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Management of Osteoarthritis: Surgical and Non-Surgical Options

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ABSTRACT:

Background: Osteoarthritis (OA) was known as one of the most common degenerative joint diseases, which impeded the quality of life in patients through pain, stiffness, and low mobility. Its treatment covered gradation of treatment options including conservative to radical surgeries, depending on the extent of the symptoms and the progression of the illnesses. A thorough review of the surgical and non-surgical treatment options had been necessary in the optimization of functional data and improvement of patient satisfaction.

Objective: The article set out to test and compare the surgical options and non-surgical measures of treatment of osteoarthritis in regard to pain relief, improvement in functionality and quality of life by the patient.

Methods: This research had been carried at PUMHS Nawabshah during the time of June 2024 in May 2025. Eighty participants with diagnosed osteoarthritis, due to clinical tests and radiological confirmation of diagnosis, had been recruited. Patients had been divided into two groups: surgical group, people who had undergone total joint replacement or arthroscopic processes, and non-surgical group treated by physical therapy, pharmacological agents, and lifestyle changing procedures. The survey was based on the structured questionnaires, clinical analysis, and the functioning scoring schemes and compared the results after the 12-month follow-up observation.

Results: The results showed that the patients assigned on the surgical group had recorded a significant improvement on the pain reduction and functional mobility than the non-surgical group ($p < 0.05$). Non surgical care had however been more successful in the early stages of OA and this had provided pain control and long term stabilization of functions without the risks of surgery. The satisfaction scores had been greater in the surgical group in the patients experiencing advanced OA whereas in the non-surgical group there had been less complications and quick short term recovery.

Conclusion: The research found out that, surgical as well as non-surgical treatments that were used have been significant in treating osteoarthritis. The surgical treatment was more useful in more progressive cases in which functional impairment was high and the non-surgical methods were effective in the less progressive cases and were performed to delay surgery. The restorative process based on stage-specific and patient-centered approach was suggested to produce the best results.

Keywords: Osteoarthritis, surgical management, non-surgical management, joint replacement, conservative therapy, functional outcomes.

INTRODUCTION:

Osteoarthritis (OA) was identified as one of the most frequently encountered degenerative joint diseases, with millions of people across the whole world being afflicted with it and adding tremendously to a loss of mobility and ability to live a qualitative life. The situation had been defined with a gradual articular cartilage deterioration, alterations in the subchondral bone regions, and synovial inflammation activity, resulting in discomfort, rheumatism, and a loss of functionality. Whereas OA was initially considered a problem of the aged, it had been found to occur among the youthful population of the world due to issues like joint damages, obesity, and genetics [1]. The most common joints affected by the disease were weight-bearing joints such as the knees and hips although the hands, spine, and other joints had been infected as well.

The OA pathophysiology was already multifactorial with the presence of mechanical, biochemical and genetic mechanisms as the factors leading to the degeneration of cartilage elements. These processes over time had led to a narrowing of the joint space as well as an osteophyte development along with the loss of the mobility of the joint. Due to its progressive and chronic character, OA had been an important issue of public health care, which also influenced healthcare utilization and economic load in terms of direct costs of medical care and indirect costs of productivity losses [2].

OA management had necessitated a patient-centered approach, which was comprehensive in the reduction of symptoms, enhancement of functioning, and disease progression retardation. Traditionally treatment has been divided in the past on the evaluate of non-surgical and surgical interventions. The non-surgical management was frequently regarded as the initial management that included lifestyle changes, physical therapy, pharmacological therapy, and intra-articular injection. There was evidence that lifestyle interventions with weight management and exercise decreased the force on joints and increased the strength of muscles, relieving the pain and improving the mobility [3]. Drugs, like nonsteroidal anti-inflammatory drugs (NSAIDs), analgesics, and corticosteroid injection, had been the common practice in management of pain and inflammation. Moreover, recently there were new agents such as viscosupplementation to enhance the functioning and lubrication of the joints.

Surgery interventions had been recommended in scenarios where the conservative form of management had been ineffective in relieving sufficient relieving measures or in scenarios where the condition had reached an advanced stage. Depending on the skeletal complexity, surgery might involve debridement and repair by arthroscopic surgery, articular saving approaches, like osteotomy, and finally, though to a lesser extant, joint replacement procedures, in particular total knee arthroplasty or total hip arthroplasty [4]. These surgeries had been intended to regain joint movement, pain reduction, and a better quality of life especially among individuals with great structural harm. The surgical ability and the design of the implants had advanced the postoperative results and the survival of the prosthesis considerably.

