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ORIGINAL RESEARCH

The role of arthroscopy in the treatment of degenerative joint disease of the knee

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ABSTRACT

Background: Degenerative joint disease is a common cause of knee symptoms and disability. The purpose of the present study is to address the role of arthroscopic surgery in patients who have degenerative joint disease in the knee.

Methods: The present study included 40 patients from August 2019 to August 2021 who complained with knee pain in the department of Orthopaedics, IGIMS, Patna. Intra operative grading of articular cartilage degeneration was done by method described by Noyes – Stabler. Patient called for follow - up on 1 month, 3 months and 6 months of post-operative day in OPD, and pain severity score was measured according to knee society pain score[8] routine physical examination of knee was done for other physical signs.

Results: Out of 40 patients in the present study, 15 were females and 25 were males.
The patients showed 65% improvement in grade 2 after 6 months, 30% patients showed improvement in grade 3 and 5% showed improvement in grade 4 patients after 6 months.

Conclusion: Although Arthroscopy is valuable for the treatment of many knee disorders. The efficacy of arthroscopic treatment for osteoarthritis of the knee is limited by poor natural history of osteoarthritis.

Keywords: Arthroscopy, Osteoarthritis of the knee joint, Arthroscopic debridement

INTRODUCTION

Degenerative arthritis is the most frequent disorder in elderly patients. Knee osteoarthritis (OA) is more likely to result in disability than OA of any other joint. [1]The symptoms of OA of the knee are due to the effects of loose fragments of articular cartilage, debris, denuding of subchondral bone, degenerative tears of the menisci, loose bodies, osteophytes formation, synovitis, effusion, and limited motion caused by contractors, pain, and malalignment.[2]

Degenerative changes in the knee involves various changes alone or in combination contribute to the pain, swelling and functional disturbances of the knee joint. There are many treatment options available for the management of OA of the knee joint. Analgesics, physical and occupational therapy, arthroscopic joint debridement, joint lavage, and joint replacement have been all advocated as management techniques.[3]

In 1990, Burks described that the role of arthroscopy in the treatment of osteoarthritis of the knee is to allow identification and treatment of a local lesion. [4]In recent year's arthroscopic surgery, osteotomy and implant arthroplasty have been offered to the patient in different stages of the disease.It has been proposed that arthroscopic lavage (wash out) of the knee

joint can improve patient status by washing out inflammatory cytokines, cartilage fragments, and other debris from the joint.[5]

Arthroscopy is the most commonly performed ortho paedicprocedure, one often associated with knee ligament reconstruction and treatment of meniscal tears. Arthroscopy has been used for the management of patients with OA with a varying degree of success, the varieties of techniques and the different methods of assessment.

The purpose of the present study is to address the role of arthroscopic surgery in patients who have degenerative joint disease in the knee.

MATERIALS AND METHODS

The present study included 40 patients from August 2019 to August 2021 who complained with knee painin the department of Orthopaedics, IGIMS, Patna. Out of 40 patients in the present study, 15 were females and 25 were males. The demographic features of the patients were noted and BMI were calculated on the basis of height and weight of the patients. The detailed clinical examination and x-rays, of both knee antero-posterior view in standing position and lateral view in supine position were noted. The assessment of x-rays patients were graded from 0-4 based on kellegren-lawrence radiological grading method.

INCLUSION CRITERIA

1. Age 30-60 years.
2. Patients who meet the American college of rheumatology criteria for osteoarthritis
3. An osteoarthritis of grade 2 or higher according to the kellegren-lawrence method.[6]

