

Results of arthroscopic debridement in patients with osteoarthritis of the knee

Resultados del desbridamiento artroscópico en pacientes con osteoartritis de la rodilla

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Abstract

Background: There are several treatments for osteoarthritis and Arthroscopic debridement is one of the them. We decided to consider Results of Arthroscopic Debridement in Patients with Osteoarthritis of the Knee in SHAHID SADOUGHI Hospital Since 2007 to 2015 review.

Methods: This study was analytic cross-sectional and retrospective. 36 patients with a previous diagnosis of osteoarthritis between 2007 and 2015 underwent arthroscopic debridement in SHAHID SADOUGHI Hospital were identified and their data completed by their files, phone call. For all patients WOMAC, SF-36 and Lysholm was calculated. Patient data analyzed by version 18 SPSS.

Results: Of the 36 patients entered into the study, 17 patients were females and 19 were males. The mean age was $54/3\pm 0.67$ years the Mean time of remission after surgery was 23.25 ± 14.23 of months. Arthroscopic debridement was performed for all patients and 34 patients underwent debridement of articular cartilage, and 3 patients underwent loose body removal. The mean preoperative and postoperative WOMAC was changed from 57 to 19, and SF-36 was changed from 25 to 73 either Lysholm was changed from 32 to 80.

Conclusion: It seems arthroscopy in cases that are properly selected, will improving symptoms and patient satisfaction.

Keywords: Debridement, arthroscopy, knee osteoarthritis.

Resumen

Antecedentes: Hay varios tratamientos para la osteoartritis y el desbridamiento artroscópico es uno de ellos. Decidimos considerar los resultados del desbridamiento artroscópico en pacientes con osteoartritis de la rodilla en el hospital SHAHID SADOUGHI desde 2007 hasta 2015.

Métodos: Este estudio fue analítico transversal y retrospectivo. Se identificaron 36 pacientes con diagnóstico previo de artrosis entre 2007 y 2015 sometidos a desbridamiento artroscópico en el Hospital SHAHID SADOUGHI y se completaron sus datos mediante sus expedientes y llamada telefónica. Para todos los pacientes se calculó el WOMAC, el SF-36 y el Lysholm. Los datos de los pacientes se analizaron con la versión 18 del SPSS.

Resultados: De los 36 pacientes que entraron en el estudio, 17 pacientes eran mujeres y 19 eran hombres. La edad media fue de $54/3\pm 0,67$ años y el tiempo medio de remisión tras la cirugía fue de $23,25\pm 14,23$ meses. Se realizó un desbridamiento artroscópico en todos los pacientes y en 34 de ellos se llevó a cabo un desbridamiento del cartílago articular, y en 3 pacientes se extrajo el cuerpo suelto. La media del WOMAC preoperatorio y postoperatorio pasó de 57 a 19, y el SF-36 pasó de 25 a 73, o el Lysholm pasó de 32 a 80.

Conclusión: Parece que la artroscopia, en los casos adecuadamente seleccionados, mejorará los síntomas y la satisfacción del paciente.

Palabras clave: Desbridamiento, artroscopia, artrosis de rodilla.

