

# A Prospective Study Evaluating the Role of Arthroscopy in the Treatment of Osteoarthritis of Knee

Joginder Singh<sup>1</sup>, Kirti Ahuja<sup>2</sup>, Sanjay Middha<sup>3</sup>

<sup>1</sup>Assistant Professor, Department of Orthopedics, N C Medical College & Hospital, Israna Panipat, Haryana, India.

<sup>2</sup>Associate professor, BPS Govt. Medical College, Khanpur kalan, Sonipat, Haryana, India.

<sup>3</sup>Professor, Department of orthopaedics, N. C. medical college & Hospital, Israna, Panipat Haryana, India.

Received: November 2020

Accepted: December 2020

## ABSTRACT

**Background:** Osteoarthritis (OA) is the most common form of arthritis and is the leading cause of chronic disability among older people. Total knee arthroplasty is the only definitive therapy available, but is reserved for patients with severe disease who fail conservative management. In elderly osteoarthritis is the most common cause of locomotor disability. While choosing treatment modality patient's age, activity level, severity of disease, number of knee compartment involved and patient's expectations are taken into consideration. Total knee replacement is associated with increased risk of morbidity and limited life time of joint replacement thus total knee replacement is not the solution for all patients. Aim of the study: To evaluate the role of arthroscopy in the treatment of osteoarthritis of knee. **Methods:** The present study was conducted in the Department of Orthopedics of the medical institution. The study was performed on 50 patients with osteoarthritis of knees. The age of the patients ranged from 40 to 70 years with mean age of 56.39 years. Patients follow up was done at 1 week, 2 weeks, 3weeks, 4weeks, 6weeks, 8weeks, 10 weeks, 12weeks, 4 month, 6 month, 9 month, 12 month, 15 month, 18 months. **Results:** In the present study, a total of 50 patients with knee osteoarthritis underwent arthroscopy. The outcomes of the arthroscopy were studied. In our study group, 22 were males and 28 were females. We observed that lavage and joint insufflations were performed in all the patients. Partial meniscectomy was the least performed procedure. It was observed that the most common outcome at 4 weeks was fair. It was observed that the outcome increased significantly from fair to excellent in majority of patients in 6 months. **Conclusion:** Within the limitations of the present study, it can be concluded that the arthroscopic treatment regimen significantly improved the symptoms of osteoarthritic knee.

**Keywords:** Knee Osteoarthritis, Arthroscopy, Meniscectomy, Knee Surgery

## INTRODUCTION

Osteoarthritis (OA) is the most common form of arthritis and the leading cause of chronic disability among older people. More than 50% of people over the age of 65 years have radiological evidence of OA and approximately 10% of men and 18% of women having symptomatic OA. Total knee arthroplasty is the only definitive therapy available, but is reserved for patients with severe disease who fail conservative management. In elderly osteoarthritis is the most common cause of locomotor disability.<sup>[1,2]</sup> Numerous treatment modalities are available for knee osteoarthritis. Treatment modalities include high tibial osteotomy, distal femoral osteotomy, arthrodesis, arthroscopic debridement, osteochondral or chondrocyte transplantation and arthroplasty. While choosing treatment modality patient's age, activity level,

severity of disease, number of knee compartments involved and patient's expectations are taken into consideration.<sup>[2]</sup> Recently, the usefulness of arthroscopy for the degenerative knee has been challenged. In patients with advanced osteoarthritis of knee, total knee replacement provides predictable outcome but patient's who wish to maintain higher level of activity tend to avoid total knee replacement.<sup>[3,4]</sup> Total knee replacement is associated with increased risk of morbidity and limited life time of joint replacement thus total knee replacement is not the solution for all patients. Arthroscopic techniques result in less postoperative pain and shorter rehabilitation than open procedures.<sup>[5,6]</sup> Hence, the present study was conducted to evaluate the role of arthroscopy in the treatment of osteoarthritis of knee.

## MATERIALS AND METHODS

The present study was conducted in the Department of Orthopedics of the medical institution. The ethical clearance for the study was approved from the ethical committee of the hospital. For the study, patients were selected from the outpatient department of the hospital.

