B0515

Dynamic evaluation of the infrapatellar fat pad after anterior cruciate ligament reconstruction using ultrasonography

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Background: Anterior knee pain is one of the common complications that arises after anterior cruciate ligament reconstruction (ACLR). Anterior knee pain after ACLR may be caused by abnormalities in certain structures, such as the patellar tendon and the infrapatellar fat pad (IPFP). As the infrapatellar plica supports the IPFP, the shape and dynamics of the IPFP might change after ACLR, but few studies have investigated these changes objectively. In the present study, we aimed to compare the dynamics of the IPFP in a reconstructed knee with those in the contralateral knee by examining the knee joints of patients who underwent ACLR using hamstring autografts.
Material and method: Twenty-six patients provided informed consent to evaluate 52 knees by ultrasound. Inclusion criteria were as follows: anatomic single-bundle reconstruction with hamstring tendon grafts, and a knee flexion range of motion of 90° to 10°. Exclusion criteria were as follows: previous ligament reconstruction, and bilateral ACL injuries. Of the 26 patients, 20 (average age 26.6 ± 11.2 years; 7 male and 13 female; average post-operative period of 15.3 ± 6.6 weeks) were examined by an experienced physiotherapist at a knee flexion of 90° and 10° in the sitting position. Longitudinal ultrasonographic images of the anterior part of the knees were taken at the center of the patellar tendon, along the tendon fiber, in order to capture the IPFP and the patellar apex. The IPFP in the images were divided into superficial and deep parts. The superficial part of the IPFP was defined as a low echo intensity area of the upper layer of IPFP, and the thickness was measured 10 mm away from the patellar apex. The thickness was measured by using Image J. Differences between unaffected and affected knees were examined.
Results: At a knee flexion of 90°, we found a significant difference in the mean thickness of the superficial area of the IPFP between unaffected (11.4 ± 4.2 mm) and affected (9.2 ± 3.0 mm) knees ($p = 0.01$), as well as in the thickness change ratio of the superficial area of the IPFP before and after surgery between unaffected (278 ± 119%) and affected (178 ± 94%) knees ($p < 0.01$). We did not find a significant difference in the mean thickness of the superficial part of the IPFP between unaffected (4.8 ± 2.5 mm) and affected (5.9 ± 2.4 mm) knees ($p = 0.08$) at a flexion of 10°.
Discussion: The thickness at a knee flexion of 90°and thickness change ratio of the superficial part of the IPFP decreased after ACLR. The superficial part of the IPFP denotes the area of the IPFP above the vertical cleft and separates the IPFP into the central body and the superior tag areas. When the IPFP is resected during an operation, adhesions across the IPFP develop, decreasing mobility of the IPFP. Dysfunction of the IPFP may subsequently cause complications. Further studies are needed in order to determine the relationship between the IPFP and knee function.
Conclusion: The thickness at a knee flexion of 90°and thickness change ratio of the IPFP decreased after ACLR.
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B0525

Minimum 1 year results of pull-out suture repair with modified Mason-Allen stitch in medial meniscus root tear

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Background: Posterior medial meniscus root tears cause a loss of hoop tension and eventually lead to osteoarthritis in the medial compartment of the knee joint. An acute root tear usually locates in the vascular zone, and because of its location, it has a high chance to heal after appropriate repair. There are many articles which were introduced a variety of repair. Therefore, the purpose of this article was to evaluate the clinical and radiologic results of arthroscopic pullout suture repair with a retrograde reaming device and a modified Mason-Allen stitch in the medial meniscus root tear.
Material: 24 consecutive patients (24 knees) with a minimum of 1 years' follow-up were chosen to be analyzed after the treatment of arthroscopic pullout suture repair.
Method: Final clinical outcomes were determined using a Lysholm scores, International Knee Documentation Committee (IKDC) scores, and Hospital for Special Surgery (HSS). In addition, Radiological evaluation was performed using magnetic resonance imaging (MRI), 3D computed tomography (CT) and the Kellgren-Lawrence grading system.
Results: The preoperative mean Lysholm score was 57.1 ± 6.3, and the mean IKDC score was 40.3 ± 5.2. At last follow-up, the mean Lysholm score was 87.1 ± 6.9, and the mean IKDC score was 70.4 ± 2.5. Both the Lysholm score and IKDC score were significantly improved ($p<0.001$). And the mean HSS score increased from 68.3 ± 3.1 preoperatively to 89.2 ± 5.6 at final follow-up ($p<0.001$). According to the radiographic grades described by Kellgren and Lawrence, a radiographic evaluation at final follow-up showed an increase in radiographic grade by 1 grade in only 1 knee. Follow-up MRI was performed in 10 patients. Five patients showed complete healing and four patients showed partial healing, and 1 showed no healing with cleft of high signal or a ghost sign of preoperatively meniscus. And postoperatively mean extrusion of the midbody of the medial meniscus decrease 0.2 ± 0.4mm. Tibial tunnel location was lateral-to-medial distance (58.2 ± 0.2 %) and anterior-to-posterior distance (81.4 ± 3.2 %) in 3D CT
Discussion: There is a debate about treatment of medial meniscus posterior root tear. So, many treatment options are exist. Some surgeons claim that conservative management or partial meniscectomy is the treatment of choice. But we thought anatomical repair wound be the best treatment option.
Conclusions: Our technique demonstrated that pullout repair of medial meniscus root tears using a retrograde reaming device and a modified Mason-Allen stitch is superior choice among other variety techniques which provides a bone sparing of the meniscal tibial attachment and accurately attachment of the anatomical position.
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B0526

