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Research Article

Functional Outcomes Following Arthroscopic Partial Meniscectomy: A Retrospective Cohort Study Using the Lysholm Knee Score

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Abstract

Background: Arthroscopic partial meniscectomy remains a commonly performed procedure for symptomatic meniscal tears. Patient-reported outcome measures such as the Lysholm Knee Scoring Scale provide useful insight into postoperative functional recovery.

Methods: This retrospective cohort study evaluated functional outcomes following arthroscopic partial meniscectomy performed at a single orthopaedic practice. Fifty-five patients meeting inclusion criteria were identified from operative records and contacted retrospectively. Participants completed the Lysholm Knee Scoring Scale based on recall of symptoms immediately prior to surgery and at one year postoperatively. Demographic information was obtained from clinical records. Pre-operative and post-operative scores were compared using paired-samples t-testing and Wilcoxon signed-rank testing.

Results: Fifty-five patients were included (29 males, 26 females), with a mean age of 49.7 +/- 13.7 years. Mean Lysholm scores improved from 61.6 +/- 15.5 pre-operatively to 83.5 +/- 15.5 post-operatively. Mean improvement was 21.9 points (95% CI 17.3-26.6). Paired-samples t-testing demonstrated significant improvement ($t(54)=9.45$, $p<0.001$), confirmed by Wilcoxon signed-rank testing ($W=52.5$, $p<0.001$). The paired-samples effect size was large (Cohen's $d_z=1.27$). Forty-six patients (83.6%) achieved the pre-specified MCID threshold of at least 10 points.

Conclusion: Arthroscopic partial meniscectomy was associated with significant improvement in patient-reported knee function at one year in this single-centre cohort. These findings suggest that the procedure may provide meaningful functional benefit in appropriately selected patients within routine clinical practice. The project also highlighted the importance of prospective collection of validated outcome measures for future patients.

Keywords: *Meniscal Tear; Arthroscopic Partial Meniscectomy; Lysholm Knee Score; Functional Outcome; Knee Arthroscopy*

Introduction

Meniscal injuries are among the most common intra-articular knee pathologies encountered in orthopaedic practice. The meniscus contributes to load transmission, shock absorption, joint stability, and cartilage protection. Disruption of normal meniscal anatomy can therefore result in pain, mechanical symptoms, reduced knee function, and altered joint loading. Meniscal tissue loss has also been associated with longer-term degenerative change, supporting the current emphasis on meniscal preservation where feasible [1-5].

Arthroscopic partial meniscectomy remains an important surgical option for selected symptomatic tears, particularly where the tear is not repairable and symptoms persist despite appropriate non-operative management. However, the role of arthroscopic partial meniscectomy, especially for degenerative meniscal tears, remains debated. Randomised trials and systematic reviews have questioned the benefit of arthroscopic partial meniscectomy over sham surgery or structured physical therapy in selected degenerative populations [6-8]. Contemporary guidance therefore emphasises careful patient selection and avoidance of indiscriminate arthroscopic intervention [9].

Patient-reported outcome measures are essential when evaluating the effectiveness of knee surgery from the patient perspective. The Lysholm Knee Scoring Scale is widely used following knee arthroscopy and evaluates symptoms and functional limitations including pain, instability, locking, swelling, stair climbing, and squatting [1,2].

The aim of this study was to evaluate functional outcomes following arthroscopic partial meniscectomy in a single-centre cohort using the Lysholm Knee Scoring Scale, comparing retrospectively recalled pre-operative and one-year postoperative scores. A secondary aim was to identify limitations in current outcome measurement and inform future prospective collection of objective patient-reported data within the practice.

Methods

Study Design and Setting

This was a retrospective single-centre cohort study conducted at Fracture and Orthopaedic Clinic Limited. Patients who underwent arthroscopic partial meniscectomy for symptomatic meniscal tears were identified retrospectively from operative records. Eligible patients were contacted and invited to participate in the study.

Data Collection

Data were collected using the Lysholm Knee Scoring Scale administered retrospectively. Participants were asked to recall their knee symptoms immediately prior to surgery and at one year following surgery. Responses were recorded anonymously, and no patient-identifiable information was retained in the study database. Demographic data including age at surgery, sex, and operative side were obtained from clinical records. All data were anonymised prior to analysis.

