

Arthroscopic Debridement For Degenerative Knee Joint Disease

Karna N, Jha R, Gupta Y, Mishra BN

Nobel Medical College Teaching Hospital, Biratnagar, Nepal

ABSTRACT

INTRODUCTION: Osteoarthritis of the knee is a common problem. Arthroscopic debridement of the knee can be a useful procedure when NSAIDs, physiotherapy and life style alterations aren't helpful in relieving the patient's pain in mild to moderate osteoarthritis. This study was conducted to assess the result of arthroscopic debridement in OA knee.

MATERIAL AND METHODS: 30 patients with mild to moderate osteoarthritis of the knee were treated by arthroscopic debridement. All the patients were followed at 2, 6, 12 and 24 weeks postoperatively. Functional outcome of knee was assessed by using modified WOMAC index and pain by visual analogue scale.

RESULTS: 4% had had a previous meniscectomy and 61% had a tear of at least one meniscus. Additional pathologic problems included loose bodies in 21%, intra-articular adhesions in 10% and chondrocalcinosis in 6%. Post operatively, two patients had knee swelling lasted for three days and one had incision site erythema that subsided after a week. Subjectively, 83 percent of the patients were found to have good or fair results.

CONCLUSION: Arthroscopic debridement of the knee joint is a useful short term therapeutic treatment modality in patients with mild to moderate degenerative arthritis of the knee.

INTRODUCTION

80% of people more than 50 years of age have arthritis, with the spine, hips and knees being the most frequently affected joints¹. The treatment of osteoarthritis is mainly aimed at reducing pain, maintaining mobility and minimizing disability.

The nature of therapeutic intervention should be dictated by the severity of the condition in individual patients. When conservative treatment including NSAIDs, physiotherapy and life style alterations aren't helpful in relieving the patient's pain, the patient does not require a Total Knee Replacement (TKR) right away, arthroscopy fills the void between conservative treatment and joint replacement.

The guiding principle, in the choice of treatment that is to be offered, is the minimum that is effective: minimum in terms of incremental cost, ease of performing, safety and cost of infrastructure required.

Arthroscopic debridement can remove loose bodies, torn meniscus, osteophytes that prevents the movement of the knee and also flushes the mediators of inflammation from the joint, leading to removal or dilution of enzymes that are a part of degenerative process of osteoarthritis. A number of studies have reported substantial pain relief after arthroscopic lavage or debridement for osteoarthritis of the knee.²⁻¹⁶

The present study was conducted to assess the results after arthroscopic debridement of a painful knee resulting from mild to moderate osteoarthritis.

MATERIAL AND METHODS

All the patients with osteoarthritis of knee (OA) as defined by American College of Rheumatology¹⁷ presenting to our hospital from January 2012 to December 2012 initially were treated conservatively. Severity of the disease was classified into mild, moderate and severe types clinically and radiologically¹⁸ Informed consent for surgery was taken from patients who did not show significant improvement in terms of pain and function after conservative treatment. These patients underwent arthroscopic debridement. The patients with advanced OA knee, secondary OA knee, patients with excessive mal-alignment (deformity >10 degree in either plane) of the knee or patients who had previously undergone open surgery of the knee were excluded from the study.

OPERATIVE TECHNIQUE:

All surgeries were done under spinal anesthesia and application of pneumatic tourniquet in the thigh. Anterolateral portal was made 1 cm above lateral joint line lateral to patellar tendon. A standard 30 degrees/4 mm arthroscope was used to view the knee joint using standard anteromedial and anterolateral portals. The supra patellar pouch was viewed from side to side from proximal to distal with the arthroscope moving in an arch till the whole of the patella could be visualized. The arthroscope was then advanced to the lateral and medial gutter from proximal to distal to search for any loose bodies. The scope was brought to the tibiofemoral joint and the menisci and cruciate ligaments were examined. The loose bodies, osteophytes and torn meniscus were removed with the help of punches, grasper and powershaver system. Superolateral and superomedial portals were made if required. The joint was lavaged with at least 10 liters of normal saline. Chondroplasty was performed, loose debris removed, all torn or degenerated menisci

were trimmed, smoothed to a firm and stable rim when required. No abrasion arthroplasty or microfracture was performed. Typically, bone spurs were not removed, but any spurs from the tibial spine area that blocked full extension were shaved smooth. The arthroscope was removed and the trocar withdrawn gently while pressure applied around the knee so that collected fluid escaped. The incision was closed and covered with medicated adhesive strips.