### Name & Address of Corresponding Author

Dr. Sanjay Middha  
Professor,  
Department of orthopaedics,  
N. C. medical college & Hospital,  
Israna, Panipat Haryana, India  
Email: sanjaymiddha25@gmail.com

**Inclusion Criteria**

- Patients with primary osteoarthritis.
- Patients who failed to improve with conservative treatment.

**Exclusion Criteria**

- Patients with secondary osteoarthritis.
- Uncertain diagnosis.

The study was performed on 50 patients with osteoarthritis of knees. The age of the patients ranged from 40 to 70 years with mean age of 56.39 years. An informed written consent was obtained from all the participating patients after explaining them the protocol of the study.

**Arthroscopic Examination of the Knee**

Patients were positioned in supine position with hip flexed, abducted and externally rotated and knee flexed to 90 degrees. Tourniquet was applied routinely during the operative procedure. Antero-lateral and antero-medial portals were used. Routine diagnostic arthroscopy was then carried out. The facets of patella, trochlea and meniscus were visualized. Joint insufflation and lavage was done in all patient's. During diagnostic arthroscopy if adhesions were identified then lysis of adhesions were performed particularly within supra-patellar pouch so as to improve joint volume. All loose bodies and osteophytes were identified and removed. In patient's with meniscal tear where it was possible to salvage the meniscus we performed partial meniscectomy. Whereas patients with complete meniscal tear were treated with total meniscectomy. Partial synovectomy was done only if synovium was very much inflamed and hypertrophied. All loose chondral flaps were removed and contouring of cartilage defect was done.

Patients were followed up at 1 week, 2 weeks, 3weeks, 4weeks, 6weeks, 8weeks, 10 weeks, 12weeks, 4 month, 6 month, 9 month, 12 month, 15 month, 18 months.

**Patient satisfaction was graded on ordinal scale as**

1. Not satisfied.
2. Fairly satisfied.
3. Satisfied.
4. Very satisfied.

The Lysholm score 7 was calculated preoperatively and postoperatively at 6 months, 12 months, and 18 months. Grading of Lysholm score 8:

- <65 = Poor
- 65-83 = Fair
- 84-90 = Good
- >90 = Excellent

The statistical analysis of the data was done using SPSS version 11.0 for windows. Chi-square and Student's t-test were used for checking the significance of the data. A p-value of 0.05 and lesser was defined to be statistically significant.

**RESULTS**

In the present study, a total of 50 patients with knee osteoarthritis underwent arthroscopy. The outcomes of the arthroscopy were studied. In our study group, 22 were males and 28 were females. The mean age was 56.39 years. [Table 1,2] shows operative procedures performed in the study group. We observed that lavage and joint insufflations were performed in all the patients. Partial meniscectomy was the least performed procedure. Debridement and contouring of cartilage defect was performed in 28 patients. [Table 3] shows postoperative outcome of arthroscopy at 4 weeks, 12 weeks and 6 months. It was observed that the most common outcome at 4 weeks was fair. It was observed that the outcome increased significantly from fair to excellent in majority of patients in 6 months. The results on comparison were found to be statistically significant. [Figure 1]

**Table 1: Demographic data of the participating subjects**

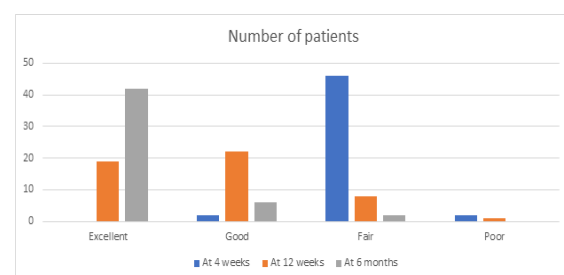
| Variables                                     | Values |
|---|--------|
| Total number of participants                  | 50     |
| Age range (years)                             | 40-70  |
| Mean age (years)                              | 56.39  |
| Male/Female                                   | 22/28  |
| Mean duration of knee osteoarthritis (months) | 14.38  |

**Table 2: Operative procedures performed in the study group**

| Operative procedure                            | No. of patients |    |
|--|-----------------|----|
| Meniscectomy                                   | Partial         | 7  |
|  | Complete        | 12 |
| Debridement and contouring of cartilage defect | 28              |    |
| Partial synovectomy                            | 17              |    |
| Lavage   | 50              |    |
| Joint insufflations                            | 50              |    |