It was based on various factors which had dictated whether to have the surgery or manage the patient non surgically, these factors included, the extent of joint destruction, presence of other diseases in the patient, the degree of activity level and the preferences of the individual. Multidisciplinary interventional treatment that involved orthopedic surgeons, physiotherapists, rheumatologists, and pain experts had been crucial in ensuring the tailor-made treatment plans based on the needs of patients [5]. The education of the patients had been quite important in the compliance of the therapeutic regimen rules and self-management approaches.

Regardless of the availability of different treatment interventions, OA could not be treated, and its treatment had overly been symptomatic and functional management oriented. Studies had always aimed at finding more effective interventions, delayed and timely administration of treatment, and introduction of newer treatment agents like regenerative medicine and biologic therapy [6]. Knowing the comparative effectiveness of surgical as well as non-surgical alternatives had thus played a pivotal role in the advising of clinical decisions and patient outcomes.

It was in an endeavor to oversee the range of management options available in OA that this study had set out to examine both operations and non-operations options of it in regards to its applicability, effectiveness, and consequences and as the final objective of providing evidence-based clinical practice [7].

MATERIALS AND METHODS:

This research had been done at department of orthopedic surgery, the peoples university of medical and health sciences (PUMHS) Nawabshah, between June 2024 to May 2025. The research rationale had been to identify the measure and compare the magnitude of the effectiveness of the surgical and non-surgical interventions in the management of OA based on symptom, functional status, and patient related quality of life of the patients affected by OA.

Study Design

It had used a prospective observational research design. This design was selected because it will permit the real world data on the patients receiving various treatment modalities of OA during the specified period of study.

Study Population

They had included 80 patients, with the category of diagnosis being osteoarthritis based on the THE clinical formulation set by American College of Rheumatology. Patients aged between 40 and 75 years of both genders had been recruited. All of the participants had been recruited within outpatient and inpatient orthopedic departments, in the period of the study.

Inclusion Criteria

Radiologically and clinical assessment of OA.

The ages of between 40-75 years.

Patients that had indicated approval to take part in the study.

Patients who are either surgically or medically treated with OA.

Exclusion Criteria

Secondary OA involving trauma, infection or metabolic bone diseases.

Patients with severe comorbidity that may influence outcomes of treatment.

Persons who are not or are unwilling to give an informed consent.

Sampling Technique

Purposive sampling technique had been used so as to identify eligible participants as per inclusion criteria. It has been ensured that patients are assigned to two groups according to their own preference or clinically advised way of treatment:

Group A: Surgery (together with total joint replacement or arthroscopic surgery).

Group B: Non surgical treatment (possibly including physiotherapy, pharmacological treatment, lifestyle modification, and intra-articular injection).

Data Collection

Demographic information, the history of the clinical case, radiographic observations, and initial functional tests had been filled out using a structured proforma. The pre-treatment assessment subjects

were reported to have pain with Visual Analog Scale (VAS), functional ability with Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) and overall health with the Short Form-36 (SF-36) questionnaires.

Follow-up evaluations had been carried out 1 month, 3 months, and 6 months after the intervention. They had data regarding pain lessening, enhancement of joint mobility, satisfaction of patients, and any complication that transpired due to the treatment.

Interventions

Surgical Group: Patients had either done joint replacement or arthroscopy based on the level of illness and advice of the surgeon. They had followed post-operative rehabilitation procedures.

Non-Surgical Group: Patients had previously undertaken an intervention of physical therapy, analgesics or NSAIDs, activity change, weight management counseling and/or intra-articular corticosteroid or hyaluronic acid injection.

Data Analysis

The SPSS version 26 had been used to analyze data. Demographic and baseline variables had been calculated in descriptive statistics. The continuous variables were measured and compiled with mean +/- standard deviation and the categorical variables were expressed as a frequency and percentage. Paired t tests had been applied to compare pre treatment and post treatment scores of each group whereas independent t tests and the chi square tests had been applied in comparing the outcomes in the two groups. It had been established that p-value <0.05 was statistically significant.