Postoperatively all patients were made to stand and walk once the pain subsided. The status was evaluated on the basis of modified WOMAC index and the pain by visual analogue scale. Quadriceps exercises were started as soon as possible. Stitches were removed at 2 weeks and patients were followed on 6, 12 and 24 weeks.

STATISTICAL ANALYSIS:

Measurements done by WOMAC knee index and VAS at visits were recorded and entered in the Microsoft EXCEL 8 file. The analysis was done using Epi Info 2000 computer program.

RESULTS

A total of 30 patients with 48 osteoarthritic knees were assessed and treated by arthroscopic debridement. The average age of the patients was 62 years (range: 60-74 years).

Table No 1: Patients detail

Total no of patients	30
Total no of knees	48
Age(years)	62 (60-74)
Gender	
Male	16
Female	14
Severity of the disease	
Mild	12
Moderate	36

Various intra-articular pathologies found during arthroscopy are shown in Table No 2.

Table No 2: Pathology found during arthroscopy

Arthroscopic findings	No of knees
Tear of medial meniscus	20 (41.66%)
Tear of lateral meniscus	10 (20.83%)
Loose bodies	10 (20.83%)
Adhesions	5 (10.41%)
Chondrocalcinosis	3 (6.25%)

We removed osteocartilaginous loose bodies. In our study 4% had a previous meniscectomy, and 61% had a tear of at least one meniscus. The degree of degeneration of articular cartilage was classified according to Bauer and Jackson¹⁹ and majority were between 2 and 3. Using modified WOMAC index functional capacity of knee was assessed and visual analogue scale used for pain assessment. There was significant improvement in both scores after debridement as shown in Table 3.

Table No 3: Functional assessment of Knee**Modified WOMAC KNEE SCORE**

Preoperative	2wks postop	6wks postop	12wks postop	24wks postop	p value
24 (20-28)	14 (12-16)	16 (14-20)	18 (16-20)	18 (16-20)	0.01

Visual Analogue Scale

Preoperative	2wks postop	6wks postop	12wks postop	24wks postop	p value
8(6-9)	2(1-4)	2(1-4)	2(1-4)	3(1-4)	0.02

Subjectively, 83 percent of the patients were found to have good or fair results. We found patients with shorter duration of symptoms, mechanical symptoms, mild to moderate radiographic changes and loose body formation were more satisfied with the procedure. Post-op complications included knee swelling in two patients which subsided in three days and incision site erythema in one patient that subsided after a week.

DISCUSSION

Arthroscopy of the knee is a commonly performed procedure. Numerous retrospective case series have reported substantial pain relief after arthroscopic lavage or arthroscopic debridement for osteoarthritis of the knee.²⁻¹⁶

Kalunian KC²⁰ found no difference in outcome comparing arthroscopic irrigation and placebo treatment. We found clinical improvement in majority of our patients. Arthroscopic lavage is said to work because loose scaling or desquamating articular cartilage fragments and excision of loose flaps or degenerative tears of meniscal cartilage from the joint, which can cause synovitis and subsequent pain, is removed. In addition, degradative enzymes and other factors, which may contribute to the pain syndrome, are washed out by this method.

Moseley and associates²¹ found no long-term effects of the procedure, whether it is performed solely as an arthroscopic washout or associated with debridement. Aaron et al²¹ found the severity of arthritis preoperatively, radiologically and intraoperatively has significant relation with outcome. They found mild cases did well and advanced cases did poorly. Subjectively, 83 percent of the patients were found to have good or fair results. We found patients with shorter duration of symptoms, mechanical symptoms, mild to moderate roentgenographic changes and loose body deposition were more satisfied with the procedure.

CONCLUSION

Arthroscopic debridement of the knee joint is recommended as a useful therapeutic modality in patients with mild to moderate degenerative arthritis of the knee which doesn't respond to NSAIDs and physiotherapy.

