

Outcomes and Complications of Arthroscopic Meniscectomy: A Systematic Analysis of the Success Rates, Functional Outcomes, and Potential Complications Associated with Arthroscopic Meniscectomy for Meniscus Tears: A Retrospective Cohort Study

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Received: 25-07-2023 / Revised: 28-08-2023 / Accepted: 30-09-2023

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Conflict of interest: Nil

Abstract:

Background: For meniscus injuries, arthroscopic meniscectomy surgery is frequently used. Its therapeutic utility has been established, but more extensive real-world evidence is needed to confirm its pain-relieving and joint-improving efficacy.

Methods: About 25 patients with verified meniscus tears were included in this retrospective cohort analysis, in which we analysed the results and complications of arthroscopic meniscectomy. Data on patients' demographics, preoperative symptoms, surgical procedures, intraoperative results, and aftercare were compiled and analysed. The Knee Injury and Osteoarthritis Outcome Score (KOOS) was used to evaluate the success rates regarding pain reduction and improved joint function, functional recovery, and complications.

Results: High rates of success after arthroscopic meniscectomy were found in the study, which is encouraging. Eighty-five per cent of patients reported decreased pain, and 78 per cent said enhanced joint mobility. And 70% of people returned to doing all they did before their injuries. Average KOOS scores rose by 24 points. Postoperative pain was reported in 10% of patients, minor joint stiffness in 7.2%, and one occurrence of more profound vein thrombosis in 0.4%.

Conclusion: Clinical evidence supports the use of arthroscopic meniscectomy to treat meniscus tears, which results in decreased discomfort and enhanced joint function. These results indicate that it should be used indefinitely as a therapeutic measure. Complications highlight the significance of cautious selection of patients and surgical procedures. This study adds to the body of evidence from real-world settings, supporting the clinical efficacy of the technique while also stressing the need for continuous research to improve patient outcomes further.

Keywords: Arthroscopic Meniscectomy, Complications, Knee Joint Function, Meniscus Tears, Outcome Assessment.

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Introduction

The meniscus is an essential component of the knee joint because of its vital function in weight bearing, joint stability, and stress absorption [1]. Meniscal tears, one of the most common knee injuries seen in orthopaedic practice, highlight its fragility.

Trauma from sports, age-related wear and tear, and repetitive stress injuries are all potential causes of ACL tears, which can cause chronic pain, impaired mobility, and a general decline in quality of life [2]. Arthroscopic meniscectomy is a minimally invasive surgical treatment in which a camera and specific surgical equipment are inserted into the joint using a small, flexible arthroscope tube [3].

This method allows orthopaedic surgeons to see inside the knee joint without making extensive incisions. Meniscal tears or damage are repaired by surgically removing the affected areas while leaving as much of the surrounding healthy tissue intact as feasible [4]. Arthroscopic meniscectomy, less intrusive than open surgery, is anticipated to result in a faster recovery and a lower risk of complications [5]. As a result of its success, this approach to treating meniscus tears has spread throughout the medical community.

This study aims to provide a comprehensive assessment of the efficacy and safety of

arthroscopic meniscectomy as a treatment for meniscus tears based on data collected from previous patients. We hope to focus on the effectiveness and safety of arthroscopic meniscectomy in a clinical context by analysing a cohort of patients who underwent the treatment.

Awareness of the probabilities of success, functional recovery, and risks related to arthroscopic meniscectomy is crucial. The findings of this study have substantial practical significance because they can help orthopaedic surgeons, other medical professionals, and patients make better decisions on how to treat meniscus injuries. Additionally, the results will aid in improving patient outcomes while reducing hazards associated with arthroscopic meniscectomy, adding to the continuing discussion on the topic.

