

Lateral Partial Patellar Facetectomy Is Associated with Improved Patellofemoral Outcomes Following Primary Non-Resurfaced Total Knee Arthroplasty: A Retrospective Comparative Cohort Study

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Abstract

Background

Anterior knee pain (AKP) remains a frequent cause of dissatisfaction after primary total knee arthroplasty (TKA) without patellar resurfacing. Lateral partial patellar facetectomy (LPPF) may reduce lateral patellofemoral overload and improve patellar tracking, but clinical evidence remains limited. This study compared outcomes of primary non-resurfaced TKA performed with or without LPPF.

Methods

This retrospective comparative study included 303 consecutive patients who underwent primary non-resurfaced TKA between January 2023 and December 2024. Patients were divided into an LPPF group (n = 147) and a control group (n = 156). Clinical outcomes included anterior VAS pain, persistent AKP, Knee Society Score (KSS), Oxford Knee Score (OKS), Kujala score, range of motion, and satisfaction. Radiographic assessment included patellar tilt, congruence angle, lateral patellar displacement, and patellar height. Patellofemoral complications were recorded at a minimum follow-up of 12 months. Between-group comparisons used independent-samples Student's t tests and Pearson's chi-square or Fisher's exact tests, as appropriate.

Results

Baseline characteristics were comparable between groups. At 12 months, the LPPF group showed significantly lower anterior VAS pain scores (1.39 ± 1.02 vs. 2.05 ± 1.14 , $p = 0.002$) and a lower prevalence of persistent AKP (5.4% vs. 17.9%, $p = 0.012$). Functional outcomes were significantly better after LPPF, including KSS Knee (88.4 vs. 83.5, $p < 0.001$), KSS Function (83.9 vs. 78.1, $p = 0.002$), OKS (41.8 vs. 38.2, $p = 0.003$), and Kujala score (77.4 vs. 72.1, $p = 0.001$). Radiographic assessment showed improved patellofemoral alignment, with lower patellar tilt (3.61° vs. 6.88° , $p < 0.001$) and reduced lateral patellar displacement (0.76 vs. 2.35 mm, $p < 0.001$). The LPPF group also had higher patient satisfaction and fewer patellofemoral complications.

Conclusions

LPPF was associated with reduced AKP, improved functional outcomes, better patellofemoral alignment, and fewer complications after primary non-resurfaced TKA. These findings support LPPF as a simple adjunctive procedure in selected patients. Prospective randomized studies with longer follow-up are needed.

Trial registration

Not applicable.

Background

TKA is one of the most successful procedures in orthopedic surgery for the treatment of end-stage knee osteoarthritis, providing substantial pain relief, restoration of function, and excellent long-term implant survivorship [1, 2]. Nevertheless, up to 20% of patients remain dissatisfied after TKA, despite technically successful surgery [3, 4]. Among the various causes of dissatisfaction, AKP remains one of the most frequent and challenging complications, negatively affecting activities such as stair climbing, rising from a chair, kneeling, and squatting, thereby impairing postoperative function and quality of life [5–7].

Management of the native patella during primary TKA remains controversial [8–13]. Although routine patellar resurfacing has been advocated to reduce postoperative AKP, it has also been associated with complications including patellar fracture, aseptic loosening, polyethylene wear, osteonecrosis, extensor mechanism injury, and revision surgery. Consequently, many surgeons continue to perform primary TKA without patellar resurfacing in an attempt to preserve patellar bone stock and avoid implant-related complications. However, persistent patellofemoral pain remains a concern in a subset of these patients, indicating that factors other than patellar resurfacing may influence postoperative outcomes [5–7, 10, 11, 14].

The development of AKP following non-resurfaced TKA is multifactorial. Component malposition, implant design, soft-tissue imbalance, residual osteophytes, and altered patellofemoral biomechanics have all been implicated [5–7, 15–17]. Among these factors, excessive lateral patellofemoral contact pressure and lateral facet overload are considered major contributors to persistent postoperative pain [5–7, 15–19]. Even in well-aligned TKAs, abnormal patellar tracking and residual lateral compression may persist, resulting in increased mechanical stress across the patellofemoral joint and inferior functional outcomes [5–7, 15–17].

