

A Comparative Study of Functional Outcomes Following Arthroscopic Meniscal Repair Versus Partial Meniscectomy in Patients with Traumatic Meniscal Tears

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ABSTRACT

Background: Traumatic meniscal tears are common knee injuries, particularly among young and physically active individuals, resulting in pain, mechanical symptoms, and functional impairment. Arthroscopic meniscal repair and partial meniscectomy are commonly performed surgical procedures. However, their comparative effectiveness regarding postoperative functional recovery remains an important consideration. **Aim:** To compare functional outcomes following arthroscopic meniscal repair versus partial meniscectomy in patients with traumatic meniscal tears. **Materials and Methods:** This prospective comparative observational study included 100 patients with traumatic meniscal tears, divided into two groups of 50 patients each. Group A underwent arthroscopic meniscal repair, while Group B underwent arthroscopic partial meniscectomy. Functional outcomes were assessed using the Lysholm Knee Score, International Knee Documentation Committee (IKDC) score, and Visual Analogue Scale (VAS). Patients were evaluated preoperatively and at six weeks, three months, and six months postoperatively. **Results:** The mean age was 29.8 ± 7.2 years in Group A and 31.2 ± 8.1 years in Group B. At six months, the mean Lysholm score was higher in Group A (91.2 ± 5.8) than Group B (86.4 ± 6.5). Similarly, IKDC scores were 88.6 ± 6.3 and 83.2 ± 7.1 , respectively. Postoperative VAS scores were 0.9 ± 0.6 and 1.4 ± 0.7 , respectively. Return to daily activities was faster following meniscectomy (4.6 ± 1.5 weeks) than repair (7.8 ± 2.1 weeks). **Conclusion:** Meniscal repair demonstrated better six-month functional scores, whereas partial meniscectomy facilitated earlier recovery. Surgical selection should consider tear characteristics and patient requirements.

Keywords: Arthroscopic Meniscal Repair; Partial Meniscectomy; Traumatic Meniscal Tears; Lysholm Knee Score; IKDC Score; Functional Outcomes.

INTRODUCTION

Meniscal injuries are among the most common intra-articular knee injuries and represent a significant cause of pain, swelling, mechanical symptoms, and functional disability, particularly among young and physically active individuals. The menisci are fibrocartilaginous structures that play essential roles in load transmission, shock absorption, joint stability, lubrication, and protection of articular cartilage. Traumatic meniscal tears commonly result from twisting movements, rotational injuries, and sports-related trauma and may

occur independently or in association with anterior cruciate ligament (ACL) injuries. These injuries can substantially impair knee function, restrict physical activities, and adversely affect patients' quality of life [1,2].

Arthroscopic partial meniscectomy is among the most frequently performed orthopaedic procedures worldwide, with approximately 500,000 procedures performed annually in the United States [3,4]. Traditionally, partial meniscectomy has been widely employed to relieve pain and mechanical symptoms by removing unstable

meniscal fragments while preserving healthy tissue. The procedure offers advantages such as shorter operative duration, early mobilization, rapid rehabilitation, and faster return to daily activities. However, removal of meniscal tissue alters normal knee biomechanics, increases tibiofemoral contact stresses, and may contribute to progressive cartilage degeneration and osteoarthritis. Furthermore, recent studies have questioned the additional benefits of partial meniscectomy over conservative treatment, particularly in patients with degenerative meniscal tears [5–10].

In contrast, arthroscopic meniscal repair has gained increasing importance because of its potential to preserve native meniscal tissue and maintain long-term knee joint function. Advances in arthroscopic instrumentation and surgical techniques, including inside-out, outside-in, and all-inside repair methods, have improved the management of repairable traumatic meniscal tears. Meniscal repair aims to restore meniscal continuity, maintain joint stability, and reduce the risk of degenerative changes. Nevertheless, it generally requires prolonged rehabilitation, delayed return to strenuous activities, and carries a risk of incomplete healing or recurrent tears requiring revision surgery [11–13].