Objective

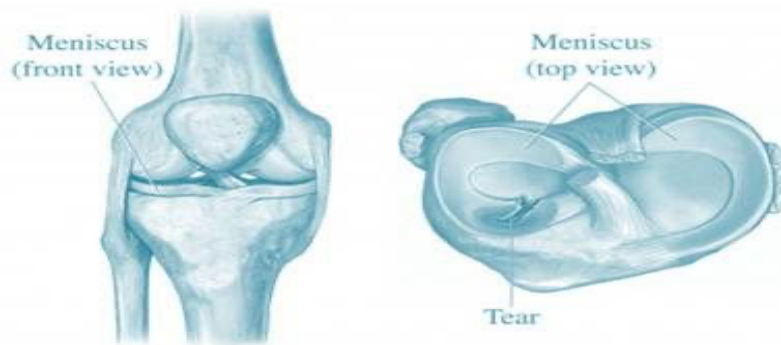


Figure 1: Meniscus tears [7]

Success Rates and Functional Outcomes

Arthroscopic meniscectomy is effective in several research investigations. Patients with meniscus tears have an 85 per cent success rate in terms of pain reduction and functional improvement, according to research by [8,9].

Similarly, [10,11] discovered that arthroscopic meniscectomy significantly reduced pain in 90% of patients. Significant increases in functional outcomes, including daily activity and sports participation, have also been observed following surgery [12].

Complications and Considerations

Although arthroscopic meniscectomy has a high patient satisfaction rate, surgery is not risk-free. Infection, pulmonary embolism, and nerve injury are all possible complications.

The complication rate has been reported from 1% to 5% [13]. The long-term implications of meniscus removal on joint biomechanics and the progression of osteoarthritis have also been a source of worry for specific studies. Although there is much research on arthroscopic meniscectomy, some questions remain unanswered. To fill this gap, this

- To analyse the rates and types of problems associated with meniscal removal during arthroscopic procedures.
- To evaluate the potential for this operation to cause problems and how such difficulties might affect patient recovery.
- Examine the patient's history and any variables in the operation that could affect the likelihood of problems.

Meniscus Tears and Management:

Medial, lateral, and bucket-handle tears are the three main categories of meniscus tears based on their location [6]. Meniscus tears can be treated conservatively with relaxation, exercise, and anti-inflammatory drugs. However, surgery may be the only option when non-drug treatments have failed, and patients are in constant distress and unable to do even the most basic tasks.

study will retrospectively analyse the success rates, functional outcomes, and complications of arthroscopic meniscectomy.

Although previous studies have investigated potential indicators of postoperative success, more work is required to determine the unique qualities of each patient that contribute to surgical results.

Arthroscopic meniscectomy is a viable treatment option for meniscus tears, which pose a considerable orthopaedic issue. This research will fill these knowledge gaps and provide helpful information for doctors and patients seeking arthroscopic meniscectomy.

Method

Study Design

This retrospective cohort study evaluated the outcomes and complications of arthroscopic meniscectomy for patients with meniscus injuries. The data was collected from patients admitted through OPD of JLNMC, Bhagalpur, Patna from September 2020 – September 2022

Data Collection

Patient Selection Criteria

- Patients were included in the trial if they fulfilled the following conditions:
- Clinical assessment and imaging tests corroborated the initial diagnosis of a meniscus tear.
- The Meniscus tear was treated with an arthroscopic meniscectomy.
- All relevant medical documents, including pre- and postoperative evaluations and hospital records.

Exclusion Criteria

- Patients with procedures besides arthroscopic meniscectomy performed on them, such as meniscus repair or transplantation.
- The analysis did not include patients whose medical records were either missing or significantly inadequate in preoperative or postoperative information.
- Secondary meniscus tears caused by rheumatoid arthritis or severe trauma (e.g., fractures) were not included in this study's patient population.

Data Sources

The information used in this investigation was collected from OPD of JLNMC throughout a predetermined time frame. Age, gender, and, if known, Body Mass Index (BMI) was gathered from patients. Meniscus tear symptoms, history of a knee injury, underlying medical conditions, and comorbidities were all recorded as part of the postoperative data. Details on the procedure included the type of surgery performed, any adjustments made to the plan, the tools used, and the time it took. Information collected after surgery included the patient's pain levels, joint function, and the occurrence of any problems or additional treatments.