Institutional Permission Statement

Institutional permission was granted by Fracture and Orthopaedic Clinic Limited, a private clinical centre, to access and analyse anonymised patient records and to conduct this research. No patient-identifiable information was collected or retained during data collection or analysis.

Eligibility Criteria

Inclusion criteria were a confirmed isolated meniscal tear and available medical records. Exclusion criteria were concomitant ligament injuries and revision arthroscopic knee surgery. Patients with incomplete records were not included in the final analysis.

Surgical Technique

All procedures were performed by a consultant orthopaedic surgeon with over 25 years of arthroscopic experience. Arthroscopic partial meniscectomy was performed under general anaesthesia using standard anteromedial and anterolateral portals. Diagnostic arthroscopy was performed to confirm the meniscal tear pattern and assess for associated intra-articular pathology.

Meniscal resection was performed using a combination of arthroscopic punches and a motorised shaver. A radiofrequency device (ArthroWand) was used to further debride meniscal and soft tissue remnants to achieve a stable meniscal rim while preserving as much functional tissue as possible. The meniscus was contoured until a smooth and stable edge was obtained, with unstable or residual fragments removed. Post-operatively, patients were managed according to the treating surgeon's rehabilitation protocol, including physiotherapy and early weight-bearing as tolerated.

Outcome Measure and Statistical Analysis

Functional outcome was assessed using the Lysholm Knee Scoring Scale (0-100), comparing recalled pre-operative scores with recalled one-year postoperative scores. Continuous variables are presented as mean +/- standard deviation (SD), median, range, and 95% confidence intervals (CI) where appropriate. Categorical variables are expressed as frequencies and percentages.

Pre-operative and post-operative Lysholm Knee Scores were compared using a paired-samples t-test. The Wilcoxon signed-rank test was additionally performed as a non-parametric confirmatory analysis. A p-value of less than 0.05 was considered statistically significant. Effect size was calculated using Cohen's d_z for paired samples.

Functional outcomes were categorised according to Lysholm Knee Score thresholds: Excellent (>=95), Good (84-94), Fair (65-83), and Poor (<65). For this project, the Minimal Clinically Important Difference (MCID) was defined as an improvement of at least 10 points on the Lysholm scale, consistent with a threshold used in a systematic review of patient-reported outcomes after arthroscopic partial meniscectomy [11].

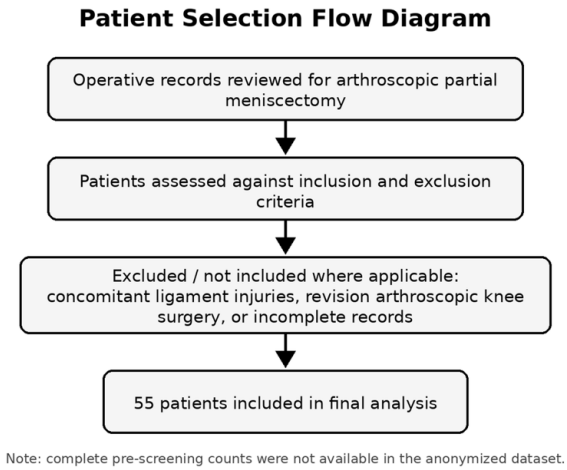

Figure 1. Patient selection flow diagram.

Results

Patient Demographics

A total of 55 patients who underwent arthroscopic partial meniscectomy were included in the final analysis. There were 29 males (52.7%) and 26 females (47.3%). The mean age at surgery was 49.7 years (SD 13.7), with a median of 52.0 years and a range of 17 to 77 years. Twenty-six procedures (47.3%) were performed on the left knee and 29 (52.7%) on the right knee.

Table 1. Patient demographics

Characteristic	n	%
Total patients	55	-
Male	29	52.7%
Female	26	47.3%
Age <40 years	15	27.3%
Age 40-60 years	30	54.5%
Age >60 years	10	18.2%
Left knee	26	47.3%
Right knee	29	52.7%

Table 2. Age at surgery summary.

Mean (SD)	Median	Minimum	Maximum
49.7 (13.7)	52.0	17	77

Functional Outcomes

The mean pre-operative Lysholm Knee Score was 61.6 +/- 15.5, increasing to 83.5 +/- 15.5 at one year following surgery. The mean improvement was 21.9 +/- 17.2 points (95% CI 17.3-26.6).

