 0.4% to 17%, whereas the discoid medial meniscus is extremely rare (0.1% to 0.3%). It has been reported that about 20% of cases are bilateral. However, the true incidence and prevalence are unknown, given that many

asymptomatic discoid menisci are incidentally discovered during Surgery.[1,2] Smillie suggested that the discoid meniscus is congenital. The discoid shape is an intermediate stage during fetal development, and final discoid morphology results from absorption failure of the central part of the menisci. The discoid meniscus is characterized by decreased collagen fibers and loss of normal collagen orientation, and intrameniscal mucoid degeneration is also common.[1,3,4] Patients with discoid lateral meniscus (DLM) often show normal plain radiography findings but may also show subtle indirect signs. MRI is an important diagnostic tool adjunct to the clinical features of the DLM.[3,4] The principle of treatment for patients with DLM is simple; asymptomatic patients with incidentally detected DLM require non-operative treatment with periodic follow-up, while symptomatic patients with DLM may need operative treatment.[4] We reported a case with symptomatic DLM which only used plain radiograph to diagnosed and perform knee arthroscopy as a diagnostic and therapeutic tools for DLM as arthroscopic partial menisectomy was performed.

CASE PRESENTATION

Female patient, 59 years old, complained of pain on her left knee after walking and climbing stairs for the last two months. On physical examination, the range of motion was limited due to the pain for flexion more than 90°. There was no effusion. The patient had medial joint line tenderness, and a McMurray test elicited pain on the lateral joint line. The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) score taken at the current time was 40. Radiographs of the left knee showed lateral joint space widening, high fibular head, and also increased concavity and subchondral sclerosis of the medial tibial plateau (Fig 1)

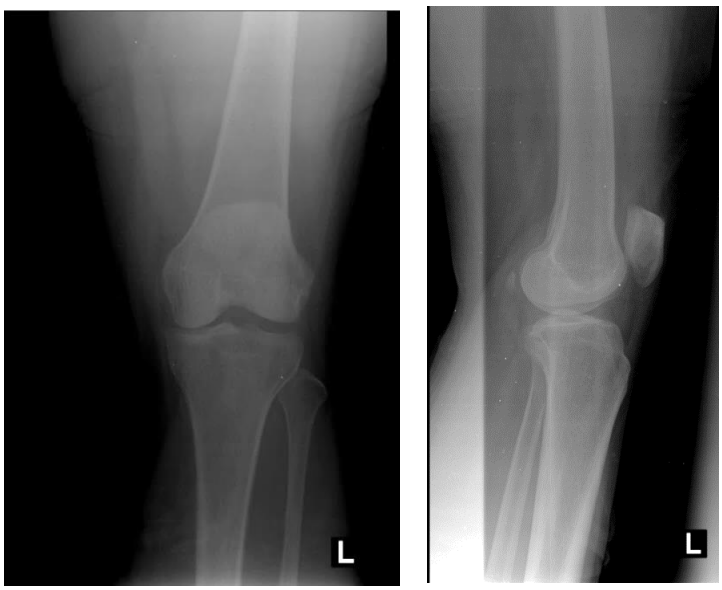

Figure 1 Knee X-ray image shown lateral joint space widening

MRI was not performed in this patient, and knee arthroscopy was planned for this patient. Arthroscopic examination of the left knee confirmed the presence of discoid lateral menisci (DLM). The lateral meniscus was completely discoid and had no tear.

DISCUSSION

Discoid lateral meniscus or “the popping knee syndrome” is a variation on the normal meniscus. Discoid itself means shaped liked or resembling a disk. The pathology mostly concerns to the lateral meniscus and is presented in young population and during adolescence. A discoid meniscus is more

prone to injury than a normally shaped meniscus. The abnormal shape of the discoid meniscus makes it more likely to get stuck in the knee or tear. The risk for injury is even bigger when the ligament attachment to the tibia is also missing.[3]

Kushare et al said, DLM is caused a knee popping syndrome in the patient with symptomatic DLM, and our patient complaint about knee popping syndrome such as pain, giving way, effusion, limitation of motion, and clicking when motion.[4]

The physical examination may help us to make a diagnosed of DLM, include lateral joint line tenderness and snapping as the knee is flexed or extended. Frequently, McMurray test and Apley grinding test produce pain and an audible and palpable loud click or snap. This occurs because of the translation of the femoral condyle over a thickened posterior rim of the lateral meniscus. This theory corresponds to our finding as the McMurray test is positive in the left knee of the patient.