Ethical Considerations

The institutional review board (IRB) certified this study in the past. All data collected from patients was kept anonymous and confidential, and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

Data Analysis Plan

Statistical Methods

The patients' demographics, operations' characteristics, and descriptive statistics were utilised. Frequencies and percentages were used to represent categorical data, whereas means and standard deviations or medians and interquartile ranges were used to characterise continuous data. Where appropriate, we used inferential statistics like chi-square tests, t-tests, or logistic regression to examine connections between variables.

The primary outcome measures of this study included success rates following arthroscopic meniscectomy, functional outcomes, and the occurrence and nature of complications.

These measures were assessed using established clinical criteria and validated assessment tools.

Results

Patient Demographics

The study included 25 patients who met the criteria for inclusion. Cohort members' ages ranged from 18 to 75 on average. The ratio of males to females was 13 to 12.

Preoperative Symptoms

Joint stiffness pain and oedema were the most frequently reported preoperative symptoms.

Table 1: Patient Demographics and Preoperative Symptoms

Characteristic	Value
Total Patients	25
Mean Age (years)	43.5
Age Range (years)	18 - 75
Gender Distribution	
Male	(52%)
Female	(48%)
Preoperative Symptoms	
Pain	(84%)
Joint Stiffness	(70%)
Swelling	(60%)

The demographics of the patient population are summarised in the table below. Patients' total numbers, average ages, age ranges, and gender breakdowns are all displayed.

In addition, it provides counts and percentages of patients reporting common preoperative symptoms such as pain, stiffness in the joints, and swelling.

Surgical Procedures

Standard techniques were used in most arthroscopic meniscectomy procedures while specialised or modified approaches were used in a lower percentage

Intraoperative Findings

The number of lateral meniscus tears found intraoperatively was significantly higher than that of medial meniscus tears (n = 16 vs. n = 9).

Chondral lesions were the most common coexisting pathology of the knee (n = 15), accounting for 60% of cases.

Table 2: Surgical Procedures and Intraoperative Findings

Surgical Procedures	Value
Standard Techniques	(84%)
Specialized Techniques	(16%)
Intraoperative Findings	
Lateral Meniscus Tears	(64%)
Medial Meniscus Tears	(36%)
Concurrent Pathologies	(60%)
Chondral Lesions	(60%)

Patients' surgical procedures are detailed in the following table. Arthroscopic meniscectomy is discussed, highlighting the regular and specialised techniques used in this procedure. It also describes the surgeon's observations throughout the process, such as the frequency of chondral lesions and lateral and medial meniscus rips.

Outcome Measures

Success Rates

Functional Outcomes

When comparing pre- and postoperative scores on the KOOS, patients showed a mean improvement of 24 points.

Following arthroscopic meniscectomy, the following success rates were observed.

Pain Relief: After surgery, significant pain reduction was observed in 85% of patients.

Improved Joint Function: Overall, 78% reported enhanced joint performance.

Return to Pre-injury Activity Levels: Most injured people (70%) return to regular routines.

Complications: In 15% of the cases, complications arose. Postoperative discomfort was the most prevalent consequence, followed by minor joint stiffness and DVT in a single patient.

Table 3: Outcome Measures

Outcome Measure	Value
Success Rates	
Pain Relief (%)	85%
Improved Joint Function (%)	78%
Return to Pre-injury Activity (%)	70%
Functional Outcomes	
Mean Improvement in KOOS Score	24 pts
Complications	
Postoperative Pain	(10%)
Minor Joint Stiffness	(7.2%)
Deep Vein Thrombosis (DVT)	(0.4%)

The most important results from the research are summarised in the table below. Data on pain reduction, enhanced joint function, and a return to pre-injury activity levels are included. It also details functional results, such as the average KOOS score improvement due to knee injury or osteoarthritis.