Introduction

Osteoarthritis is the result of biologic and biomechanical changes which breaks down the natural process of construction on the one hand and the destruction of the joint on the other hand and causing Changes in articular cartilage chondrocytes, extraocular material and subchondral bone¹. Osteoarthritis is seen in more than half of the people over 60 years of age. Osteoarthritis is expected to be the fourth cause of disability in the next decade. Knee osteoarthritis around the world involves 40% of people over the age of 70²⁻⁴. Symptoms include knee pain, morning stiffness, bone swelling, crepitation, and synovial effusion, and in general, the quality of life of a person is reduced. The usual diagnostic method is knee radiography that narrowing of the articular space, subchondral sclerosis and osteophytes formation are obvious in graphs⁵⁻⁷. The most common symptoms of osteoarthritis are progressive pain Which was mild initially, but could gradually become debilitating⁸. The pain of patients with osteoarthritis almost always gets better with a little rest and intensifying with movements and activities, especially movements that are associated with weighing⁹. Osteoarthritis can be divided into two primary and secondary types. The primary type is usually involving some joints, with unknown origin and different degrees in different joints and rarely shows up before reaching 35 years of age. The secondary type is usually single-joint and roughness of joint surface is the joint answers to this situation⁹. There are many ways to treat knee osteoarthritis which surgical treatments include osteotomy of the bone, replacement of a knee condyle and complete knee replacement¹⁰. Other non-surgical treatments include physiotherapy, training, weight loss, injectable corticosteroids, anti-inflammatory drugs, chondroitin sulfate and glucosamine and injectable hyaluronic acid¹¹. When the pain caused by osteoarthritis is not controlled by drug therapy, surgical procedures such as arthroscopic debridement are recommended¹². Debrided arthroscopy of degenerative knee is one of the methods of treatment for osteoarthritis which is used in certain cases. Generally, arthroscopy is a diagnostic method that can assess the exact stage of osteoarthritis. This method can be accompanied by the removal of free objects in the joint, limited synovectomy and also the knee joint lavage. Evidence suggests that arthroscopic debridement has improved the performance and pain of young patients with a history of knee injury. Arthroscopic debridement as a low-cost method with few complications and a quick return to everyday activities and Preventing complications and death followed by processes such as tibia osteotomy and arthroplasty¹³. The patient's choice for arthroscopic debridement should be based on the level of activity, the amount of joint mobility required, the age and overall health status of the patients. Some other factors, such as excessive surgical costs, rest periods, and distances from work, are also considered. The therapeutic goals in Osteoarthritis patients include reducing pain, improving physical disability, preventing

progression of cartilage damage and improving quality of life¹⁴. On the other hand, studies have shown the desirability of debridement results in improving the symptoms of the patient, especially patients with varus¹⁵. A study by Moseley and colleagues found no acceptable findings on the efficacy of arthroscopic debridement on knee function and its results did not differ from placebo and lavage¹⁶. Another retrospective study was conducted in 2003 has been shown that in patients with low degrees of osteoarthritis (Grade 1 and 2), after the operation, the symptoms of the disease are greater and their symptoms greatly decreased. Considering that similar studies have shown different results in the therapeutic effects of debridement of arthroscopy, Therefore, we decided to study the results of arthroscopic debridement in patients with knee osteoarthritis in SHAHID SADOUGHI Hospital in Yazd during a 7-years period (2007-2015).

Materials and methods

This research is a cross-sectional and retrospective study. Our study population included 36 patients with knee osteoarthritis who had undergone knee arthroscopy debridement at SHAHID SADOUGHI Hospital in Yazd from the beginning of 2007 to March 2015. Sampling method in this study was all patients who were under arthroscopic debridement due to knee osteoarthritis and did not have exit criteria. Patients with inflammatory diseases such as Rheumatoid Arthritis or Septic Arthritis, Patients with severe disturbances such as Valgus with over 8 degrees and Varus more than 3 degrees were excluded from the study. Our statistical population (36 patients) was identified and their information was collected from files or with calling them. The data collection method was with questionnaire which was designed to assess the pain and quality of life of patients with osteoarthritis. The parameters studied included age, sex, weight, height, body mass index (BMI), duration of symptoms of osteoarthritis, knee locking symptoms and articular fluid and WOMAC' SF-36' Lysholm scores. WOMAC is abbreviation of Western Ontario and McMaster universities which is graded in three areas: Pain intensity (0-8), joint stiffness (0-20), and patient's function in different situations (0-68). Finally, the total score in three areas is graded from 0 to 100 that the higher the number, the more advanced the osteoarthritis and the reduction of knee function. SF-36 is abbreviation of the short form 36 Health survey which includes 36 questions in 8 domains: Physical function, social function, physical role, emotional role, mental health, physical pain and general health. The questionnaire is scored from 0 to 100, the larger numbers represent better quality of life (improved knee performance). The reliability and stability of this questionnaire are calculated in the other study¹⁷. Other score is Lysholm that is dedicated to the knee and scored in 8 areas: Pain, support, impotence, swelling, lameness, locking, jumping and squatting. This scorecard is scored from 0 to 100, and larger numbers represent

improvements. Finally, the data is entered into the SPSS version 17 and Chi-square, ANOVA and Levene were used to analyze the data. The results were expressed as frequency distribution tables, percentages, mean and standard deviation. In all cases, P-value <0.05 was considered as a significant level.

