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Six Year Follow-Up after Arthroscopic Menisectomy

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ABSTRACT

Today, Positive developments were made with the arthroscopy with regard to the knee pathology and suture techniques applied arthroscopically are regarded as the gold standard. Our 194 patients have been included in our study, who applied due to knee pain between the years of 2005 and 2008. A partial meniscectomy was done to 164 of our patients and a total menisectomy was done to 30 of our patients. Given the findings from this study including 194 patients and 6-year follow-up, it has been observed that in cases with total meniscectomy and partial lateral meniscectomy, the chondropathy occurs in the first 5 years, 33.4% of the partial medial meniscectomy cases the symptoms of chondropathy occur in the 6th year. In our study it was determined that cartilage problems occur in later periods, although there is almost a total recovery in the patients in the early periods after the arthroscopic meniscectomy according to the follow up of six years after the arthroscopic meniscectomy we have applied to our 194 patients. If a partial meniscectomy will be conducted, it is important to remove as little as possible of the tissue and to avoid a total meniscectomy.

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INTRODUCTION

Meniscus is a semi-lunar shaped fibrocartilage tissue [1-3]. Its main tasks are to enable load transfer by absorbing shock, [1, 4] to increase the area where the joint contact the surface [2] to contribute to joint stability [3] and proprioception [5, 6]. The loads transmitted by meniscus can rise up to 90% during flexion [1, 7]. Medial meniscus also prevents tibial translation in a knee without anterior cruciate ligament (acl) and facilitates knee stability [1, 8]. 60-70 people out of 100.000 are recorded to have meniscus tear annually [5, 9]. Meniscus tears are classified as: longitudinal, horizontal, radial, flap and bucket handle [5, 10, 11].

Symptomatic meniscus tear can mostly be diagnosed during anamnesis of the patient. The most common complaints of the patients are popping or clicking within the knee following knee twisting or stress caused by over-flexion and pain during flexion. At later ages, pain and clicking within the knee that start insidiously and are followed by knee swelling resembles degenerative meniscus tear. Joint line tenderness, McMurray test and Appley grinding tests are the most common tests used. Tests are more likely to reveal accurate results when evaluated with together with anamnesis [5, 11-14].

Magnetic resonance imaging enables to establish a final diagnosis in 95% of the cases [15]. However, as only the 5-13% of the meniscus tear cases can be diagnosed among non-symptomatic individuals through MRI [16, 17]. If the examination results are positive, then the performance of arthroscopic surgery is required [18].

Football is followed by the athletism, american football and skiing among the causes of meniscus tears [19, 20]. In the past, the torn part of meniscus used to be removed frequently, but today, especially in the young patients, repair and recovery, if possible, has become the gold standard [1, 21, 22]. The recovery of the meniscus is closely related to the vascular structure of the meniscus [23, 24]. Acute or chronic tears are important for healing after the repair [12, 24].

If the tear is decided to be excised partially, all the mobile fragments should be removed [18]. Partial meniscectomy causes irreversible damage in the joint cartilage in the long term [25]. The recovery rates are quite high among the patients [5, 26-28]. The surgeon should always use the methods with which they are familiar for meniscus repair [15, 29]. Better functioning meniscus can be obtained by stabilising anterior and posterior horns to the bone [30, 31]. The bone bridges are used for meniscus transplantation [32]. Removal of the meniscus in a single piece is useful in reducing the amount of debris to occur in the joint [33].

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Methodology:

Chondropathies developed after arthroscopic meniscectomy in our patient group (194 cases), we aim to share our 6-year long follow-up.

In this study, 194 patients who referred to a hospital because of knee pain between 2005 and 2008 were involved. Based on physical examination, direct radiography and magnetic resonance imaging (MRI), it is determined that these patients only have meniscus tear without accompanying cartilage problems.

All the patients went through an in-deep physical examination and their medical histories were taken. Their radiographic images and MRI results were checked. Bringing all the findings together, it was confirmed that the patients' complaints were actually caused by meniscus tear we detected.

The routine preparations were completed before all the operations on the patients. 38 of the patients preferred general anaesthesia while 156 were administered spinal anaesthesia. The patients were positioned in the arthroscopy position. The blood in the knee was evacuated by using the Esbach bandage and the blood flow was stopped by inflating the pneumatic tourniquet with a pressure of 250 mm Hg. The leg of the patients were sterilised and covered. The knee joints were entered by using anteromedial and anterolateral portals. Arthroscopic joint examination was conducted and all results were found parallel with the pre-surgery diagnosis; after preliminary assessment regarding the torn meniscus part, either total or partial meniscectomy was performed. The excised edges of the meniscus were straightened. The meniscus was examined with probes after excision. The joint was washed thoroughly. The portals were closed and the operation was ended. After the elastic bandage was put on, the tourniquet was opened. After the operation, all the patients were asked to walk, discharged from the hospital and followed as outpatients.

