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Review Article

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Accuracy And Difficulty of Preoperative Diagnosis for Mediopatellar Plica Syndrome

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Abstract

Background: *There is no consensus on the optimal method for the definitive diagnosis of mediopatellar plica syndrome. Currently, the diagnosis is made based on the patient history and is supported by physical examination. In this study, we retrospectively examined the accuracy of pre-arthroscopic diagnosis.*

Result: *Five knees (20%) were diagnosed with mediopatellar plica syndrome based on MRI before arthroscopic examination. The pre- arthroscopic diagnosis rate of mediopatellar plica syndrome was 18 knees (72%). Complete suprapatellar plica and mediopatellar plica were noted in 3 knees. Mediopatellar plica (type C) and patellofemoral disorder were observed bilaterally in one patient.*

Conclusion: *Our results imply that collecting a more detailed patient history and conducting a thorough physical examination are both important in definitive diagnosis of mediopatellar plica syndrome. However, it should be noted that mediopatellar plica syndrome may accompany patellofemoral disorders.*

Introduction

The synovial plica of the knee joint is considered a remnant of the septum that exists in the patellofemoral joint during fetal life. It is classified into four distinct anatomical patterns: superior, medial, inferior, and lateral [1, 2]. Medial suprapatellar synovial plica refers to the medial alar fold that extends and ascends the medial joint wall toward the suprapatellar synovial plica, exhibiting a shelf-like appearance [1, 3]. The prevalence of synovial plica ranges from 3% to 30% in European population studies, with most studies reporting approximately 10% [4-7]. Anterior knee pain is the primary complaint in the medial patella. Depending on its position, size, and elasticity, the plica may impinge between the quadriceps tendon and femoral trochlea at 70 to 100 degrees of knee flexion, causing mechanical symptoms [8, 9]. Mediopatellar plica syndrome can be diagnosed based on a combination of patient history and physical examination. In some cases, plicae can be visualized on magnetic resonance imaging (MRI). However, MRI does not reveal the presence of mediopatellar plica in all cases. Even if there are no findings during arthroscopy, the symptoms may remain, making future treatment difficult. Therefore, it is very important to determine whether the diagnosis of mediopatellar plica syndrome is correct in patients diagnosed with before arthroscopy. The aim of this retrospective study was to confirm the accuracy of the diagnosis of mediopatellar plica syndrome in patients who were diagnosed before arthroscopy.

Materials

Nineteen patients (25 knees) underwent arthroscopy under a diagnosis of mediopatellar plica syndrome between January 2012 and June 2020 at our institute. The group was composed of 10 males (12 knees) and 9 females (13 knees). Mean age at surgery was 21.8 ± 9.5 years (from 9 to 40 years old). Patients who had meniscus injury, ligament injury or previous arthroscopy were not included. The time between the appearance of symptoms and surgery ranged from 1 week to 36 months. The mean follow-up time was 5.2 ± 8.7 months (1 month to 36 months) (Table 1).

Table 1: Demographic Deta of 19 patients

Characteristic	value
Mean age	21.8± 9.5
Gender (male/female)	10/9
Side, right/left	15/10
Duration of symptom, month	6.3± 8.2, (1-36)
Follow-up time, month	5.2± 8.7

Preoperative Clinical Examination

Mediopatellar plica syndrome was diagnosed by symptoms and physical signs such as anterior knee pain (parapatellar), snapping sensation along the inside of the knee while bending, swelling, tenderness, pain on squatting, clicking or catching, or palpation of a tender band underneath the skin.

Clinical Assessment

Clinical evaluations were performed using the Lysholm score before and after surgery. Radiological evaluations were performed using MRI before surgery. All MRI studies were interpreted by an experienced musculoskeletal radiologist (HP).