Functional outcomes following meniscal surgery are commonly evaluated using validated scoring systems, including the Lysholm Knee Score, International Knee Documentation Committee (IKDC) score, and Tegner Activity Scale. These assessments provide information regarding postoperative pain, knee stability, functional recovery, and return to activity. Although both surgical procedures demonstrate satisfactory clinical outcomes, uncertainty remains regarding their comparative effectiveness, particularly concerning early recovery, functional improvement, and long-term joint preservation [14].

Therefore, the present study was undertaken to compare functional outcomes following arthroscopic meniscal repair versus partial meniscectomy in patients with traumatic meniscal tears, focusing on postoperative knee function, pain relief, range of motion, and functional recovery. The findings may contribute to evidence-based surgical decision-making and help optimize treatment strategies for patients with traumatic meniscal injuries.

MATERIALS AND METHODS

Study Design

The present study was designed as a hospital-based, prospective, comparative observational study to evaluate and compare the functional outcomes following arthroscopic meniscal repair versus arthroscopic partial meniscectomy in patients with traumatic meniscal tears.

Study Setting

The study was conducted in the Department of Orthopaedics at a tertiary care teaching hospital. Patients presenting with traumatic meniscal injuries who underwent arthroscopic surgical management were enrolled after fulfilling the predefined eligibility criteria.

Study Duration

The study was conducted over a period of 18 months, during which eligible patients were recruited, surgically managed, and followed up to assess postoperative functional outcomes.

Study Population

The study population comprised adult patients aged 18–50 years who were diagnosed with traumatic meniscal tears based on clinical examination and magnetic resonance imaging (MRI) findings and subsequently underwent arthroscopic meniscal repair or partial meniscectomy.

Sample Size

A total of 100 patients with traumatic meniscal tears were included in the study. Patients were divided into two groups according to the arthroscopic procedure performed.

- Group A (Meniscal Repair): 50 patients who underwent arthroscopic meniscal repair.
- Group B (Partial Meniscectomy): 50 patients who underwent arthroscopic partial meniscectomy.

The sample size was selected based on the anticipated availability of eligible patients during the study period. Both groups were followed using a standardized assessment protocol.

Sampling Technique

Patients were recruited using a consecutive sampling technique after assessment of eligibility. The choice of surgical procedure was determined by the operating surgeon based on tear characteristics, location, vascularity, tissue quality, and feasibility of repair. Patients were subsequently categorized into the respective treatment groups.

Inclusion Criteria

1. Patients aged 18–50 years of either sex.
2. Patients diagnosed with traumatic meniscal tears based on clinical examination and MRI findings.
3. Patients with symptomatic meniscal tears requiring arthroscopic surgical intervention.
4. Patients who underwent arthroscopic meniscal repair or partial meniscectomy.
5. Patients willing to participate and provide written informed consent.

6. Patients willing to comply with the prescribed postoperative rehabilitation and follow-up schedule.

Exclusion Criteria

1. Patients with degenerative meniscal tears or advanced osteoarthritis of the knee.
2. Patients with previous surgery involving the affected knee.
3. Patients with associated major ligamentous injuries requiring simultaneous ligament reconstruction.
4. Patients with associated intra-articular fractures or significant cartilage defects.
5. Patients with inflammatory arthritis, septic arthritis, or other chronic knee joint disorders.
6. Patients with neurological or musculoskeletal conditions affecting lower-limb function.
7. Patients unwilling to participate or unable to complete the follow-up protocol.

Data Collection Procedure

After obtaining written informed consent, demographic and clinical information was recorded using a structured case record form. Baseline characteristics included age, sex, body mass index (BMI), affected knee, mode of injury, duration of symptoms, and preoperative functional status.

A detailed clinical examination was performed to assess joint line tenderness, swelling, range of motion, mechanical symptoms, and knee stability. Special clinical tests, including the McMurray test and Thessaly test, were performed wherever feasible.

Preoperative MRI findings were reviewed to identify the location, morphology, and extent of the meniscal tear. The final tear characteristics were confirmed during diagnostic arthroscopy.

Preoperative Assessment

All patients underwent routine preoperative evaluation, including detailed medical history, physical examination, and investigations required for anaesthetic fitness. Preoperative knee function was assessed using the Lysholm Knee Scoring Scale and the International Knee Documentation Committee (IKDC) Subjective Knee Evaluation Form.

