Eklem Hastalıkları ve Cerrahisi
Joint Diseases and Related Surgery

Original Article / *Çalışma - Araştırma*

Joint Dis Rel Surg
2008;19(1):1-4

Arthroscopic treatment of patellar dislocations with medial retinacular repair

Patella çıkıklarının medial retinaküler onarım ile artroskopik tedavisi

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Objectives: Patellar dislocation is a common problem in skeletally immature subjects. Nonoperative treatment of these dislocations results in unsatisfactory outcomes. The aim of this study was to evaluate the results of minimally invasive arthroscopic treatment for acute and recurrent patellar dislocations.

Patients and methods: Twelve patients underwent arthroscopic medial retinaculum suture for patellar dislocations. The dislocations were acute in seven patients (mean age 14 years; range 13 to 17 years) and recurrent in five patients (mean age 22 years; range 17 to 32 years). In some cases, arthroscopic medial retinaculum suture was combined with a lateral release. The patients were evaluated by physical examination and with the Lysholm-Gillquist score and the Bandi knee global assessment score. The mean follow-up period was 9.8 months (range 2 to 28 months). Two patients were excluded from the final evaluations: one was lost to follow-up and the other underwent surgery.

Results: The mean Lysholm-Gillquist score after treatment was 97.6±1.5 (range 85 to 100). The results were excellent in nine patients, and good in one patient. The global objective assessment score of Bandi was good in all the patients. None of the patients experienced recurrent luxations during the follow-up period. The patients had no complaints and were satisfied with treatment. None of them reported pain or swelling. All the knees had normal range of motion. Most of the patients returned to competitive sports activities. Some patients refrained from active sporting even though they had no physical complaints.

Conclusion: Arthroscopic medial retinacular suture combined with lateral release is a safe and effective treatment modality in acute and recurrent patellar dislocations and in chronic subluxations.

Key words: Arthroscopy; dislocations/surgery; patella/injuries/surgery.

Amaç: Patella çıkığı, iskelet gelişimini tamamlamamış kişilerde yaygın bir sorundur. Bu çıkıkların konservatif tedavisinin sonuçları tatmin edici değildir. Bu çalışmada akut veya tekrarlayan patella çıkığı nedeniyle artroskopik minimal invaziv cerrahiyle tedavi edilen hastalar değerlendirildi.

Hastalar ve yöntemler: Patella çıkığı tanısı konan 12 hasta artroskopik medial retinakulum onarımı ile tedavi edildi. Yedi hastada (ort. yaş 14; dağılım 13-17) akut, beş hastada (ort. yaş 22; dağılım 17-32) tekrarlayan çıkık vardı. Bazı olgularda, artroskopik medial retinakulum dikişine lateral gevşetme de eklendi. Hastalar tedavi sonrasında fizik muayene, Lysholm-Gillquist diz skoru ve Bandi global diz değerlendirme skoru ile değerlendirildi. Ortalama takip süresi 9.8 ay (dağılım 2-28 ay) idi. İki hasta son değerlendirmeye alınmadı. Bunlardan biri takiplerde izlenememiş, diğerinde ise cerrahi tedavi uygulanmıştı.

Bulgular: Tedavi sonrasında Lysholm-Gillquist diz skoru ortalaması 97.6±1.5 (dağılım 85-100) bulundu. Dokuz hastada mükemmel, bir hastada iyi sonuç alındı. Bandi diz global değerlendirme skoru tüm hastalarda iyi idi. Takip dönemi içinde hiçbir hastada tekrarlayan luksasyon gelişmedi. Hastaların hiçbir şikayetleri kalmamıştı, ağrı ve şişlik yakınması yoktu ve hepsi tedaviden memnundu. Hareket açıklığı tüm dizlerde normal bulundu. Hastaların çoğu yaralanma öncesi spor etkinliklerine dönerken, bazı hastaların, hiçbir fiziksel yakınması olmamasına karşın, spor etkinliklerinden uzak durdukları görüldü.