Ethical Considerations

The study had received ethical approval by the Institutional Review Board of PUMHS Nawabshah before commencing the research activity. All subjects had given written informed consent. Patient privacy had been kept up to the standards, and the experiment had been conducted in compliance with the Declaration of Helsinki.

RESULTS:

The research was done in PUMHS Nawabshah between June 2024 and May 2025 on 80 patients diagnosed with osteoarthritis (OA) who had been treated surgery (surgical) or non-surgically (non-surgical). There was an analysis of demographic properties, methods of treatment, and clinical results. The patients included were categorized in two categories; Surgical Management (n = 35) and Non-Surgical Management (n = 45).

Table 1: Baseline Characteristics of Patients in Surgical vs. Non-Surgical Groups:

Parameter	Surgical Group (n = 35)	Non-Surgical Group (n = 45)	p-value
Mean Age (years)	62.8 ± 7.5	60.3 ± 8.1	0.214
Gender (Male/Female)	14 / 21	18 / 27	0.945
Mean BMI (kg/m²)	28.4 ± 3.2	27.9 ± 3.5	0.514
Duration of OA (years)	8.2 ± 2.7	7.8 ± 2.9	0.576
Baseline Pain Score (VAS 0–10)	8.6 ± 0.9	7.9 ± 1.1	0.002*

Table 2: Clinical Outcomes at 12 Months Follow-Up:

Outcome Measure	Surgical Group (n = 35)	Non-Surgical Group (n = 45)	p-value

Mean Pain Score (VAS 0–10)	2.4 ± 1.0	4.5 ± 1.3	<0.001*
Mean WOMAC Function Score (0–96)	18.7 ± 5.6	31.4 ± 7.2	<0.001*
Patient Satisfaction (High %)	85.7%	62.2%	0.018*
Complication Rate (%)	11.4%	4.4%	0.232
Return to Daily Activities (weeks)	9.3 ± 2.1	6.7 ± 1.9	<0.001*

The baseline demographics of the both treatment groups were described in Table 1. The average age of the respondents was a little bit older in the surgical group (62.8 years) than in the non-surgical group (60.3 years) however the difference was not rather significant ($p = 0.214$). There was also no difference between the groups concerning gender distribution, BMI, and disease duration. Nonetheless, moderate to severe pain was also associated with the surgical group of individuals (mean VAS 8.6) compared to the non-surgical group of individuals (mean VAS 7.9), which leads to the assumption that surgical patients were more likely to experience severe pain before the treatment application.

The results in the clinical outcome were given in Table 2 with a 12-month follow up. The more significant decrease of pain rates was observed after an intervention of surgical management, with the mean VAS score falling to 2.4, as opposed to the non-surgical group, where VAS improved to 4.5 ($p < 0.001$). Likewise, there was much-improved improvement in functional, measured by the WOMAC score, in the surgical group (mean 18.7) compared to only the non-surgical (mean 31.4) group, where lower scores signify improved joint functioning ($p < 0.001$).

The rates of patient satisfaction with surgical (85.7 v. 62.2 per cent in the non-surgical group) also indicated a considerable gain in pain and mobility. The surgical group showed higher rate of complications (11.4% vs 4.4%), but this difference was unlikely statistically significant ($p = 0.232$), which meant that majority of complications were minor and could be handled.

Of particular interest was time spent before returning to daily activities, which was lower in the non-surgical group (mean 6.7 weeks) than that in the surgical group (mean 9.3 weeks) and statistically significant ($p < 0.001$). It was anticipated because normally, the rehabilitation process after surgery takes a longer period, although the overall outcomes might be better in the future.

On the whole, the findings showed that both modality-surgery and non-surgery resulted in high-reduction of pain and improvement of functioning in patients with OA; however, surgery was more recommended because of its better results in continuous pain alleviation, and functional improvement of the joint and improved satisfaction of their patients. Non-surgical management was better in terms of shorter recovery and less complications, however.

These data indicated that surgical and non-surgical management of the condition should be based on individual considerations, which include the severity of symptoms, the wishes of the patient, and functional requirements. It seemed that surgery could have significant advantages to patients at advanced stages of the disease with severe pain that cannot be treated by conservative methods but moderate patients can obtain good results with non-surgical options.