Pain intensity was assessed using the Visual Analogue Scale (VAS), ranging from 0 (no pain) to 10 (worst imaginable pain). Preoperative knee range of motion was measured using a standard goniometer.

Surgical Procedure

All surgical procedures were performed arthroscopically under spinal or general anaesthesia using standard anterolateral and anteromedial portals. Diagnostic

arthroscopy was initially performed to evaluate meniscal tear characteristics, articular cartilage condition, and associated intra-articular abnormalities.

Group A: Arthroscopic Meniscal Repair (n = 50)

Patients in Group A underwent arthroscopic meniscal repair. The procedure was performed for tears considered suitable for repair based on tear location, morphology, vascularity, and tissue quality.

The torn meniscal edges were prepared, and the tear was stabilized using an appropriate repair technique, including all-inside, inside-out, or outside-in suturing, depending on the tear configuration and location. Adequate approximation and stability of the repaired meniscus were confirmed arthroscopically.

Group B: Arthroscopic Partial Meniscectomy (n = 50)

Patients in Group B underwent arthroscopic partial meniscectomy for meniscal tears considered unsuitable for repair.

The unstable or damaged portion of the meniscus was selectively excised using arthroscopic instruments, while the maximum possible amount of healthy meniscal tissue was preserved. The remaining meniscal rim was contoured to obtain a stable configuration, and the joint was inspected for residual unstable fragments.

Postoperative Management and Rehabilitation

All patients received standard postoperative care, including analgesics, wound care, and physiotherapy. Rehabilitation protocols were individualized according to the surgical procedure performed.

In Group A, patients followed a protected rehabilitation protocol, with restrictions on weight-bearing and knee flexion during the initial postoperative period according to tear characteristics and repair stability. Gradual progression of knee movements, muscle-strengthening exercises, and weight-bearing activities was permitted based on clinical recovery.

In Group B, patients were encouraged to begin early knee mobilization and weight-bearing as tolerated. Quadriceps-strengthening exercises, range-of-motion exercises, and progressive functional training were initiated under physiotherapy supervision.

Both groups were advised to attend scheduled follow-up visits and adhere to their respective rehabilitation protocols.

Follow-up Assessment

Patients were evaluated preoperatively and at 6 weeks, 3 months, and 6 months postoperatively. Functional recovery, pain intensity, knee range of motion, and postoperative complications were assessed during follow-up visits.

The following parameters were recorded:

Parameter	Assessment method
Knee functional outcome	Lysholm Knee Score
Subjective knee function	IKDC Subjective Knee Score
Pain intensity	Visual Analogue Scale (VAS)
Knee range of motion	Goniometric measurement
Return to daily activities	Time taken to resume routine activities
Return to sports	Time taken to resume sporting activities, where applicable
Postoperative complications	Infection, stiffness, recurrent symptoms, and reoperation
Overall functional recovery	Comparison of preoperative and postoperative functional scores

Outcome Measures

Primary Outcome

The primary outcome was the comparison of postoperative functional outcomes between arthroscopic meniscal repair and partial meniscectomy groups at 6 months, assessed using the Lysholm Knee Score and IKDC Subjective Knee Score.

Secondary Outcomes

The secondary outcomes included:

1. Comparison of postoperative pain reduction using VAS scores.
2. Assessment of improvement in knee range of motion.
3. Comparison of time required to return to routine daily activities.
4. Assessment of return to sports and recreational activities.
5. Evaluation of postoperative complications, including knee stiffness, recurrent symptoms, and reoperation.
6. Comparison of functional improvement from baseline to 6 months in both groups.

Statistical Analysis

The collected data were entered into Microsoft Excel and analysed using SPSS 27 statistical software. Continuous variables were expressed as mean $\pm$ standard

deviation or median with interquartile range, depending on data distribution, while categorical variables were presented as frequencies and percentages.

The Shapiro–Wilk test was used to assess the normality of continuous variables. The independent-samples Student's t-test or Mann–Whitney U test was used to compare continuous variables between the two groups, as SPSS 27. Within-group comparisons of preoperative and postoperative scores were performed using the paired t-test or Wilcoxon signed-rank test.

