

## Role of arthroscopic surgery in patients aged 60 years and more with degenerative knee

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### ABSTRACT

Osteoarthritis is a progressive degenerative disease of the synovial joints that causes pain and limitation of range of motion. Surgery is an effective treatment method for this when conservative treatment is ineffective. Arthroscopy is one of the surgical methods that is controversial for degenerative knees. This study aimed to find the efficacy of arthroscopy in patients aged 60 years and more with degenerative knees.

A total of 27 patients (16 women and 11 men), aged 60 years and more, operated between 2012 and 2015, in whom conservative treatment for 3 months was ineffective before surgery, were enrolled. These patients had osteoarthritis according to the American College of Rheumatology criteria and a Kellgren–Lawrence Osteoarthritis Index score of less than 4. The Visual Analog Scale (VAS) and Western Ontario and McMaster Universities (WOMAC) Osteoarthritis Index of patients before and after arthroscopy were compared by age, gender, and complications.

The average Kellgren–Lawrence Index was 2.4. The average VAS score was 8 before surgery and 4.1 after surgery, indicating an almost 50% improvement in pain. The average WOMAC Osteoarthritis Index was 40.7% before surgery and 25.5% after surgery. No complications were observed after surgery. The preoperative and postoperative VAS and WOMAC values were significant. Both the described pain and osteoarthritis of the patients were partially recovered after arthroscopic surgery.

In conclusion, arthroscopy treated functions that increased pain and mechanical symptoms and hence was beneficial in appropriately selected degenerative knees.

**Key words:** Arthroscopy, debridement, degenerative knee, knee pathologies, lavage

### INTRODUCTION

Osteoarthritis of the synovial joints is a progressive degenerative disease, which especially affects the cartilage and also bone, tendon, synovium, and meniscus. Osteoarthritis generally affects the knee, hip, and wrist, and can interrupt the daily activities of patients by causing pain, joint stiffness, and motion disabilities. The main purpose of treating osteoarthritis is to recover the functions of joints by reducing pain and joint stiffness. Patients generally opt for surgery when conservative treatment fails to improve their condition. One of the surgical methods for treating osteoarthritis is arthroscopy. Arthroscopy includes washing joints, debridement of tear and fringing cartilage, removing free fragments in joints, debridement of meniscus, repairing meniscus tear, resection of synovial hypertrophy, and subchondral

drilling. However, this surgery has been controversial. This study aimed to investigate the efficacy of arthroscopy in patients aged 60 years and more with degenerative knees in whom conservative treatment was ineffective (1,2).

### MATERIALS AND METHODS

A total of 39 patients, aged 60 years and more, operated between 2012 and 2015, in whom conservative treatment for 3 months was ineffective before surgery, were examined retrospectively. Patients with osteoarthritis according to the American College of Rheumatology criteria and a Kellgren–Lawrence Osteoarthritis Index score less than 4 were included in this study. Therefore, a total of 27 patients were enrolled for the study.

All patients underwent spinal anesthesia and used tourniquet before surgery. Anteromedial and anterolateral portals were used in all patients. No extra portals were needed. The patients who underwent meniscectomy and debridement were allowed to step on the first day. The other patients who had meniscus fixing, femoral drilling–microfracture, and mosaicplasty were allowed to step progressively after 4th week. The age, gender, and mobilization of the patients were compared according to the Visual Analog Scale (VAS) and Western Ontario and McMaster Universities (WOMAC) Osteoarthritis Index.

The data were evaluated using paired-samples *t* test. The difference in genders was compared using the Student *t* test. A *P* value <0.05 was considered statistically significant.

## RESULTS

A total of 27 patients (16 women and 11 men) were analyzed retrospectively. Average age was 65.2 years for women and 62.9 years for men. Surgery was performed on 18 left knees and 9 left knees. The average tracking time was 31 months. According to the Kellgren–Lawrence Index, 17 patients had grade 2 osteoarthritis and 10 had grade 3 osteoarthritis. The average Kellgren–Lawrence index was 2.4. Except one patient, the others had unreparable degenerative meniscus tear. In total, 18 patients were treated by meniscectomy and lavage; 1 patient by lavage and debridement (abrasion-plasty); 5 patients by meniscectomy and femoral drilling–microfracture; and 1 patient by meniscectomy and mosaicplasty. The average VAS score was 8 before surgery and 4.1 after surgery, indicating almost a 50% decrease in pain. The average WOMAC Osteoarthritis Index was 40.7% before surgery and 25.5% after surgery. No complications were found after the surgery. The preoperative and postoperative VAS and WOMAC values were considered significant ( $P < 0.001$ ). With these values, both the described pain and osteoarthritis of the patients were partially recovered after arthroscopic surgery. Statistical analysis of postoperative pain described by gender was significant ( $P = 0.039$ ); other values were not significant. These findings showed that women still had more pain than men after surgery (Table 1).

## DISCUSSION

Osteoarthritis is a progressive degenerative disease of the synovial joints in patients aged 40 years and more. Knee is the most affected joint in osteoarthritis. The common complaint is pain, and most patients need surgical treatment. Arthroscopic debridement, implantation of cartilage, correction of axle (tibial/femoral osteotomies), and arthroplasty are the primary surgical choices (4).