Results

Thirty six patients had inclusion criteria. Patient information was fully recorded and then scored for all patients based on the WOMAC, SF-36, and Lysholm criteria. Of the 36 patients examined, 19 were female (54.1%) and 17 were male (45.9%). The mean age of patients who undergone arthroscopic debridement was 54.3 ± 0.67 years, the mean weight of patients was 74.18 ± 1.88 kg, The mean height of patients was 162.6 ± 1.89 cm and the average BMI was 27.5 ± 0.33 . Also, the length of recovery after surgery was 23.25 ± 13.23 months, the minimum recovery time after surgery was 4 months and most were 54 months. The results of the study showed that the total number of patients under arthroscopic debridement, joint dryness in 28 patients (75.7%), inflammation and swelling of the knee in 33 patients (91.7%), crepitation in 35 patients (97.2%) and Knee locking occurred was in 8 patients (22.2%). The results of the study indicate the duration of preoperative symptoms that 19 patients (52.8%) for 6 months, 14 persons (38.9%) for 12 months and 3 patients (8.3%) had symptoms for 18 months. Symptoms of osteoarthritis included pain, joint stiffness, swelling, locking or instability in the knee. According to **figure 1**, 34 patients (94.4%)

underwent arthroscopic arthroplasty with cartilage debridement, 13 (36.1%) patients underwent arthroscopic debridement of Minsk, 3 patients (8.3%) had removal of loose Body and 6 (16.7%) patients with synovectomy.

The results of the study revealed the distribution of pre-operative pain scored of 1 to 10 that 8 people (22.2%) have chosen 8 point. The frequency distribution of other pain scores is presented in **table I**.

The results of the study show the distribution of abnormal findings during arthroscopy that the rupture of meniscus was clearly seen in 14 patients (38.9%), loose body in 3 patients (8.3%) and articular cartilage damage in 35 (97.2%) patients. Findings in the MRI revealed that in 14 patients (38.9%) from 36 cases, Meniscus tears were reported, 8 patients (22.2%) had loose body and 35 patients (97.2%) had cartilage damage that had MRI report for cartilaginous damage. Based on **figure 2**, which represents WOMAC, SF-36, Lysholm before and after surgery, The WOMAC scoring system, before the operation, averaged 57.8 and after the operation was 19.7, scoring SF-36 before the operation is 25.3 and after it, is 73.4 and Lysholm scored, before surgery, 32.2 and then 80.1 were achieved.

The results of the study on the relationship between variables using ANOVA test showed that there is a significant relationship between articular cartilage damage in arthroscopy and MRI with BMI (P-value=0.006). In other words, weight gain can damage the articular cartilage. Also, there was a significant relationship between age and cartilage damage in MRI (P-value<0.05). Younger patients show better results. The results of the study using Levene test show that there is a significant statistical relationship between loose body formation in arthroscopy and age (**Table II**).

Figure 1: Distribution and frequency of arthroscopic operations in patients.

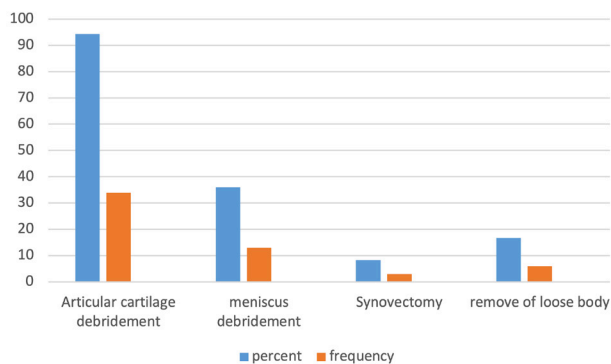


Table I: Distribution and prevalence of pain before and after surgery (10 points).

	Pain score	Prevalence	Percent
Before operation	9	19	52.8
	10	9	25
	8	8	22.2
After operation	2	14	38.9
	3	11	30.6
	4	6	16.7
	5	2	5.6
	6	2	5.6
	1	1	2.8

Figure 2: WOMAC, SF-36, Lysholm before and after surgery in patients.