Categorical variables were compared using the Chi-square test or Fisher's exact test, wherever applicable. Changes in functional scores over multiple follow-up visits were evaluated using repeated-measures analysis of variance or an SPSS 27 non-parametric alternative. A p-value less than 0.05 was considered statistically significant.

RESULTS

A total of 100 patients with traumatic meniscal tears were included in the study and divided into two groups: Group A underwent arthroscopic meniscal repair (n=50), while Group B underwent arthroscopic partial meniscectomy (n=50). Both groups were evaluated for baseline demographic characteristics, meniscal tear patterns, postoperative functional outcomes, pain reduction, recovery parameters, and complications.

Table 1. Comparison of Baseline Characteristics Between the Two Groups (N = 100)

Parameter	Meniscal Repair (n=50)	Meniscectomy (n=50)
Age (years)	29.8 $\pm$ 7.2	31.2 $\pm$ 8.1
Male, n (%)	36 (72.0)	34 (68.0)
Female, n (%)	14 (28.0)	16 (32.0)
BMI (kg/m ²)	24.1 $\pm$ 2.9	24.6 $\pm$ 3.1
Right knee, n (%)	28 (56.0)	27 (54.0)
Sports injury, n (%)	27 (54.0)	24 (48.0)

As shown in Table 1, the mean age of patients undergoing meniscal repair was 29.8 $\pm$ 7.2 years, compared with 31.2 $\pm$ 8.1 years in the meniscectomy group. Male patients predominated in both groups (72.0% and 68.0%, respectively). The mean BMI was 24.1 $\pm$ 2.9 kg/m² in the repair group and 24.6 $\pm$ 3.1 kg/m² in the meniscectomy group. Right knee involvement was observed in 56.0% and 54.0% of patients, respectively. Sports-related injuries accounted for 54.0% of cases in the repair group and 48.0% in the meniscectomy group. Overall, the baseline characteristics were comparable between the two groups.

Table 2. Comparison of Meniscal Tear Characteristics (N = 100)

Parameter, n (%)	Meniscal Repair (n=50)	Meniscectomy (n=50)
Medial meniscus	32 (64.0)	34 (68.0)
Lateral meniscus	18 (36.0)	16 (32.0)
Longitudinal tear	28 (56.0)	10 (20.0)
Bucket-handle tear	14 (28.0)	8 (16.0)
Radial tear	5 (10.0)	17 (34.0)
Complex tear	3 (6.0)	15 (30.0)

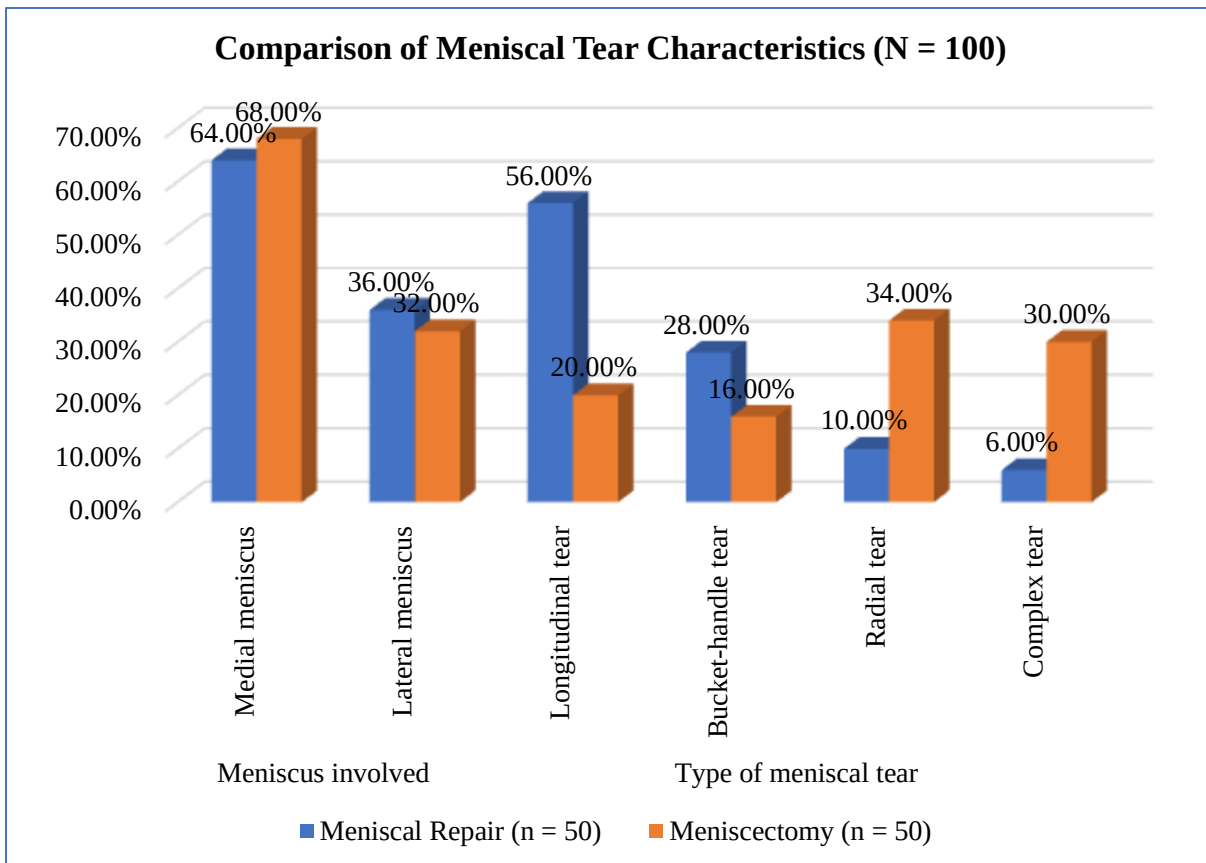
**Figure 1 Comparison of Meniscal Tear Characteristics (N = 100)**