Lateral partial patellar facetectomy (LPPF) has been proposed as a simple adjunctive procedure to address lateral patellofemoral overload while preserving the native patella. By partially resecting the lateral patellar facet, LPPF aims to decrease lateral contact pressure, improve patellar tracking, optimize patellofemoral congruence, and ultimately reduce postoperative AKP. Biomechanical studies have demonstrated reductions in patellofemoral contact stress following lateral facetectomy, while several clinical studies have reported encouraging improvements in pain and functional outcomes [18–22]. However, the available evidence remains limited by relatively small sample sizes, heterogeneous surgical techniques, variable indications, short follow-up periods, and the inclusion of mixed cohorts of resurfaced and non-resurfaced TKAs [18].

To our knowledge, few comparative studies have specifically evaluated the effect of LPPF in patients undergoing primary non-resurfaced TKA using comprehensive clinical, functional, and radiographic outcome measures [18, 20, 22]. Furthermore, the relationship between LPPF, patellofemoral alignment, postoperative AKP, patient satisfaction, and patellofemoral complications remains incompletely understood.

Therefore, the aim of the present study was to compare the clinical, functional, and radiographic outcomes of primary non-resurfaced TKA performed with or without LPPF. We hypothesized that the

addition of LPPF would be associated with reduced anterior knee pain, improved functional outcomes, better patellofemoral alignment, greater patient satisfaction, and fewer patellofemoral complications at a minimum follow-up of 12 months.

Methods

Study Design

This retrospective comparative cohort study was conducted at the Department of Orthopedic and Trauma Surgery, Military Principal Hospital of Instruction of Tunis, Tunisia. Consecutive patients who underwent primary TKA without patellar resurfacing between January 2023 and December 2024 were retrospectively identified from the institutional database.

Patients were allocated into two groups according to the surgical procedure performed during the index operation. The LPPF group included patients who underwent primary non-resurfaced TKA combined with LPPF, whereas the control group comprised patients who underwent primary non-resurfaced TKA without LPPF. The decision to perform LPPF was left to the discretion of the operating surgeon according to routine surgical practice and intraoperative assessment of the patellofemoral joint.

The study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical approval was granted by the CLPP of the Military Hospital of Tunis at meeting no. 87 (decision no. 103/2026/CLPP). All patient data were anonymized before analysis.

Patient Selection

Patients were eligible if they underwent primary non-resurfaced TKA and completed a minimum clinical and radiographic follow-up of 12 months.

Exclusion criteria were TKA performed through a lateral approach, inflammatory or post-traumatic arthritis, concomitant lateral retinacular release, postoperative traumatic or infectious complications, and incomplete clinical or radiographic data.

Surgical Technique

All procedures were performed through a standard medial parapatellar approach by a team of three experienced knee arthroplasty surgeons. Patellar resurfacing was not performed in any patient.

In the LPPF group, lateral partial patellar facetectomy was performed after patellar eversion. The indication was based on intraoperative patellofemoral findings, particularly lateral patellar facet degeneration, lateral patellofemoral overload, or osteophytic impingement. A longitudinal osteotomy was made parallel to the patellar ridge, removing approximately one-third to one-half of the lateral patellar facet according to individual patellar morphology. Care was taken to preserve more than half of the lateral facet to avoid excessive medialization and unnecessary reduction of the patellofemoral contact

surface. The osteotomy was performed using an oscillating saw, followed by careful separation of the resected fragment from the surrounding soft tissues while preserving the lateral retinaculum [18,20,22].

The same postoperative rehabilitation protocol was applied to both groups.

Clinical Assessment

Patients underwent standardized preoperative and postoperative clinical evaluation. Pain intensity was assessed using the visual analogue scale (VAS), including overall knee pain and AKP. Functional assessment included range of motion, the Knee Society Score (KSS), Oxford Knee Score (OKS), and Kujala Anterior Knee Pain Score. Patient satisfaction was evaluated at the final follow-up [23-26].