EXCLUSION CRITERIA

1. Osteoarthritis with predominant involvement of patelo-femoral joint.
2. Secondary osteoarthritis.

ARTHROSCOPIC EXAMINATION AND DEBRIDEMENT

The patients who were selected for arthroscopy underwent appropriate anesthesia and patient was shifted in the operating room. A tourniquet was placed around the thigh and was inflated after exsanguinations of the limb. After that the outlines of the patella and patellar tendon were drawn, medial and lateral joint lines were palpated with the fingertip and drawn, and the posterior contours of the medial and lateral femoral condyles were marked. Anteromedial portal is located similarly to the anterolateral portal: 1 cm above the medial joint line, 1 cm inferior to the tip of the patella, and 1 cm medial to the edge of the patellar tendon. Then scope canula with trochar was inserted in to the joint through the anterolateral portal and joint was distended with normal saline through. After sufficient distention of joint, trochar was removed and scope with TV camera was inserted in to the joint. Then knee was examined in the following order of compartments: Suprapatellar pouch and patellofemoral joint, Medial gutter, Medial compartment, Intercondylar notch, Posteromedial compartment, Lateral compartment, Lateral gutter and posterolateral compartment.

The debridement included thorough normal saline wash, removal of loose bodies, removal of loose flaps of articular cartilages and removal of frayed meniscal margins and articular cartilages in the present study. Intra operative grading of articular cartilage degeneration was done by method described by Noyes-Stabler.[7]

Patient called for follow-up on 1 month, 3 months and 6 months of post-operative day in OPD, and pain severity score was measured according to knee society pain score[8] routine physical examination of knee was done for other physical signs.

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STATISTICAL ANALYSIS

For the comparison of knee pain and Body mass index correlation coefficient (r) was calculated between pain severity score and body mass index. For comparison of radiological grading Kellengren-Lawrence[6] and arthroscopic grading Noyes-Stabler, [7]patients were assigned a score to all grading of Noyes-stabler from o-6 according to severity.

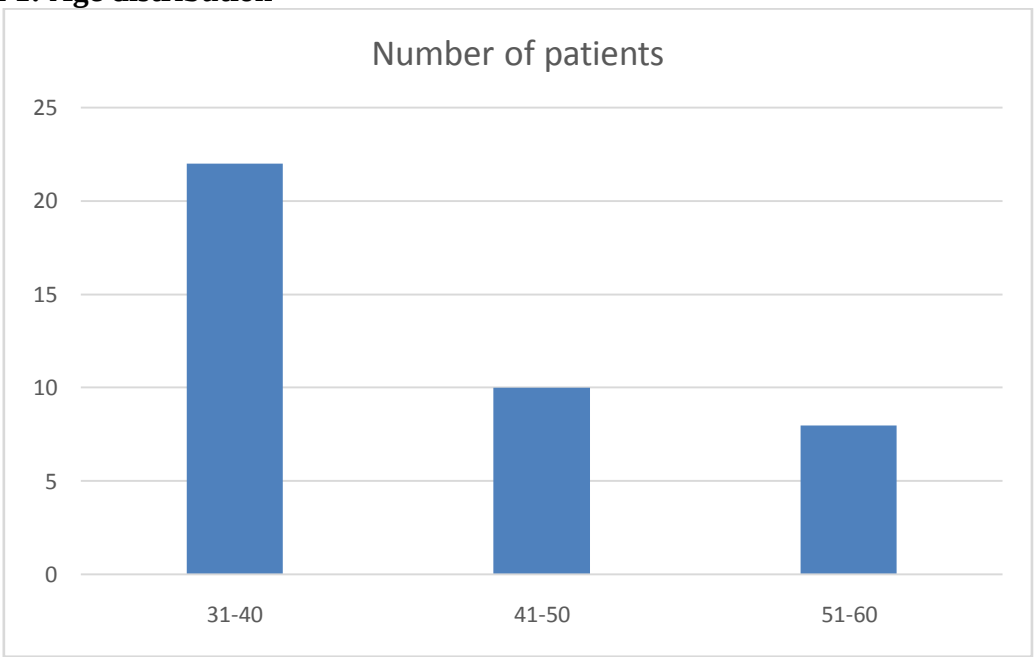
RESULTS

Out of 40 patients in the present study, 22 were in age group 31-40, 10 were in 41-50 and 51-60 were 8 patients (table 1 and graph 1). 15 were females and 25 were male patients (table1 and graph 2).Table 2 shows side of injury, 25 had injury in right knee and 15 had in left knee. Kellegren-Lawrence radiological grading wise distribution showed grade 2 patients were 40%, grade 3 patients were 25% and grade 4 patients were 35% The patients showed 65% improvement in grade 2 after 6 months, 30% patients showed improvement in grade 3 and 5% showed improvement in grade 4 patients after 6 months (table 4).