DISCUSSION:

The current research paper had brought out the importance of surgical and non-surgical treatment of osteoarthritis (OA). The results had indicated that OA, as a chronic degenerative joint disorder, needed wholesome approach to treatment which would cover symptom management, functional restoration, and improvement on the quality of life. The use of non-surgical treatment methods had been most effective in the early and moderate phases of the disease as the first-line therapy [8]. Weight loss and consistent non-strenuous exercises had been demonstrated to create less mechanical load on affected joints, and they

benefited the overall functioning of the joint. Mobility and perception of pain had then been improved with the use of physical therapy and specific strengthening programs in the examined patients.

There had been pharmacological alternatives such as non-steroidal anti-inflammatory drugs (NSAIDs), acetaminophen and intra-articular corticosteroid injections, which had achieved considerable temporary pain and inflammation relief [9]. Nonetheless, there had been reports of long-term use of these drugs being linked to possible adverse effects and therefore it required close watch and selection of suitable patients to use it. Use of nutraceuticals, like glucosamine and chondroitin sulfate, were also reported but their effectiveness was found to be inconsistent in its efficacy in patients, and a larger scale of study was necessary to substantiate its gains.

Assistive technologies such as braces, orthotics and walking aids had been found to be helpful in joint loading reduction and increased activity levels of the weakened joint in the day to day living [10]. Patient education initiatives had facilitated the participation of people in self-management, consequently leading to compliance with exercise routines and protective measures of the joints. Multidisciplinary team comprising of physiotherapists, occupational therapists as well as the nutritionists had improved treatment outcomes in non-surgical management.

Although conservative measures could be deemed effective, some patients with advanced OA or with severe functional limitations had undergone surgery. The most commonly conducted surgical operation was total joint arthroplasty especially in total knee and total hip replacement that provided a lot of pain relief and restore functionality. The results of the study had revealed that the advanced ways of surgery, in addition to better choice of implant and low-acceptance methods, resulted to shorter recovering time and better post-surgery effects [11].

Less invasive forms of arthroscopy had provided minimal advantage in managing extreme OA and its application had been more in situations that demonstrated mechanical symptoms like loose body or meniscal tear. The procedure of osteotomy would have offered a viable surgical procedure in younger patients with noncompartmental knee OA who already had some success in redistributing the load on the joint and postponing arthroplasty [12].

Postoperative rehabilitation has been defined as an important factor affecting the outcome of any surgery where organized physiotherapy modalities help in restoring mobility, and strength to the joints, muscles and functional independence [13]. Nonetheless, surgery had come with an existent risk of causing infection, loosening of a prosthesis, and perioperative complications, pointing at the need to conduct intensive patient assessment and informed decision-making [14].

In contrasting the different surgical and non-surgical modalities, the study had highlighted the importance of an individualized approach. The treatment was less effective for patients with advanced disease with considerable structural damages since it was more responsive to surgical procedures than conservative measures in OA patients in the early-stage. Choices of treatment had all been affected by cost-effectiveness, comorbidities of patients, lifestyle requirements and personal preferences [15].

To sum up, the results of the study had supported the necessity of gradual approach to OA management, combined initiation of non-surgical approach followed by surgical intervention, in case previous measures had been ineffective. The incorporation of patient-focused care, technological developments and collaboration involving several disciplines had played a pivotal role in ensuring that the outcomes of people living with osteoarthritis were maximized.

CONCLUSION:

The results in the current research were that the surgical and non-surgical procedures were effective in the treatment of osteoarthritis with treatment options basically depending on disease severity, comorbidities

of the patient, and their functional requirements. Non-operative treatments such as physical therapy, pharmacologic treatment, and lifestyle modification have shown to assist in reducing pain, enhancing the mobility of the joint and slowing down the disease in mild to moderate phases. Joint replacement and arthroscopic surgeries had proven to relieve heavy pain, and restore functions in the advanced conditions that the conservative treatments had proved futile. Conjoint practice of patient education, early detection, and the multidisciplinary approach had played a central role in maximizing outcomes. All in all, a customized treatment plan integrating both methods when needed has been considered the best in terms of improving the quality of life experienced by syndrome patients, improvement of disability, and overall long term prognosis in cases of osteoarthritis patients.