Results

Five knees (20%) were diagnosed with mediopatellar plica syndrome based on MRI before arthroscopic examination. Regarding arthroscopic findings, mediopatellar plicae were only noted in 21 knees: A type 1 knee, B type 7 knees, C type 12 knees, and D type 1 knee (Table 2) [3]. Complete suprapatellar plica and mediopatellar plica were present in 3 knees. One knee had no plica; however, a lateral meniscal injury of the posterior portion was noted. Mediopatellar plica excision was performed on 20 knees. The mean preoperative Lysholm score was 75.2 ± 7.9 (range: 63-89). The mean postoperative score was 95.9 ± 9.0 (range: 67-100). Thirteen knees (65%) were pain-free, 5 (20%) had residual (improved) pain, and 2 (10%) had continued residual pain with no improvement. The pre-arthroscopic diagnosis rate of mediopatellar plica was 72%. In the knee categorized as type A mediopatellar plica, conservative therapy was effective. In the 3 knees with complete suprapatellar plica and mediopatellar plica, plica excision was performed. After excision, 2 knees were pain-free and 1 knee had residual (although improved) pain. In the 2 knees (1 patient) with continued residual pain, both mediopatellar plica (C type) and patellofemoral disorder were noted, suggesting lateral patellar tilt, patellar height, and instability (although there was no feeling of instability). Conservative therapy after arthroscopy was ineffective in resolving the residual pain and other symptoms.

Table 2: Detais of mediopatellar plica

Type	
A	1
B	7
C	12
D	1

Discussion

Preoperative diagnosis of mediopatellar plica syndrome is difficult. There is no consensus on the best method for making a definitive diagnosis; the diagnosis is usually made through exclusion. Mediopatellar plica syndrome is often diagnosed based on patient history alone and is supported by physical examination. It is possible to distinguish between intra-articular and extra-articular when performing intra-articular anesthetic injection. However, the lesion cannot be diagnosed as mediopatellar plica based solely on anesthetic injection. Mediopatellar plicae can be visualized on MRI if sufficiently large. However, MRI dose not reveal the presence of mediopatellar plicae in all cases. Ravikanth et al reported that MRI can be used as a screening method for the diagnosis of mediopatellar plica syndrome considering its noninvasive nature. Therefore, they suggested that MRI should be used in the differential diagnosis of internal derangement of the knee [10]. In the current study, only 5 knees (20%) were diagnosed with mediopatellar plica syndrome based on MRI before arthroscopic examination. However, the pre-arthroscopic diagnosis rate of the syndrome was 96%. These results imply that physicians should carefully check the symptoms and physical findings prior to considering arthroscopic surgery. Gerrard et al reported that arthroscopic surgical management of symptomatic medial knee plica resulted in favorable outcomes [11]. Arthroscopic surgical excision should be considered as a first-line treatment modality for patients with pathological medial plica disease of the knee. Schindler et al reported that arthroscopic excision has low morbidity and results are universally good, especially if the plica is the sole pathology [7]. Johnson et al reported a success rate greater than 80% after arthroscopic plica resection in well-selected patients [6]. Kassim et al reported a good outcome in 88% of patients at the 4-year follow-up after arthroscopic pathological plica resection [12]. In the current study, mediopatellar plica excision was only performed on 20 knees. Eighteen knees (90%) exhibited immediate pain relief after excision of mediopatellar plicae. However, 2 knees (10%) had continued residual pain. In these 2 knees (both from the same patient), both type C, mediopatellar plica and patellofemoral disorder were diagnosed. Diagnosis before arthroscopy would have been difficult; the patient did not have patellar dislocation or a feeling of patellar instability, but had anterior knee pain. Lateral patellar tracking and a tight lateral retinaculum have also been implicated in anterior knee pain. Several authors noted that medicpatellar plica syndrome may be part of a broader problem involving aberrant patellofemoral mechanics. Kramer et al reported that for adolescents with anterior knee pain refractory to conservative management, plica excision with or without lateral release resulted in a high rate of surgical satisfaction and the ability to return to sports. However, residual symptoms were common and only 30-40% of patients were pain-free [13]. To improve the diagnosis rate of mediopatellar plica syndrome, it is necessary to determine if mediopatellar plica is the sole pathology. Therefore, the most important considerations for diagnosis may be to collect a more detailed patient history and conduct a thorough physical examination.

Limitations

A limitation to our study which impacted the statistical power of the results is our small number of patients. Further investigation with a larger sample size is required to obtain more accurate clinical data. Although this study had limitation, it improved our current understanding of the accuracy of preoperative diagnosis for mediopatellar plica syndrome

Conclusion

In this retrospective study, the pre- arthroscopic diagnosis rate of mediopatellar plica syndrome was 72e%. The most important considerations for physicians may be to collect a more detailed patient history and conduct a thorough physical examination. However, it should be noted that mediopatellar plica syndrome may accompany patellofemoral disorders in some knees.

Abbreviations

MRI: Magnetic Resonance Imaging

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