Table 3. Lysholm Knee Scores - Pre-operative vs Post-operative

Metric	Pre-operative	Post-operative	Change
Mean	61.6	83.5	+21.9
SD	15.5	15.5	17.2
Median	64.0	87.0	+21.0
Range	19-88	26-100	-39 to +72

Change was calculated as postoperative score minus pre-operative score.

A paired-samples t-test demonstrated a statistically significant improvement in Lysholm scores following arthroscopic partial meniscectomy ($t(54)=9.45$, $p<0.001$). This finding was confirmed using the Wilcoxon signed-rank test ($W=52.5$, $p<0.001$). The magnitude of improvement represented a large paired-samples effect size (Cohen's $d_z=1.27$).

Lysholm Score Category Distribution

Table 4. Lysholm Score category distribution

Category	Score range	Pre-op n (%)	Post-op n (%)
Excellent	>=95	0 (0.0%)	17 (30.9%)
Good	84-94	3 (5.5%)	20 (36.4%)
Fair	65-83	22 (40.0%)	13 (23.6%)
Poor	<65	30 (54.5%)	5 (9.1%)

No patients were classified as Excellent pre-operatively, compared with 17 patients (30.9%) post-operatively. A combined Good-to-Excellent postoperative outcome was achieved by 37 patients (67.3%).

Individual Patient Outcomes

Table 5. Individual patient outcomes.

Outcome	n	%
Improved	49	89.1%
No change	2	3.6%
Worsened	4	7.3%
Achieved MCID (>=10 points)	46	83.6%

MCID = Minimal Clinically Important Difference. For this project, MCID was defined as an improvement of at least 10 points on the Lysholm Knee Scoring Scale.

Subgroup Analysis

Table 6. Descriptive subgroup analysis by sex and age group.

Subgroup	n	Mean Pre-op	Mean Post-op	Mean Change
Male	29	63.3	87.8	+24.5
Female	26	59.7	78.7	+19.0
<40 years	15	59.8	84.1	+24.3
40-60 years	30	60.7	84.1	+23.5
>60 years	10	67.2	80.9	+13.7

Subgroup analyses are descriptive only; no inferential testing was performed because of the limited sample size.

Improvement was observed across all sex and age subgroups. Patients older than 60 years demonstrated a smaller mean improvement (+13.7) compared with patients younger than 40 years (+24.3) and those aged 40-60 years (+23.5).

Discussion

This retrospective single-centre cohort study demonstrated a statistically significant and clinically meaningful improvement in patient-reported knee function following arthroscopic partial meniscectomy. Mean Lysholm Knee Scores improved from 61.6 pre-operatively to 83.5 at one year, representing a mean increase of 21.9 points. Furthermore, 46 patients (83.6%) achieved the pre-specified MCID threshold, and over two-thirds achieved Good or Excellent postoperative outcomes.

The improvement was not only statistically significant but also clinically substantial, with a large paired-samples effect size (Cohen's d_z=1.27). This supports the impression that, within this selected clinical cohort, arthroscopic partial meniscectomy was associated with meaningful symptomatic and functional improvement.

These results should be interpreted in the context of the wider literature. Arthroscopic partial meniscectomy remains controversial for degenerative meniscal pathology. Major randomised trials and systematic reviews have reported limited or no clinically important superiority of arthroscopic partial meniscectomy over sham surgery or structured physical therapy in selected degenerative populations [6-8]. As this study had no control group and did not systematically classify tears as traumatic or degenerative, it cannot determine comparative effectiveness. The findings are best understood as real-world postoperative outcome data from a single orthopaedic practice, rather than high-level evidence of superiority over non-operative treatment.

The magnitude of improvement in the present cohort is comparable to the arthroscopic partial meniscectomy arm of the FIDELITY trial. In that sham-controlled trial, patients undergoing arthroscopic partial meniscectomy demonstrated a 21.7-point improvement in Lysholm score at 12 months, while the sham-surgery group improved by 23.3 points. The present cohort demonstrated a similar mean improvement of 21.9 points at one year. This comparison is important because it shows that although the improvement observed in the present study is clinically meaningful, improvement alone cannot be assumed to represent a treatment effect attributable solely to surgery in the absence of a control group. However, the present study reflects routine clinical practice and surgeon-directed patient selection, whereas FIDELITY focused on degenerative medial meniscal tears in a controlled trial setting [7].