Table No 1: Age and Gender distribution

Age	n
31-40	22
41-50	10
51-60	8
Total	40
Gender	n
Male	25
Female	15
Total	40

Graph 1: Age distribution



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Graph 2: Gender distribution

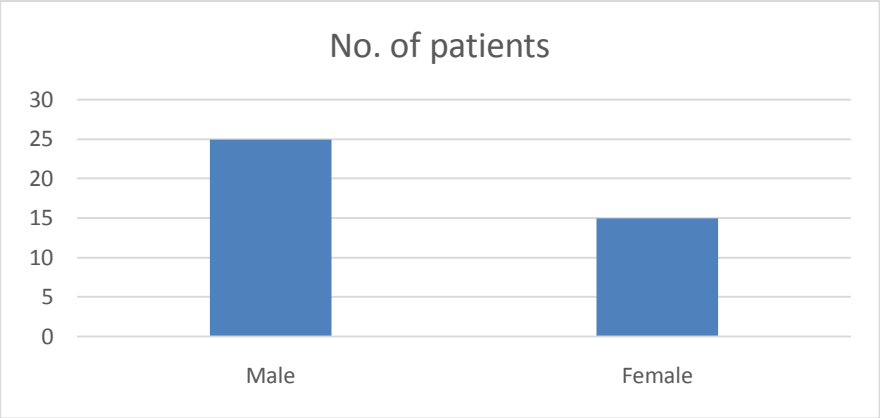

Table 2: Side of Injury and Kellegren-Lawrence Radiological Grading Wise Distribution

Side of Injury	n
Right knee	25
Left knee	15
Kellegren-Lawrence Radiological Grading	
Grade 2	16(40%)
Grade 3	10(25%)
Grade 4	14(35%)

Table 3: Pre-Operative- Pain Severity Score (PSS)

Grades	1 month	3 months	6 months
Grade 2	5%	15%	30%
Grade 3	2%	25%	60%
Grade 4	1%	32%	90%

Table 4: Improvement in patients post-operatively

Grade	Improvement
Grade 2	65%
Grade 3	30%
Grade 4	5%

Graph 3: Improvement in patients post-operatively

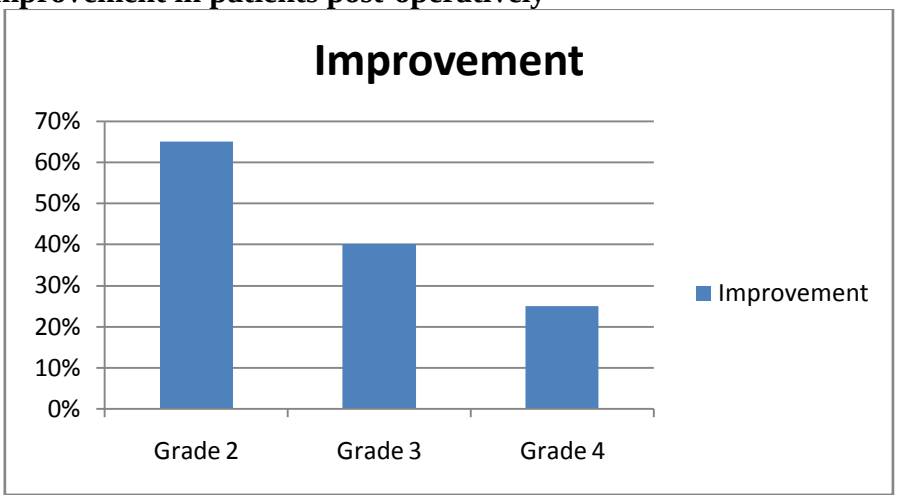

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Figure 1: Intraoperative pic of patient treated arthroscopically for degenerative knee joint due to loose body