**Table 3: Postoperative outcome**

| Lysholm score grading | Number of patients |             |             | p-value |
|-----------------------|--------------------|-------------|-------------|---------|
|                       | At 4 weeks         | At 12 weeks | At 6 months |         |
| Excellent             | 0                  | 19          | 42          | 0.002   |
| Good                  | 2                  | 22          | 6           |         |
| Fair                  | 46                 | 8           | 2           |         |
| Poor                  | 2                  | 1           | 0           |         |

**Figure 1: Comparison of Lysholm score grading at 4 weeks, 12 weeks and 6 months**

## DISCUSSION

In the present study, we evaluated the outcome of arthroscopy in osteoarthritis knee patients. We selected 50 patients for our study within the age group of 40-70 years. From the results of our study, we conclude that arthroscopy has excellent results for osteoarthritic patients. The Lysholm score grading improved significantly in our study from 4 weeks postoperatively to 6 months. The results were statistically significant. The results were compared with studies from the literature. Giri S et al,<sup>[9]</sup> evaluated the role of arthroscopy in functional and subjective outcomes of patient with moderate to severe osteoarthritis of knee. Between October 2011 to September 2013, 30 patients were treated with an arthroscopic regimen. Patients with primary osteoarthritis who fulfilled clinical and radiographic classification criteria of American College of Rheumatology for osteoarthritis were included. All patients were followed for 18 months. All patients were subjected to comprehensive arthroscopic treatment. Overall, mean age was 59 years, with 17 females and 13 males. According to Kellgren Lawrence scale, 17 patients had grade 2 osteoarthritis, 10 had grade 3 osteoarthritis and 3 patients had grade 4. The average preoperative Lysholm score was 38.8. According to Outerbridge grading of chondral surface lesions, 14 patients were in grade-1, 5 in grade-2, 8 in grade-3 and 3 patients were in grade-4. The average 18 months postoperative Lysholm score was 83.3 (range 60-96). 73.33% patients showed good/ excellent outcome. 80% of patients with chondral and meniscal lesions showed excellent/good outcome. Figueroa D et al,<sup>[10]</sup> studied the clinical outcomes of patients with knee osteoarthritis (OA) treated with arthroscopic surgery. 100 patients with clinical and radiological diagnosis of OA who were treated with knee arthroscopy. The average follow-up time was 35.9 months (25-71), and the average age was 60.1 years (50-83). The preoperative average scores were as follows: Lysholm, 56.9±13.5 points (22-71); IKDC, 59.4±21.7 points (45-80). The postoperative average scores were as follows: Lysholm, 86.9 points (22-87); IKDC, 79.5 points (45-100). Regarding the Lysholm scores, 76% were good and excellent results and 24% were moderate. The associated injuries included 48% of chondral and 36% of unstable meniscal injuries. Good or excellent results were observed in 76% of the meniscal injury cases according to the Lysholm scores, while only 84.6% of the cases with unstable chondral lesions had good or excellent results. They concluded that most patients with knee OA associated with unstable cartilage or meniscal injuries reported good-to-excellent symptomatic results at the short- and mid-term follow-ups. Steadman JR et al,<sup>[11]</sup> studied the 10-year outcomes and total knee arthroplasty (TKA) rate after

arthroscopic treatment of knee osteoarthritis and compare survivorship of patients with Kellgren-Lawrence (KL) grade 3 and 4 knees. Eighty-one knees in 73 patients (49 male, 32 female; mean age, 58 years; range, 37 to 79 years) that underwent an arthroscopic regimen for knee osteoarthritis between August 2000 and November 2001 were included in this institutional review board-approved study. Patients with KL grade 4 osteoarthritis were 5.3 times more likely to fail than those with KL grade 3. For 26 knees that did not undergo arthroplasty, the mean Lysholm score was 74, the median Tegner activity scale score was 3 (range, 0 to 8), the median patient satisfaction with outcome was 9 (range, 1 to 10), and the mean WOMAC score was 18.5 at 10 years of follow-up. King C et al,<sup>[12]</sup> evaluated the outcome of arthroscopic debridement with autologous conditioned plasma. They retrospectively analyzed a cohort of 52 patients who underwent arthroscopic knee debridement with autologous conditioned plasma in 2011. Of the 52 patients in our study, 16 were female and 36 were male. The mean follow-up period in the clinic was 6.5 months. The Kellgren-Lawrence score was 21.2% Grade 1, 13.5% Grade 2, 51.9% Grade 3 and 13.5% Grade 4. Improvement in range of movement was seen in 32.7% of patients.