Arthroscopic treatment in degenerative knees has many advantages. The intra-articular rashes of cartilage seen in osteoarthritis increase the concentration of tumor necrosis factor alpha (TNF- $\alpha$ ). TNF- $\alpha$  causes cartilage destruction and joint pain. Also, surplus calcium crystals spark inflammation. Moreover, it can cause progression of osteoarthritis and symptoms by increasing cartilage destruction (6). By removing these components from joints by arthroscopic debridement and lavage can slow down the inflammation process. However, which patients need arthroscopy and when is controversial. Differences in patient populations, different protocols, subjective patient statements, and no standardized criteria have led to this controversy. Uncontrolled studies suggest that arthroscopic surgery is beneficial in osteoarthritis. However, wide controlled studies suggest that arthroscopic surgery should not be the primary treatment choice and can be beneficial in just few chosen patients (1,7-9).

Stefan *et al.* showed that arthroscopic irrigation decreased 80% of complaints of patients aged 60 years and more. However, meniscectomy increased 230% by that time. According to their study, arthroscopic lavage was not much beneficial for degenerative and mechanical symptoms in knees. In this study, arthroscopic lavage was performed in just one patient (3.5%). The other patients underwent other arthroscopic treatments.

Many surgeons advocate that arthroscopy is helpful in patients with less degenerative knees (7,10). Shannon *et al.* followed up 54 patients, with an average age of 60.9 years, who had less- and medium-degree osteoarthritis. They found that 19 patients required meniscectomy and loose body excision and others required diagnostic arthroscopy and lavage. Moreover, 37 patients (68.5) were cured subjectively.

**Table 1:** Laboratory values of patients at various stages of two-stage revision surgery.

Patient	Gender (male- female)	Age (year)	Side (right- left)	Follow-up (months)	Kellgren- Lawrence index	Applied surgery	WOMAC Osteoarthritis Index Score $p < 0.001$		VAS Score $p < 0.001$	
							Preop (%)	Postop (%)	Preop	Postop
1	F	68	L	78	3	Meniscectomy-drilling	21,80	37,50	8	4
2	M	65	R	81	2	Meniscectomy	72,90	12,0	8	2
3	F	72	L	81	3	Meniscectomy-drilling	70,80	54,00	9	4
4	F	69	R	72	2	Meniscectomy-drilling	17,70	9,30	9	2
5	F	67	L	38	3	Meniscectomy	32,20	17,70	9	2
6	M	62	L	24	2	Meniscectomy	27,00	15,60	7	2
7	M	67	L	24	2	Meniscectomy	9,30	2,10	4	1
8	M	62	L	21	2	Meniscectomy	39,50	19,80	8	2
9	F	62	L	20	2	Meniscectomy-microfracture	44,70	38,50	8	8
10	F	72	L	16	3	Meniscectomy-drilling	46,80	29,10	8	4
11	F	65	L	16	3	Meniscectomy	31,20	21,80	8	5
12	F	65	R	16	2	Meniscectomy	60,40	30,10	9	5
13	F	68	L	13	3	Meniscectomy-debridement	32,20	4,10	9	2
14	F	66	L	13	3	Meniscectomy	47,90	28,10	8	6
15	F	65	L	12	3	Meniscectomy-debridement	51,00	31,20	7	4
16	M	61	R	12	2	Meniscectomy	20,80	5,20	9	3
17	M	67	R	11	2	Meniscectomy-debridement	50,00	13,54	8	2
18	F	69	L	11	3	Meniscectomy-debridement	52,00	33,33	8	6
19	M	61	L	10	2	Meniscectomy-debridement	37,50	27,08	9	5
20	M	64	L	37	2	Meniscectomy	27,00	46,87	7	6
21	F	64	R	38	2	Meniscectomy	79,10	70,04	8	8
22	F	66	L	36	3	Meniscectomy	24,70	16,00	9	4
23	M	73	L	38	2	Meniscectomy-debridement	45,80	15,60	9	5
24	F	66	R	24	3	Meniscectomy	28,10	28,10	8	7
25	M	68	R	24	2	Meniscectomy- mosaicplasty	32,20	25,00	6	5
26	M	68	L	56	2	Meniscectomy	42,70	21,80	8	2
27	F	68	R	56	2	Meniscectomy	37,50	26,00	8	5

This indicated that arthroscopy was helpful in chosen patients. Law *et al.* (10) treated 180 knees of 169 patients with arthroscopy who had an average Kellgren–Lawrence Index of 2.02. Arthroscopic treatment satisfied the expectations of 96% patients. Specified arthroscopic surgery was helpful for patients who had symptomatic patellofemoral arthritis, degenerative meniscus tear, and symptomatic chondral flap. In the present study, 92% of the patients were satisfied

with arthroscopic surgery. The pain scores decreased in 50% of patients. Functional activities eased in 62% of patients. Therefore, surgery was considered successful in patients with Kellgren–Lawrence Osteoarthritis Index of 2.2, and 96% of patients had mechanical knee problems.

Sannon *et al.* (4) suggested that arthroscopic surgery could be considered as a primary surgical option for osteoarthritis. Thorlund *et al.* (11) not-

ed a reduction in arthroscopic surgery in the last 2 years. Dhawan *et al.* (12) examined preoperative arthroplasty on 12,806 degenerative knees in the last 4 years and found that 19% of these patients had arthroscopic surgery before arthroplasty. However, 96% of the patients who had arthroscopic surgery had arthroplasty within 3 years. The patients in this study were followed up for an average of 31 months. Followed-up patients under 3 years was 77% mainly high. Arthroscopy was beneficial in short follow-up. However, more follow-up time is needed to assess the need for arthroscopy.

The complications of arthroscopy were very few

(2-4). In this study, no complications were encountered during intraoperative and postoperative periods or follow-ups.

In conclusion, arthroscopy was beneficial before arthroplasty in patients with grade 2–3 osteoarthritis, and especially in those with degenerative mechanical complaints that cannot be cured with conservative treatment. Moreover, arthroscopy had few complications.

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