Endoscopic excision of os trigonum and Flexor Hallucis longus decompression in dancers and athletes

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Background: Posterior ankle pain is a common complaint in dancers especially ballerinas and athletes such as runners, basketball players, or in sports that involve repetitive, forceful, plantar flexion. The most common diagnosis in this specific population is Os Trigonum Syndrome. Due to the close proximity of Flexor Hallucis Longus with an Os Trigonum, majority of these patients present with Flexor Hallucis Longus Tenosynovitis.
Due to the intense level of their training activities and routines, conservative treatment of their condition requires 3-6 months training cessation or activity modification, which can be frustrating for athletes preparing for a competition.
Based on recent studies, endoscopic excision of Os Trigonum and decompression of Flexor Hallucis Longus result in faster relief of symptoms and return to activities as reflected in Visual Analog Scale (VAS) and American Orthopaedic Foot and Ankle Society (AOFAS) ankle-hindfoot score. In this paper, we want to share our experience in treating dancers and athletes with Os Trigonum syndrome and Flexor Hallucis Longus Tenosynovitis, which showed an excellent result in a short term period.
Material and Method: This study included 8 ankles of 8 consecutive patients who underwent arthroscopic excision of Os Trigonum and release of Flexor Hallucis Longus by a single surgeon between 2014 and 2015. The primary diagnosis was Posterior Ankle Impingement due to an Os Trigonum and Flexor Hallucis Longus Tenosynovitis. The indication for surgery was persistent posterior ankle pain in daily activities and during training despite conservative measures. Conservative treatment was initially done for a minimum of 6 months which included NSAID medication, stretching and physical exercises. X-ray and MRI examination were taken and showed evidence of Os Trigonum and inflammation of the Flexor Hallucis Longus.
From eight patients that were included in this study, three patients are professional ballet dancers, one patient is an amateur ballroom dancer, two patients are runners and two patients are basketball player. Four patients are male and four patients are female with mean age of 33.6 (19-59). Mean duration of postoperative follow-up was 4.75 months (range, 3-7 months). Clinical evaluations were performed using the American Orthopaedic Foot and Ankle Society (AOFAS) ankle-hindfoot score and the Visual Analog Scale (VAS) for pain taken pre-operatively and upon follow up. The time to return to sports activities was assessed for each patient.
Operative Technique: Procedure was done with patient in prone position and using standard posterior portals. Endoscopic findings showed presence of Os Trigonum with inflamed synovium and Flexor Hallucis Longus tendon. Excision of Os Trigonum was done and decompression of the Flexor Hallucis Longus was carried out.
Patient was then placed in a splint for 1 week for wound care and then allowed weight bearing as tolerated and range of movement exercises once skin wound healed.
Results: Average AOFAS ankle hindfoot score increased from 72 (range, 60-86) preoperatively to 91, (range, 85-100) postoperatively, and pain VAS decreased from 7.3 (range, 6-9) to 1.9 (range, 0-5). The mean time the patient was able to return to previous sports activities is 27.5 days (range, 14-58).
Postoperatively, seven of eight patients went back to pre-injury level of activity. One patient had a complication of tarsal tunnel syndrome upon follow up, which required decompression. No other complication was found.
Discussion: The previous study done by Weis, et al. on arthroscopic excision of a symptomatic Os Trigonum of 24 patients with a mean follow-up of 26 months, revealed similar findings with our present study. Moreover the study done by Calder, et al. on 28 elite professional soccer players with an average of 23 months follow-up, had mean length of time to return to training postoperatively of 34 days showed comparable results as to our study wherein patients were able to return to training by 27.5 days.
In our literature review, we noted that the endoscopic method was more favorable compared to the open method in the excision of Os Trigonum. A comparative study done by Guo, et al. on 41 cases of open versus endoscopic excision of a symptomatic Os Trigonum, revealed that the endoscopic group had a significantly shorter mean time to return to previous sports level. However, there is no significant difference in VAS and AOFAS score between two groups.
Limitation of our study is the small number of population and short period of follow up.
Conclusion: Endoscopic excision of a symptomatic Os Trigonum and decompression of the Flexor Hallucis Longus were effective and safe in treating Os Trigonum syndrome and Flexor Hallucis Longus Tenosynovitis. Faster relief of symptoms and earlier return to sports activities by endoscopic surgery is beneficial for professional dancer and athletes.
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