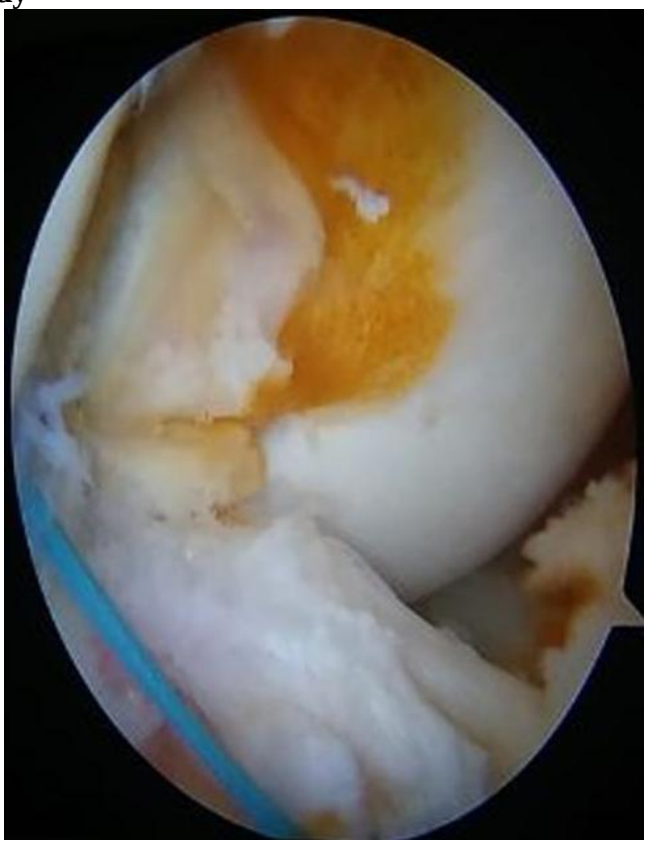

Figure 2: 2nd case intraoperative pic of loose body treated arthroscopically by debridement and lavage

DISCUSSION

Arthroscopic lavage involves the visually guided introduction of saline solution into the knee joint and the removal of the fluid. The term arthroscopic debridement may include the introduction of saline into the joint, in addition to articular trimming, lavage, meniscectomy, removal of osteophytes, and articular abrasion.[1]

The purpose of the present study is to address the role of arthroscopic surgery in patients who have degenerative joint disease in the knee. According to Howell [9], there are three indications for treating OA knee with arthroscopy: 1), mild to severe OA with a complaint of mechanical symptoms from a loose body. 2) arthroscopic removal of a meniscal tear when the presenting symptoms are mechanical with pain localized on the joint line in a knee with mild joint space narrowing. 3) arthroscopic excision of an anterior anvil osteophyte to improve extension in the knee with mild OA and a flexion contracture.

The maximum number of patients in the present study belongs to 50 - 60 years and varied from 30 - 70 years. This finding of the present study is similar to the study conducted by Wai EK et al. According to Wai EK et al, older age group was most affected because of is degenerative osteoarthritis condition.

In the present study, grade-2 patients were 40%, garde-3 patients were 25% and grade-4 patients were 35% which is similar to the study conducted by Aaron RK et al.[11] where grade-2 was observed to be maximum (53%)as compared to grade 2 and grade 3.

The patients showed 65% improvement in grade 2 after 6 months, 30% patients showed improvement in grade 3 and 5% showed improvement in grade 4 patients after 6 months. The grade 4 patients showed little improvement elucidating that there was little effect of arthroscopy in the patients included in the study.

CONCLUSION

Although Arthroscopy is valuable for the treatment of many knee disorders. The efficacy of arthroscopic treatment for osteoarthritis of the knee is limited by poor natural history of osteoarthritis. For successful treatment results, care should be taken to detailed medial history including related symptoms and signs, thorough physical examination, and clinical findings on weight-bearing radiographs for proper patient selection. It is useful to counsel the patient about effectiveness, advantages and disadvantages of arthroscopic debridement.

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