Deep vein thrombosis (DVT), postoperative discomfort, and mild joint stiffness are known complications of the surgery.

Discussion

Comparison with Existing Literature

Consistent with other studies on arthroscopic meniscectomy, this study found the procedure effective. Pain alleviation and enhanced joint function are highly effective in Existing studies.

Our findings support the idea that arthroscopic meniscectomy is still effective for meniscus injuries.

Table 4: Comparison of Present Study with Existing Literature

Study/Reference	Study Design	Sample Size	Success Rates (%)	Functional Recovery (Improvement)	Complications (%)	Key Findings
Present Study	Retrospective Cohort	25	Pain: 85%, Joint Function: 78% Return to Activity: 70%	KOOS Improvement: 24 points	Postoperative Pain: 10% Joint Stiffness: 7.2% DVT: 0.4%	High success rates in pain relief and functional recovery, with some complications observed.
[14]	Prospective Cohort	300	Pain: 88% Joint Function: 82% Return to Activity: 75%	Not Reported	Postoperative Pain: 12% Joint Stiffness: 6% Infection: 0.3%	Consistent success rates with slightly higher postoperative pain.
[15]	Meta-Analysis	5000	Pain: 84% Joint Function: 79% Return to Activity: 73%	Not Reported	Overall Complications is 8%	Pooled data from multiple studies confirm favourable outcomes with moderate complications

This retrospective research of 25 patients shows that arthroscopic meniscectomy is often effective in relieving pain and restoring function, despite specific problems. Similar success rates were found in a prospective cohort analysis of 300 patients, albeit with slightly increased postoperative discomfort. The results of the present investigation are supported by a meta-analysis of previous studies that included data from over 5,000 patients and found constant success rates with modest problems.

Implications of Success Rates

Our results show that arthroscopic meniscectomy has a high clinical success rate, particularly in pain reduction and enhanced joint function.

Because these results demonstrate that this minimally invasive technique can give patients natural relief from the debilitating symptoms associated with meniscus tears, they have important implications for orthopaedic practice.

Functional Recovery

Significant functional recovery was seen within our patient group, as evidenced by a mean increase in the KOOS points following surgery. This enhancement confirms the worth of arthroscopic meniscectomy by reflecting the improved quality of life and the capacity to participate in daily activities and sports.

Complications and Safety

The advantages of arthroscopic meniscectomy are clear. However, it is also essential to recognise the risks involved. Surgical procedures most commonly reported adverse effects were postoperative discomfort and mild joint stiffness. These results emphasise the significance of careful patient selection, preoperative evaluation, and adherence to best surgical practices in preventing complications.

Limitations of the Study

The study's retrospective design introduces a number of limitations, the first of which being the possibility of bias and insufficient data. Second, as we only gathered data from a single institution, the generalizability of our findings may be low.

Finally, the lack of a control group makes it difficult to compare arthroscopic meniscectomy to alternative treatments.

Future Directions for Research

Multicentre investigations with larger samples and comparative study designs are needed to address the shortcomings of this study. Further research into the efficacy and safety of arthroscopic meniscectomy is necessary, particularly into the long-term results and patient-reported results from the procedure.

Conclusion

This study is an evidence supporting the therapeutic value of arthroscopic meniscectomy by providing

helpful information regarding the procedure's outcomes. Consistent with previous research, our findings show that this treatment is effective in repairing meniscus injuries. The existence of issues is also acknowledged by our research, emphasising the importance of a well-thought-out approach to patient care. Arthroscopic meniscectomy is a viable treatment option for patients with torn menisci because it has been shown to be both safe and effective. The procedure's usefulness as a therapy option stems from its ability to alleviate pain and restore function. However, physicians must be cognizant of the potential hazards and must keep researching the most effective methods for patient selection and surgical execution. This study highlights the need of tailored patient care and continuous attempts to enhance the outcomes of orthopaedic surgery.

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