Table 2 and Figure 1 illustrate the distribution of meniscal tear characteristics in both groups. Medial meniscal involvement was more frequent than lateral involvement in both groups, accounting for 64.0% of cases in the repair group and 68.0% in the meniscectomy group. Longitudinal tears were predominantly observed in the repair group (56.0% versus 20.0%), followed by bucket-handle tears (28.0% versus 16.0%). Conversely, radial tears (34.0% versus 10.0%) and complex tears (30.0% versus 6.0%) were more frequent in the meniscectomy group. These findings demonstrated differences in tear morphology between the two surgical groups.

Table 3. Comparison of Lysholm Knee Scores Between the Two Groups (N = 100)

Follow-up	Meniscal Repair (n=50)	Meniscectomy (n=50)
Preoperative	51.6 ± 8.4	52.3 ± 8.1
6 weeks	65.8 ± 7.6	72.4 ± 7.2
3 months	79.6 ± 7.1	82.1 ± 6.8
6 months	91.2 ± 5.8	86.4 ± 6.5

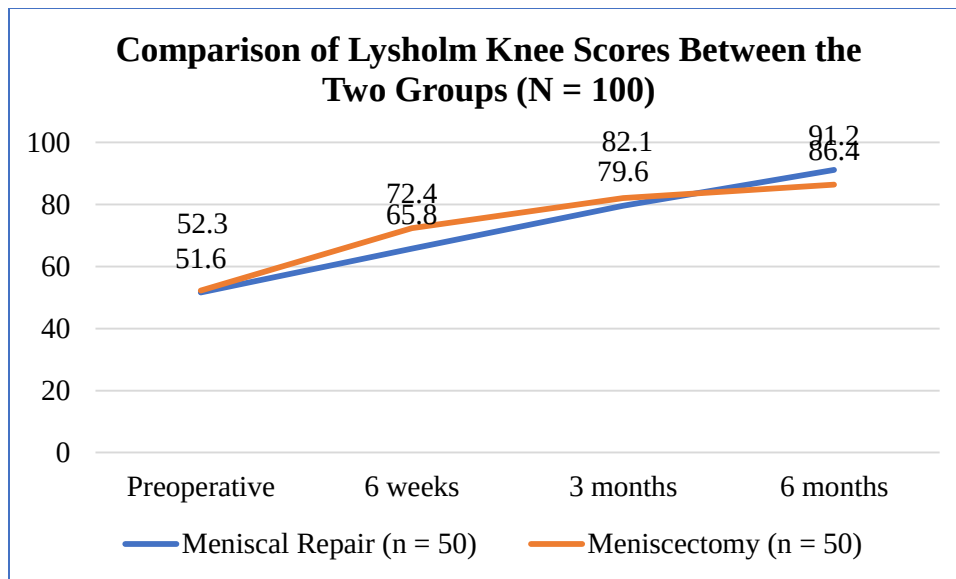


Figure 2 Comparison of Lysholm Knee Scores Between the Two Groups (N = 100)