Results:

164 of the patients underwent partial meniscectomy while 30 underwent total meniscectomy. All of the total meniscectomy operations were applied on the medial meniscus. 66 of the patients were applied lateral partial meniscectomy while 98 were applied medial partial meniscectomy. Except for 23 patients who suffered from acute knee locking, in all the patients, the conservative treatment methods were tried but not proved effective. 23 patients suffering from acute painful knee locking were applied arthroscopic partial meniscectomy. The complaints of the patients stopped and they went back to their routines.

23 of the patients referred to the hospital because of acute painful knee locking while the other patients had had knee related complaints for at least one to twelve months. The patients are aged between 32 and 49 and the average age is 43,4. All the patients have meniscus tear only in the one knee. 132 of the patients are female and 62 are male. None of the patients suffer from a metabolic disease and none of the females is in the menopause. 32 of the patients engage in sports activities (mainly football, basketball, tennis and swimming).

All the patients were followed by their clinical examination and MRI findings. In the follow-up, in the total meniscectomy and lateral partial meniscectomy cases, the chondrapathic findings were observed on the MRI findings in the first 5th year. In 33.4% of all 98 patients who underwent medial partial meniscectomy, chondropathic findings were recorded in the 6th year.

Discussion:

Meniscus tear is a very common problem. According to the prevalence studies, 60-70 people out of 100.000 are recorded to suffer from meniscus tear annually. Menisci take over the task of reducing shock in case of overloading on the knee joint during weight bearing or sports performance [4]. Its main tasks are; to enable load transfer by absorbing shock [4, 1], to increase the area where the joint contact the surface [2], to contribute to joint stability[4] and proprioception [5, 34, 9, 35, 6]. Today, as our life span gets longer and the societies become more involved in the sports activities, the long-term results of the meniscus treatments become more important. Partial meniscectomy causes irreversible damage in the joint cartilage in the long term [25]. However, clinically, the recovery rates are quite high among the patients [5, 27, 36, 28].

If the patient suffer from symptoms that hamper their daily or sports activities; if the examination results are positive; if there is no positive respond to the conservative treatment; if no other particular reason for the pain is found, then the performance of arthroscopic surgery is required [18]. However, bucket-handle meniscus tears that cause knee locking should be immediately taken to the arthroscopic surgery [5]. Given the findings from this study including 194 patients and 6-year follow-up, it has been observed that in cases with total meniscectomy and partial lateral meniscectomy, the chondropathy occurs in the first 5 years, 33.4% of the partial medial meniscectomy cases the symptoms of chondropathy occur in the 6^{th} year. Fairbank described the degenerative changes occurring after the total meniscus removal operation in 1948. These are: a) intraarticular narrowing, b) flattening in the femoral condyle, c) eminentia in the femoral condyle [1].

However, this study fails to present the relationship between the size of the excised meniscus fragment and the development of chondropathy. We are in the opinion that the fact that this study involves males and non-menopausal females but not elderly females with low bone density is a disadvantage.

In this study, it is important that all the diagnoses based on the examinations and the tests before the surgery correspond with the arthroscopic diagnosis. Tests are more likely to reveal accurate results when evaluated with together with anamnesis [5, 11, 13, 37, 14].

In the aftermath of arthroscopy meniscus repair, the advancements in the repair techniques and the long-term positive results of the meniscus repairs in the protection of joint cartilage led to a reduction in partial meniscectomy indications [2]. As this study involved partial and total meniscectomy cases, its follow-up period is limited to 6 years, it was carried out by a single surgeon and with a limited number of patients, more detailed studies are essential.

Conclusion:

Meniscus repair has a high chance of success when it is performed based on appropriate indications. The long-term follow-up showed that it is superior to the partial meniscectomy and protects against osteoarthritis. Today, suture techniques applied arthroscopically are regarded as the gold standard.

In this study, based on the 6-year follow-up of 194 patients who underwent arthroscopic partial and total meniscectomy, although almost a complete recovery have been recorded among the patients in the early period after the arthroscopic meniscectomy, in the later period, cartilage problems have been recorded. We showed that if the partial meniscectomy is to be performed, the least tissue possible should be removed. We realised the importance of avoiding the total meniscectomy.

Today, due to prolonging longing life span and the importance of the sports, we need preventive treatments against meniscus rather than meniscectomy and a good number of studies to shed light on this subject.

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