Sonuç: Artroskopik medial retinakulum onarımı, akut ve tekrarlayan patella çıkıklarında ve kronik luksasyonlarda güvenli ve etkili bir tedavidir. Gereken olgularda tedaviye lateral gevşetme de eklenebilir.

Anahtar sözcükler: Artroskopi; çıkık/cerrahi; patella/yaralanma/cerrahi.

• *Received: July 17, 2007 Accepted: December 27, 2007*

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Patellar instability is a common problem in adolescent patients.[1] It can be divided into acute and recurrent dislocations and chronic subluxations. Long-term follow-up studies reported poor results by nonoperative treatment in acute dislocations, with recurrent dislocations in 20 to 44 % of the patients.[1-7] In contrast to conservative methods, redislocations occur less often after operative treatment.[8-12] Dainer et al.[10] reported redislocation in 14% of the operated cases.There are several operative methods for patellar dislocation.[13] In the skeletally immature group, tibial tubercle transfer is contraindicated until growth is complete because of the risk for premature fusion at the front of the tibial physis and genu recurvatum deformity.[14] Stabilizing procedures can only involve soft tissue in children.

The stabilizing components of the knee-joint was first described by Kaplan.[15] He differentiated between active and passive stabilizing components, giving an important function to the quadriceps femoris muscle. A detailed description of the medial structure of the patellofemoral joint was made by Warren et al.[16] The medial retinaculum consists of the following parts: superficial medial retinaculum (SMR), medial patellotibial ligament (MPTL), medial patellofemoral ligament (MPFL), medial collateral ligament (MCL), and medial patello-meniscal ligament (MPML). Their function is to compensate the lateral vector arising from the forces acting on the patellofemoral joint. Cash and Hughston[5] emphasized that there was a significant correlation between the redislocations and the time of the first dislocation. Stanitski[17] reported that a concomitant osteochondral fracture is rarely diagnosed on radiographic examinations; Although this fracture is present in 40% of dislocations, it cannot be visualized on 66% of radiograms. The aim of the operations on soft tissues is to fasten the medial stabilizing parts, to repair their injuries, and to decrease the effect of the valgus vector.[18-20] Arthroscopy has a major role in the diagnosis of associated injuries such as osteochondral fractures and in repairing the cartilage. This minimal invasive method provides a good chance for an early postoperative care.

PATIENTS AND METHODS

We performed 12 arthroscopic medial retinaculum sutures, seven for acute and five for recurrent patellar dislocations in two institutes. The mean age of the patients was 17 years (range 13 to 32 years). There were six males and six females. The method we applied was minimally invasive, resulting in light encumbrance. In some cases, we completed the operation with a lateral release.

Technique

Knee-joint arthroscopy was performed through the standard lateral portal. Associated injuries were treated adequately. Bending of the knee provided a good visualization for the relationship between the patella and trochlea and malposition of the patella. When necessary, the lateral release was performed with a dissector or as far as possible with ArthroCare. With the use of ArthroCare, postoperative bleeding does not occur and as the patella is denerved, the retropatellar pain is decreased. Injury to the proximal third of the retinaculum was well visible next to the medial edge of the patella in all cases of acute dislocations even if the joint capsule was injured. Under arthroscopic control, stitchs were performed through the injury widely with a No 1 PDS strand from the direction of the patella, then were drawn through the skin. Three to five sutures were placed. The parallel sutures stitching through the skin were well visible by arthroscopy (Fig. 1). The knotting was made subcutaneously through the penetrating skin wound. To decrease postoperative bleeding and pain, lidocaine with epinephrine was administered into the knee-joint and a Redon suction drain was