As presented in Table 3 and Figure 2, both groups demonstrated progressive improvement in Lysholm knee scores following surgery. Preoperative scores were comparable, with mean values of 51.6 ± 8.4 in the repair group and 52.3 ± 8.1 in the meniscectomy group. At 6 weeks, the meniscectomy group demonstrated higher scores (72.4 ± 7.2 versus 65.8 ± 7.6), and this trend continued at 3 months (82.1 ± 6.8 versus 79.6 ± 7.1). However, at 6 months, the meniscal repair group achieved a higher mean Lysholm score of 91.2 ± 5.8 compared with 86.4 ± 6.5 in the meniscectomy group. These findings indicated faster early functional recovery following meniscectomy but better functional scores at 6 months following meniscal repair.

Table 4. Comparison of IKDC Scores and VAS Pain Scores at 6 Months (N = 100)

Parameter	Meniscal Repair (n=50)	Meniscectomy (n=50)
Preoperative IKDC	46.8 ± 7.9	47.5 ± 8.2
IKDC at 6 months	88.6 ± 6.3	83.2 ± 7.1
Preoperative VAS	6.8 ± 1.1	6.7 ± 1.2
VAS at 6 months	0.9 ± 0.6	1.4 ± 0.7

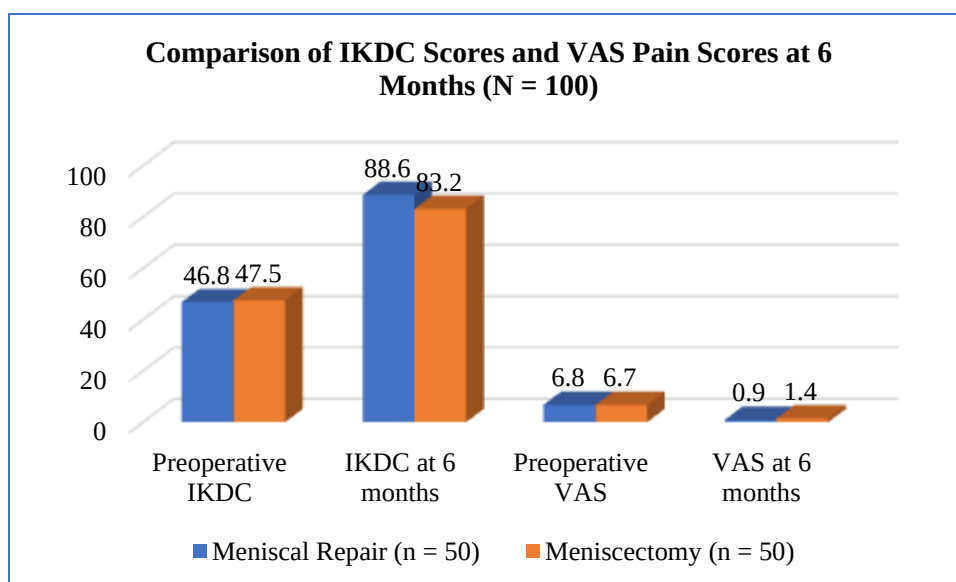


Figure 3 Comparison of IKDC Scores and VAS Pain Scores at 6 Months (N = 100)

Table 4 and Figure 3 demonstrate changes in IKDC functional scores and VAS pain scores following both surgical procedures. The mean preoperative IKDC scores were 46.8 ± 7.9 in the repair group and 47.5 ± 8.2 in the meniscectomy group. At 6 months, IKDC scores improved to 88.6 ± 6.3 and 83.2 ± 7.1 , respectively, indicating greater functional improvement in the repair group. Similarly, the mean preoperative VAS scores were 6.8 ± 1.1 and 6.7 ± 1.2 , decreasing to 0.9 ± 0.6 and 1.4 ± 0.7 at 6 months, respectively. Thus, both procedures resulted in substantial pain reduction, with lower residual pain scores observed following meniscal repair.