## CONCLUSION

Within the limitations of the present study, it can be concluded that the arthroscopic treatment regimen significantly improved the symptoms of osteoarthritic knee.

## REFERENCES

1. Murphy L., Schwartz T.A., Helmick C.G., Renner J.B., Tudor G., Koch G., et al. (2008) Lifetime risk of symptomatic knee osteoarthritis. *Arthritis Rheum* 59: 1207–1213.
2. Mahajan A, Jasrotia DS, Manhas AS, Jamwal SS. Prevalence of major rheumatic disorders in Jammu. *JK Science*. 2003;5:63–66.
3. Daboy GD. Campbell's operative orthopedics. 11th edition. Vol. 1. Philadelphia: Mosby Elsevier; 2008. Miscellaneous nontraumatic disorder, In: Canale ST, Beaty JH; pp. 999–1002.
4. Steadman JR, Ramappa AJ, Maxwell RB, Briggs KK. An Arthroscopic Treatment Regimen for Osteoarthritis of the Knee. *Arthroscopy*. 2007;23(9):948–55.
5. Lysholm J, Gillquist J. Evaluation of knee ligament surgery result with special emphasis on using a scoring scale. *Journal of sports medicine*. 1982;10:150–54.
6. Dervin GF, Stiell IG, Rody K, Grabowski J. Effect of arthroscopic debridement for osteoarthritis of the knee on health related quality of life. *J Bone Joint Surg Am*. 2003;85:10–19.
7. Lysholm J, Gillquist J. Evaluation of knee ligament surgery result with special emphasis on using a scoring scale. *Journal of sports medicine*. 1982;10:150–54.
8. Mitsou A, Vallianatos P, Piskopakis N, Maheras S. Anterior cruciate ligament reconstruction by over-the-top repair

- combined with popliteus tendon plasty. J Bone Joint Surg Br. 1990;72(3):398–404.
9. Giri S, Santosha, Singh ChA, et al. Role of Arthroscopy in the Treatment of Osteoarthritis of Knee. J Clin Diagn Res. 2015;9(8):RC08-RC11. doi:10.7860/JCDR/2015/13809.6390
  10. Figueroa D, Calvo R, Villalón IE, Meleán P, Novoa F, Vaisman A. Clinical outcomes after arthroscopic treatment of knee osteoarthritis. Knee. 2013 Dec;20(6):591-4. doi: 10.1016/j.knee.2012.09.014. Epub 2012 Oct 25. PMID: 23103346.
  11. Steadman JR, Briggs KK, Matheny LM, Ellis HB. Ten-year survivorship after knee arthroscopy in patients with Kellgren-Lawrence grade 3 and grade 4 osteoarthritis of the knee. Arthroscopy. 2013 Feb;29(2):220-5. doi: 10.1016/j.arthro.2012.08.018. Epub 2012 Dec 27. PMID: 23273893.
  12. King C, Yung A. Outcome of Treatment of Osteoarthritis with Arthroscopic Debridement and Autologous Conditioned Plasma. Malays Orthop J. 2017;11(1):23-27. doi:10.5704/MOJ.1703.008

**Copyright:** © the author(s), 2020. It is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits authors to retain ownership of the copyright for their content, and allow anyone to download, reuse, reprint, modify, distribute and/or copy the content as long as the original authors and source are cited.

**How to cite this article:** Singh J, Ahuja K, Middha S. A prospective study evaluating the Role of Arthroscopy in the Treatment of Osteoarthritis of Knee. Ann. Int. Med. Den. Res. 2021; 7(1):OR29-OR32.

**Source of Support:** Nil, **Conflict of Interest:** None declared