Longer-term FIDELITY follow-up further reinforces the need for caution when interpreting outcomes after arthroscopic partial meniscectomy for degenerative tears. At five years, arthroscopic partial meniscectomy did not demonstrate clinically relevant symptomatic benefit over placebo surgery and was associated with concern regarding radiographic osteoarthritis progression. These findings support careful patient selection and highlight the importance of distinguishing traumatic, repairable, and degenerative meniscal pathology in future prospective data collection [10].

Subgroup analysis demonstrated improvement across all age groups, although patients older than 60 years experienced a smaller mean gain (+13.7) than younger patients. This may reflect a greater underlying degenerative burden or reduced postoperative functional reserve in older patients. However, the subgroup sizes were small and these findings should be considered exploratory.

Four patients (7.3%) demonstrated deterioration in postoperative Lysholm scores. These patients were distributed across age groups: one patient was aged under 40 years, one was aged 40-60 years, and two were aged over 60 years. The reasons for deterioration could not be determined reliably from the retrospective dataset. However, the fact that half of the worsened cases occurred in patients older than 60 years may suggest that further degenerative progression contributed to poorer outcomes in some patients, although the numbers are too small to draw firm conclusions. Other possible explanations include persistent or recurrent symptoms, postoperative rehabilitation factors, or limitations associated with retrospective recall.

An important strength of this project is that it reflects routine clinical practice in a local single-centre setting. All procedures were performed by a consultant orthopaedic surgeon with over 25 years of arthroscopic experience, supporting consistency in operative decision-making and surgical technique. The project also produced a practical quality-improvement lesson: outcome assessment should ideally be performed prospectively using a standardised patient-reported scoring system before surgery and at defined postoperative intervals. Implementing routine pre-operative and postoperative Lysholm scoring would allow the practice to generate more objective, reliable, and defensible outcome data in future patients.

Limitations

Several limitations should be acknowledged. First, the retrospective design limits causal inference and introduces potential selection bias. Second, both pre-operative and one-year postoperative Lysholm scores were collected retrospectively through patient recall rather than prospectively at the time of surgery and follow-up. This introduces recall bias and may reduce the precision of the outcome measurement.

Third, there was no control group, so the study cannot compare arthroscopic partial meniscectomy with non-operative management, sham surgery, physiotherapy, or meniscal repair. Fourth, tear morphology, tear aetiology, cartilage status, radiographic osteoarthritis severity, and body mass index were not consistently available in the retrospective records and therefore could not be analysed. These variables may influence outcome after meniscal surgery.

Fifth, the study reflects outcomes from a single orthopaedic practice and may not be generalisable to other settings. Finally, the one-year follow-up period does not allow assessment of longer-term functional outcomes or osteoarthritis progression.

Despite these limitations, the study provides useful local outcome data and highlights a clear pathway for improvement: prospective collection of validated patient-reported outcome measures for all future arthroscopic partial meniscectomy patients.

Conclusion

Arthroscopic partial meniscectomy was associated with statistically significant and clinically meaningful improvement in Lysholm Knee Scores at one year in this retrospective single-centre cohort. Mean improvement was 21.9 points, and 83.6% of patients achieved the pre-specified MCID threshold. These findings suggest that arthroscopic partial meniscectomy may provide meaningful functional improvement in appropriately selected patients within routine clinical practice.

The main value of this project is not only the observed improvement in postoperative function but also the recognition that future patient management and research should incorporate prospective pre-operative and postoperative scoring. Routine use of a validated outcome measure such as the Lysholm Knee Score would provide more objective data, improve audit quality, and support better evaluation of patient outcomes after surgery.

Institutional Permission

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Patient Participation and Consent

Eligible patients were contacted and invited to participate in the retrospective outcome assessment. Responses were recorded anonymously, and no patient-identifiable information was retained in the study database.

Author Contributions

All authors contributed substantially to the conception and preparation of the study, interpretation of the findings, critical revision of the manuscript, and approval of the final version. All authors agree to be accountable for the work.

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Conflict of Interest

The authors declare no conflicts of interest.

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