Table 5. Comparison of Postoperative Recovery and Functional Outcomes (N = 100)

Parameter	Meniscal Repair (n=50)	Meniscectomy (n=50)
Hospital stay (days)	2.1 ± 0.6	1.8 ± 0.5
Return to daily activities (weeks)	7.8 ± 2.1	4.6 ± 1.5
Excellent outcome, n (%)	20 (40.0)	12 (24.0)
Good outcome, n (%)	23 (46.0)	25 (50.0)
Fair/Poor outcome, n (%)	7 (14.0)	13 (26.0)

As shown in Table 5, the mean hospital stay was 2.1 ± 0.6 days in the meniscal repair group and 1.8 ± 0.5 days in the meniscectomy group. Patients undergoing meniscectomy returned to daily activities earlier (4.6 ± 1.5 weeks) compared with those undergoing repair (7.8 ± 2.1 weeks). However, excellent functional outcomes were more frequent following meniscal repair (40.0% versus 24.0%). Good outcomes were observed in 46.0% and 50.0% of patients, respectively, while fair or poor outcomes were less frequent in the repair group (14.0% versus 26.0%). Overall, excellent or good outcomes were achieved in 86.0% of patients following repair compared with 74.0% following meniscectomy.

Table 6. Comparison of Postoperative Complications (N = 100)

Complication, n (%)	Meniscal Repair (n=50)	Meniscectomy (n=50)
Wound infection	1 (2.0)	1 (2.0)
Knee stiffness	4 (8.0)	2 (4.0)
Persistent pain	3 (6.0)	7 (14.0)
Recurrent tear	2 (4.0)	3 (6.0)
Revision surgery	2 (4.0)	3 (6.0)

Table 6 presents the postoperative complications observed in both groups. Wound infection occurred in 2.0% of patients in each group. Knee stiffness was more frequent following meniscal repair (8.0% versus 4.0%), whereas persistent pain was more commonly observed following meniscectomy (14.0% versus 6.0%). Recurrent meniscal tears occurred in 4.0% of patients in the repair group and 6.0% in the meniscectomy group. Revision surgery was required in 4.0% and 6.0% of patients, respectively. Overall, both procedures demonstrated relatively low complication frequencies, although the patterns of postoperative complications differed between groups.

DISCUSSION

The present comparative study evaluated functional outcomes following arthroscopic meniscal repair and partial meniscectomy in 100 patients with traumatic meniscal tears, comprising 50 patients in each group. The findings suggested that partial meniscectomy was associated with faster initial functional recovery, whereas meniscal repair demonstrated better functional scores at six months. These observations highlight the potential benefits of meniscal preservation while emphasizing the importance of individualized surgical management.

In the present study, the mean age was 29.8 ± 7.2 years in the meniscal repair group and 31.2 ± 8.1 years in the partial meniscectomy group. Male patients predominated in both groups (72% and 68%, respectively). Sports-related injuries accounted for 54% and 48% of cases, indicating that traumatic meniscal injuries commonly

affected young, physically active individuals. The mean BMI was comparable between groups (24.1 ± 2.9 versus 24.6 ± 3.1 kg/m²).

Medial meniscal injuries predominated in both groups (64% versus 68%). Longitudinal tears were more frequent in the repair group (56% versus 20%), whereas radial (34%) and complex tears (30%) were more common in the meniscectomy group. These differences reflected the influence of tear morphology on surgical selection, as longitudinal tears are frequently more amenable to repair, while complex and certain radial tears may require alternative treatment strategies.

Migliorini et al. (2023) [15], in a systematic review involving 458 patients undergoing outside-in meniscal repair, reported that 65% of tears involved the medial meniscus, closely resembling the distribution in the present study. Their findings also demonstrated significant improvements in Lysholm and IKDC scores

(both $p < 0.0001$), supporting the effectiveness of meniscal repair in traumatic injuries.