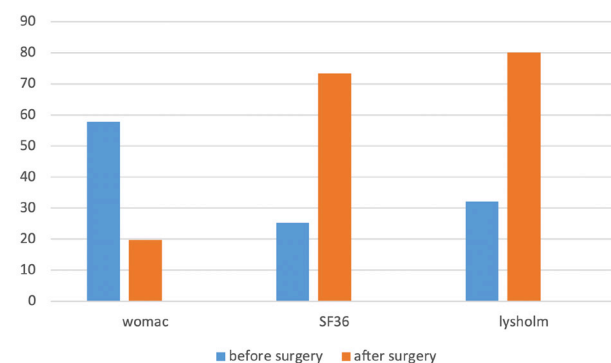


Table II: Relationship between Loose Body in Age Arthroscopy.

Loose age	Body	Mean	Standard deviation	P-value
yes		54.90	5.01	0.002
no		53.57	1.45	

As the age increases, the incidence of Loose Body increases in arthroscopy. The results of the study based on the ANOVA test showed no statistically significant relationship between sex and duration of Osteoarthritis symptoms with tearing of Meniscus and Loose body in MRI (P-value>0.05), But according to the Levene Test, there was a significant statistical relationship between sex with the numbers obtained in SF-36 (**Table III**). So that in higher man's numbers, shows better improvement after arthroscopy.

Table III: The relationship between sex with SF-36.

Sex	SF-36	Mean	Standard deviation	P-value
male		52.13	2.19	<0.05
female		44.42	13.43	

Discussion

Medical science faces many challenges and problems¹⁸⁻²³. For the first time, Mr. Bircher described the beneficial effect of arthroscopy on knee osteoarthritis in 1921 and later Masaaki and colleagues described the effects of lavage⁵. In all patients, the knee scores of osteoarthritis were calculated and Before and after surgery, they were recorded separately to study its difference between patients. Based on the results of these scores, all patients had a significant improvement in knee function, as a result, we had an average of 48 points on the WOMAC score's reduction. Nearly 85% of the patients were satisfied with the outcome of the surgery. In Harwine's study, 63% of patients were satisfied with surgical results 16 and in the Bonamo study, 83% of the patients were satisfied with surgical results¹⁶. Another score which examined by SF-36, before surgery was at least 14, and reached 36 after surgery. After surgery, the maximum was 32, which reached 82. This score was increased by an average of 50, indicating a significant improvement in patients. In McLaren's study, 65% of patients had a significant increase in knee score, which was close to the results of this study²⁴. The other score that was studied was Lysholm, the lowest amount before surgery was 20, which reached 75 after surgery and the highest was 47, which reached 94. These numbers

indicate improvement in the symptoms of the disease in patients and their satisfaction with the results of arthroscopic debridement. In Baumgartner et al., 60% of patients had excellent outcomes after surgery¹³.

Moseley did not find an acceptable result in the study of the efficacy of arthroscopic debridement on knee function and results did not differ from placebo and lavage²⁵. While this study showed a significant improvement in patients and a rise in SF-36 and Lysholm and a reduction in WOMAC. But Richard et al. said that arthroscopic debridement does not play a significant role in improving knee pain²⁶. The results showed that there is a significant relationship between articular cartilage damage in arthroscopy with BMI, this suggests that weight gain causes damage to the articular cartilage which is consistent with the Harwine and Kelly study results²⁷. There was a significant relationship between age and articular cartilage damage in MRI, Harwine study also mentions the age-related relationship with cartilage damage, and age mentioned as an important factor in evaluating arthroscopic results, so that patients with lower age showed better results²⁷. There is also a significant relationship between the creation of a loose body in arthroscopy with the patient age, As the age increased, the incidence of Loose Body increased in arthroscopy. Harwine et al. Also showed an increase in loose body in arthroscopy with increasing age²⁷.

Conclusion

Patients' pain was greatly reduced, so that the numbers WOMAC, SF-36, Lysholm all represent the improvement of the patient's condition and generally improving the quality of one's life. SF-36 numbers were also higher in males, indicating that the knee condition is better in male. So arthroscopy has caused a significant increase in scores measured as well as reducing the pain of the patients. Arthroscopy seems to improve patients' symptoms and satisfaction in cases that are properly selected.

Interests conflict

The researchers declare that they have no conflict of interest.

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