We perform left knee plain radiography in this patient with antero-posterior and lateral view and widening of the lateral joint space, squaring of the lateral femoral condyle were seen. Song et al said, patients with DLM often show normal plain radiography findings but may also show subtle indirect signs include widening of the lateral joint space, squaring of the lateral femoral condyle, cupping of the lateral tibial plateau, lateral tibial eminence hypoplasia, elevation of the fibular head, and condylar cutoff sign.[3–5] Lu et al said in their systematic review said that lateral condyle convex angle (LCCA) is statistically larger in patient with DLM. LCCA is the angle formed by the imaginary line through the lowest point of the lateral condylar and the highest point of inter-condylar fossa and the imaginary line through the lowest point of the lateral condylar and the most lateral point of the lateral femoral articular surface. It is a new type of measurement proposed by Lu et al and has high sensitivity to screened DLM on plain radiograph. The sensitivity and specificity were 85.5% and 42.9%, respectively.[6] In our patient, the LCCA is typically larger than usual, so we confirm the diagnosed of DLM and planned to perform the knee arthroscopic for evaluation and treatment of the DLM.

Although MRI is still a definitive diagnostic tool, it also has several disadvantages such as, more expensive and inconvenient for claustrophobia patient. It is also contraindicated for patients with magnetic metallic implants. Plain radiograph can be used for screening and quite reliable to detect discoid meniscus before performing arthroscopy for the definitive diagnosis. Another advantage on plain radiograph is it is very cost effective and suitable to perform in our practice area in Bali.

Intraoperatively, we found hypertrophy and widening of meniscus fibrous cartilage arthroscopically and the lateral tibial plateau was completely covered so the meniscus was considered a complete DLM. Watanabe et al. classified the discoid menisci as complete, incomplete, and Wrisberg types, depending on the presence or absence of a normal posterior attachment and the degree of tibial plateau coverage.[1]

Arthroscopic partial meniscectomy with all inside technique was done in this patient. Surgical intervention, particularly arthroscopic partial meniscectomy, is the treatment of choice for symptomatic DLM, aiming to preserve as much of the meniscus as possible. Intraoperatively, hypertrophy and complete coverage of the lateral tibial plateau are observed in complete DLM cases. While asymptomatic DLM may not require treatment, symptomatic cases are generally treated with meniscoplasty to maintain knee function and prevent further deterioration. According to Liu et al, symptomatic DLM is treated with arthroscopic meniscoplasty to preserve the meniscus while asymptomatic discoid meniscus is not necessary for further treatment unless symptoms appear, as the knee joint may have adapted to the anatomic configuration and can maintain normal function.[7] Furthermore, Yaniv et al

described the treatment of choice for symptomatic stable or unstable discoid lateral meniscus was open total meniscectomy. A retrospective review of patients who underwent arthroscopic partial lateral meniscectomy for lateral meniscus tears demonstrated that early results for partial lateral meniscectomy could be quite good, but that significant deterioration of functional results and decreased activity level can be anticipated.[8]

CONCLUSION

In conclusion, Discoid Lateral Meniscus (DLM) is a variation of the normal meniscus that predominantly affects the lateral meniscus, particularly in younger populations. Due to its abnormal disk-like shape, the discoid meniscus is more susceptible to injury and can lead to symptoms such as knee pain, popping, effusion, and limited range of motion. Plain radiography can cost effectively and detect the DLM by LCCA parameter without performing the MRI. The arthroscopic partial meniscectomy is the preferred surgical procedure to treat symptomatic DLM, as improvements were seen in some previous studies.

Declaration by Authors

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