REFERENCES

1. Peyron JG, Altman RD. The epidemiology of osteoarthritis. In: Moskowitz RW, Howell DS, Goldberg VM et al., eds. *Osteoarthritis: diagnosis and medical/surgical management*, 2nd ed. Philadelphia: WB Saunders, 1992:15-37.
2. Baumgaertner MR, Cannon WD Jr, Vittore JM, Schmidt ES, Maurer RC. Arthroscopic debridement of the arthritic knee. *ClinOrthop* 1990;253:197-202.
3. Bert JM, Maschka K. The arthroscopic treatment of unicompartmental gonarthrosis: a five-year follow-up study of abrasion arthroplasty plus arthroscopic debridement and arthroscopic debridement alone. *Arthroscopy* 1989;5:25-32.
4. Chang RW, Falconer J, Stulberg SD, Arnold WJ, Manheim LM, Dyer AR. A randomized, controlled trial of arthroscopic surgery versus closed-needle joint lavage for patients with osteoarthritis of the knee. *Arthritis Rheum* 1993;36:289-296.
5. Gross DE, Brenner SL, Esformes I, Gross ML. Arthroscopic treatment of degenerative joint disease of the knee. *Orthopedics* 1991;14:1317-1321.
6. Jackson RW, Silver R, Marans H. Arthroscopic treatment of degenerative joint disease. *Arthroscopy* 1986;2:114-114.
7. Jennings JE. Arthroscopic debridement as an alternative to total knee replacement. *Arthroscopy* 1986;2:123-124.
8. McLaren AC, Blokker CP, Fowler PJ, Roth JN, Rock MG. Arthroscopic debridement of the knee for osteoarthritis. *Can J Surg* 1991;34:595-598.
9. Ogilvie-Harris DJ, Fitsialos DP. Arthroscopic management of the degenerative knee. *Arthroscopy* 1991;7:151-157.
10. Rand JA. Role of arthroscopy in osteoarthritis of the knee. *Arthroscopy* 1991;7:358-363.
11. Richards RN Jr, Lonergan RP. Arthroscopic surgery for relief of pain in the osteoarthritic knee. *Orthopedics* 1984;7:1705-1707.
12. Salisbury RB, Nottage WM, Gardner V. The effect of alignment on results in arthroscopic debridement of the degenerative knee. *ClinOrthop* 1985;198:268-272.
13. Sprague NF III. Arthroscopic debridement for degenerative knee joint disease. *ClinOrthop* 1981;160:118-123.
14. Timoney JM, Kneisl JS, Barrack RL, Alexander AH. Arthroscopy in the osteoarthritic knee: long-term follow-up. *Orthop Rev* 1990;19:371-3
15. Ike RW, Arnold WJ, Rothschild EW, Shaw HL. Tidal irrigation versus conservative medical management in patients with osteoarthritis of the knee: a prospective randomized study. *J Rheumatol* 1992;19:772-779.
16. Livesley PJ, Doherty M, Needoff M, Moulton A. Arthroscopic lavage of osteoarthritic knees. *J Bone Joint Surg Br* 1991;73:922-926.
17. Altmen R et al. Development of criteria for the classification and reporting of osteoarthritis. Classification of osteoarthritis of the knee. Diagnostic and Therapeutic criteria committee of American Rheumatism Association *Arthritis Rheum* 1986 Aug;28(8) 1039-49
18. Kellgren JH, Lawrence JS. Radiological assessment osteoarthritis *Ann Rheum Dis* 1957;16:494-501
19. Bauer M, Jackson RW. Chondral lesions of the femoral condyles: a system of arthroscopic classification. *Arthroscopy* 1988;4:97-102
20. Kalunian KC, Moreland LW, Klashman DJ, et al. Visually-guided irrigation in patients with early knee osteoarthritis: a multicenter randomized, controlled trial. *Osteoarthritis Cartilage* 2000;8:412-418
21. Moseley J. Bruce, O'Malley Kimberly, Petersen, Nancy Jet al. A Controlled Trial of Arthroscopic Surgery for Osteoarthritis of the Knee *NEJM* 2002;347:81-88
22. Aaron RK, Skolinick AH, Reinert SE et al. Arthroscopic debridement for osteoarthritis of the knee *J Bone Joint Surg Am.* 2006 May;88(5):936-43

Address for correspondence:

NAVIN KARNA

Nobel Medical College, Biratnagar, Nepal

Phone Number: 977-9852027814

Email: dr.navinkarn@gmail.com