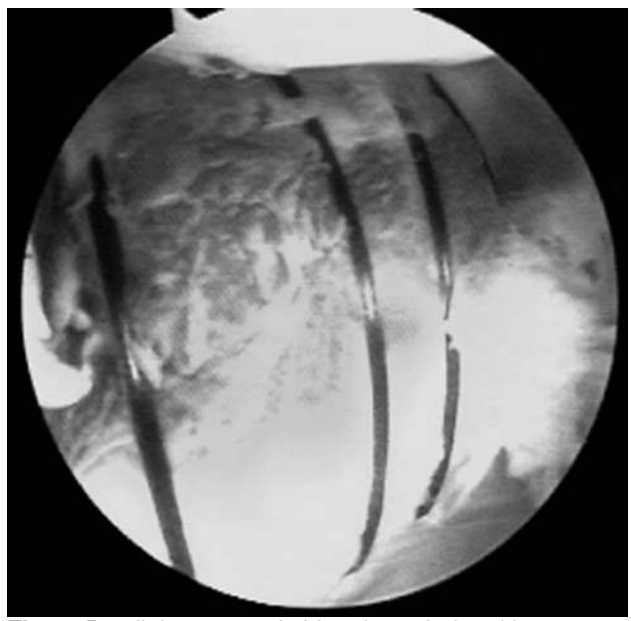

Fig. 1. Parallel sutures stitching through the skin.

used for 24 hours. Controlled, passive, monoplain flexion was started in a range of 0° to 30° on the third postoperative day. Fixation was maintained with a Genu Syncro 680 brace, except for a few cases where the leg was placed in plaster. Sutures were removed on the tenth postoperative day.

A flexion of 0° to 30° was allowed in the first four weeks with a laterally supported brace. During the next two weeks a flexion of 0° to 90° was allowed. With increasing load, the flexion of the brace was allowed to full range, after which it was removed.

The patients were evaluated by physical examination and with the Lysholm-Gillquist score[21] and the Bandi knee global assessment score.[22] The mean follow-up period was 9.8 months (range 2 to 28 months).

RESULTS

The dislocations were acute in seven patients (mean age 14 years; range 13 to 17 years) and recurrent in five patients (mean age 22 years; range 17 to 32 years). Two patients were excluded from the final evaluations: one was lost to follow-up and the other underwent surgery.

The mean Lysholm-Gillquist score after treatment was 97.6±1.5 (range 85 to 100). The results were excellent in nine patients, and good in one patient. The global objective assessment score of Bandi was good in all the patients.

None of the patients experienced recurrent luxations during the follow-up period. On physical examinations, no discrepancies were observed and the patients had no complaints. None of them reported pain or swelling. All the knees had normal range of motion.

One patient who was operated on for acute patellar dislocation described the giving way phenomenon.

DISCUSSION

Conservative treatment of patellar dislocations in adolescents is associated with frequent recurrences of luxations.[1-7] In contrast, recurrent luxations are less common in operatively treated cases.[8-12] The transfer of the tibial tuberosity is not possible in skeletally immature patients because of the evolving genu recurvatum.[14] The purpose of operative intervention is to treat and strengthen the medial stabilizing parts in order to avoid their expansion, so that they can heal by adequate stretching. Apart from this, we should consider to decrease the effect of the valgus vector as much as possible. The intervention offers the opportunity of simultaneous examination of incidental patellar displacement by flexion.[23] Knee joint arthroscopy is essential for the early diagnosis and treatment of associated injuries resulting from patellar dislocations.[17] Arthroscopic medial retinaculum suture, first described by Yamamoto[24] and later modified by several authors, offers a good chance to treat both acute and recurrent patellar dislocations.[24-28] The method is minimally invasive, with excellent cosmetic and functional outcomes.

In contrast to open operations with great exploration, arthroscopic treatment allows early postoperative mobilization and early functional rehabilitation with the help of a brace. This intervention has low peri- and postoperative morbidity, causing small encumbrance for the patient.

Our functional results were excellent in almost all the patients both in acute and in recurrent cases. The mean postoperative Lysholm-Gillquist score was 97.6 (range 85 to 100), which showed an excellent result in nine patients, and a good result in one patient. The global objective assessment score of Bandi was good in all the patients.

The patients were satisfied with their postoperative state; they reached their preinjury activity level, and most of them returned to competitive sports activities. We noted that some patients refrained from active sporting due to certain psychological factors even though they had no physical complaints, indicating the need for postoperative rehabilitation addressing these psychological problems.

In conclusion, arthroscopic medial retinacular suture combined with lateral release can be applied with good outcomes in acute and recurrent patellar dislocations and in chronic subluxations in adolescents.

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