In the present study, the mean Lysholm score increased from 51.6 ± 8.4 preoperatively to 91.2 ± 5.8 at six months following meniscal repair, compared with an increase from 52.3 ± 8.1 to 86.4 ± 6.5 following partial meniscectomy. Similarly, the six-month IKDC score was higher following repair (88.6 ± 6.3) than meniscectomy (83.2 ± 7.1).

Paxton et al. (2011) [16], in a systematic review comparing both procedures, reported better long-term Lysholm scores and less radiological degeneration following meniscal repair, although reoperation rates were higher. These findings were consistent with the direction of functional improvement observed in the present study.

At six months, the mean VAS pain score decreased from 6.8 ± 1.1 to 0.9 ± 0.6 following meniscal repair and from 6.7 ± 1.2 to 1.4 ± 0.7 following meniscectomy. However, return to daily activities was faster following meniscectomy (4.6 ± 1.5 weeks) than repair (7.8 ± 2.1 weeks).

A systematic review of athletes published in 2026 reported a mean return-to-sport time of 2.1 months following meniscectomy compared with 5.8 months following repair ($p < 0.001$). Return-to-sport rates were 98.2% and 96.9%, respectively. These findings supported the observation that meniscectomy facilitated earlier recovery, although return to sport and routine daily activities represented different outcomes.

Excellent functional outcomes were observed in 40% of repair patients compared with 24% of meniscectomy patients. Revision surgery was required in 4% and 6%, respectively, while persistent pain occurred in 6% and 14%.

In contrast, Paxton et al. (2011) [16] reported short-term reoperation rates of 16.5% following isolated meniscal repair and 1.4% following partial meniscectomy. The differences may reflect variations in follow-up duration, patient selection, and tear characteristics.

Overall, the presented findings suggested better six-month functional scores following meniscal repair and faster early recovery following partial meniscectomy. However, the groups differed substantially in tear morphology, and the six-month follow-up was insufficient to establish long-term joint preservation.

STRENGTHS OF THE STUDY

The study prospectively compared two commonly performed surgical procedures in 100 patients with traumatic meniscal tears. The use of validated functional assessment tools, including the Lysholm Knee Score, IKDC score, and VAS, at multiple follow-up intervals provided a structured evaluation of postoperative recovery. The study also assessed return to daily

activities and postoperative complications, offering a broader comparison of functional outcomes.

FUTURE RECOMMENDATIONS

Future studies should include larger patient populations, randomized comparative designs where feasible, and longer follow-up periods to assess sustained functional outcomes, meniscal healing, reoperation rates, and the development of osteoarthritis. Standardized rehabilitation protocols and stratification according to tear morphology may help provide more reliable comparisons between meniscal repair and partial meniscectomy.

LIMITATIONS

The present study was limited by its relatively small sample size of 100 patients and short follow-up duration of six months, which restricted the assessment of long-term functional outcomes and osteoarthritic changes. The non-randomized study design and differences in meniscal tear characteristics between groups may have introduced selection bias. Variations in surgical techniques and postoperative rehabilitation protocols could have influenced functional recovery. Furthermore, the absence of long-term radiological assessment limited the evaluation of meniscal healing and joint preservation.

CONCLUSION

The present study suggested that both arthroscopic meniscal repair and partial meniscectomy improved functional outcomes in patients with traumatic meniscal tears. Meniscal repair demonstrated better Lysholm and IKDC scores and greater pain reduction at six months, whereas partial meniscectomy facilitated faster early recovery and return to daily activities. Meniscal repair may be preferred for suitable repairable tears to preserve meniscal tissue and knee function. However, treatment selection should be individualized according to tear characteristics, patient activity level, and rehabilitation requirements. Longer follow-up studies are required to evaluate sustained functional benefits and long-term joint preservation.

DECLARATIONS

Ethical Approval: Ethical approval was obtained from the Institutional Ethics Committee.

Informed Consent: Written informed consent was obtained from all participants.

Conflict of Interest: The authors declare no conflict of interest.

Funding: No external funding was received for this study.

Author Contributions: All authors contributed to the study and approved the final manuscript.

Data Availability: Data are available from the corresponding author upon reasonable request.

Use of Artificial Intelligence: No artificial intelligence tools were used in the preparation of this manuscript.

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