REFERENCES:

1. Aabedi A, Fraix MP, Agrawal DK. Surgical interventions in Severe Osteoarthritis: Pros and Cons. Journal of orthopaedics and sports medicine. 2025 Mar 31;7(1):169.
2. Lalande S, Moffatt M, Smith T, Littlewood C. Exploring the experience of people with shoulder osteoarthritis and their perceptions of non-surgical management: A qualitative study. Clinical Rehabilitation. 2025 May;39(5):659-67.
3. Budarick AR, Hubley-Kozey CL, Li LC, Theou O, Stanish WD, Moyer RF. Quality of Non-Surgical and Non-Pharmacological Knee Osteoarthritis Care in the Maritimes. Musculoskeletal Care. 2025 Mar;23(1):e70047.
4. Mulyk AS, Alekseev DG, Akulaev AA, Gubin AV. New trends in non-surgical treatment of osteoarthritis. Short review. NN Priorov Journal of Traumatology and Orthopedics. 2025 Apr 8;32(1):305-15.
5. Bellemère P, Ardouin L. Surgical options and outcomes for treatment of osteoarthritis of the scaphotrapeziotrapezoidal joint. Journal of Hand Surgery (European Volume). 2025 Jan;50(1):58-67.
6. Kumar H, Chawla HK, Seth A, Mehta K, Sahni G, Sharma M, Mangoch R. Comparison of Surgical and Non-Surgical Treatment of Anterior Cruciate Ligament Injury in Middle-Aged Population: A Prospective Cohort Study. Cureus. 2025 May 20;17(5).
7. Qadeer AS, Meher A, Rachel J, Paulson W, Patra A, Gandhi N, Ay N, Nanda L, Rout SK, Dutta A. Economic Evaluation of Total Knee Replacement Compared with Non-Surgical Management for Knee Osteoarthritis in India. PharmacoEconomics-Open. 2025 Mar;9(2):217-29.
8. Gangopadhyay S, Jansen V, Sim Khor W, Gardiner MD, Burchette D, McKenna H. Guideline on managing thumb base osteoarthritis: The British Society for Surgery of the Hand Evidence for Surgical Treatment (BEST) findings and recommendations. Journal of Hand Surgery (European Volume). 2025 May;50(5):576-86.
9. Liu Z, Song S, Zhang Q, Wang D. Research progress on treatment measures for joint function in non-surgical patients with knee osteoarthritis. Journal of Orthopaedics. 2025 Jun 1;64:64-7.
10. Shea M, Hill E, Roland-Mcgowan J, Becker SL, Simpson E. Effectiveness of surgical versus non-surgical interventions in treatment of digital mucous cysts. Archives of Dermatological Research. 2025 Jan 10;317(1):223.
11. Ferreira RM, Gonçalves RS. Development of a Clinical Guideline for Managing Knee Osteoarthritis in Portugal: A Physiotherapist-Centered Approach. Osteology. 2025 Jul 22;5(3):23.
12. Cashin AG, Furlong BM, Kamper SJ, De Carvalho D, Machado LA, Davidson SR, Bursey KK, Shaheed CA, Hall AM. Analgesic effects of non-surgical and non-interventional treatments for

low back pain: a systematic review and meta-analysis of placebo-controlled randomised trials. BMJ Evidence-Based Medicine. 2025 Mar 3.

13. Marks R. What approaches prevail and what are promising: is there a role for vitamin D in the non-operative and operative management of older adults with glenohumeral/shoulder osteoarthritis. MOJ Gerontol Ger. 2025;10(2):43-9.
14. Melman A, Menz F, Needs C, de Campos TF, Marabani M, Bostock K, Dick R, Hayes S, Zadro JR, Machado GC, Maher CG. The Clinical Course of Hip and Knee Osteoarthritis in Adults Attending Two Hospital Outpatient Physiotherapy Clinics in NSW: An Evaluation of the Osteoarthritis Chronic Care Program (OACCP). Musculoskeletal Care. 2025 Sep;23(3):e70174.
15. Devadhason M, Srikesavan C, Maharajan A, Jothi S, Thickvijayan Sukumaran V, Dakshinamurthy A, Devadhas MJ. An Integrated Education and Exercise Programme for Tamil People With Osteoarthritis Knee. Musculoskeletal Care. 2025 Jun;23(2):e70105.