Radiographic Assessment

Standardized anteroposterior, lateral, and Merchant 60° skyline radiographs were obtained preoperatively and at the 12-month follow-up. Patellar height was assessed using the Insall-Salvati and Caton-Deschamps indices. Patellofemoral alignment was evaluated by measuring patellar tilt, congruence angle, and lateral patellar displacement. Postoperative patellofemoral complications, including persistent lateral compression syndrome, patellar maltracking, retro-patellar synovitis, and secondary patellar resurfacing, were also recorded.

Outcome Measures

The primary outcome was the severity of anterior knee pain at 12 months, assessed using the anterior VAS score.

Secondary outcomes included the prevalence of persistent AKP, functional outcomes including KSS, OKS, and Kujala score, range of motion, patient satisfaction, radiographic patellofemoral parameters, and postoperative patellofemoral complications.

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics version 21.0 (IBM Corp., Armonk, NY, USA). Continuous variables are presented as mean $\pm$ standard deviation, whereas categorical variables are expressed as frequencies and percentages. Continuous variables were compared using the independent-samples Student's t-test, and categorical variables were analyzed using Pearson's chi-square test. All statistical tests were two-sided, and a p value < 0.05 was considered statistically significant. Fisher's exact test was used when expected cell counts were low, particularly for individual patellofemoral complication rates.

Results

Patient Selection

During the study period, 637 primary TKAs were performed at our institution. Among these, 434 non-resurfaced TKAs were assessed for eligibility. After applying the predefined exclusion criteria, 303 patients were included in the final analysis. Of these, 147 patients underwent primary non-resurfaced TKA combined with LPPF, whereas 156 underwent primary non-resurfaced TKA alone. The patient selection process is illustrated in Figure 1.

Baseline Characteristics

Baseline demographic, clinical, functional, and radiographic characteristics of the study population are summarized in Table 1.

The two groups were well matched before surgery. No statistically significant differences were observed regarding age, sex distribution, body mass index, preoperative pain severity, anterior knee pain prevalence, range of motion, or functional scores (all $p > 0.05$). Likewise, preoperative radiographic patellofemoral parameters were comparable between the LPPF and control groups, indicating similar baseline characteristics and allowing reliable comparison of postoperative outcomes.

Clinical Outcomes

Clinical outcomes at the 12-month follow-up are presented in Table 2.

Patients who underwent LPPF experienced significantly lower postoperative pain than those treated without facetectomy. Overall VAS pain was lower in the LPPF group (1.52 ± 1.10 vs. 2.31 ± 1.25 , $p = 0.004$), and anterior knee pain was significantly reduced, with a mean anterior VAS score of 1.39 ± 1.02 compared with 2.05 ± 1.14 in the control group ($p = 0.002$). Only 8 patients (5.4%) in the LPPF group reported persistent AKP at final follow-up compared with 28 patients (17.9%) in the control group ($p = 0.012$).

Postoperative knee range of motion improved in both groups. However, no statistically significant differences were observed regarding knee flexion or extension between the two groups at the final follow-up.

Functional Outcomes

Functional outcomes are summarized in Table 2.

Patients treated with LPPF achieved significantly better postoperative functional scores across all validated assessment tools. The mean Knee Society Score (Knee) was significantly higher in the LPPF group than in the control group (88.4 vs. 83.5, $p < 0.001$). Similarly, the Knee Society Score (Function) demonstrated superior functional recovery following LPPF (83.9 vs. 78.1, $p = 0.002$). The Oxford Knee Score also favored the LPPF group (41.8 vs. 38.2, $p = 0.003$). Likewise, patients undergoing LPPF achieved significantly higher Kujala scores than those in the control group (77.4 vs. 72.1, $p = 0.001$),

indicating better patellofemoral function. Overall, all functional outcome measures consistently favored patients who underwent LPPF.

Patient Satisfaction

Patient satisfaction was significantly greater in the LPPF group. A higher proportion of patients who underwent LPPF reported being very satisfied with the surgical outcome compared with the control group (64.2% vs. 44.9%, $p = 0.010$). Conversely, dissatisfaction was less frequent in the LPPF group (2.0% vs. 9.0%, $p = 0.010$).

Radiographic Patellofemoral Outcomes

Radiographic patellofemoral outcomes are summarized in Table 2.

Patients treated with LPPF demonstrated significantly improved postoperative patellofemoral alignment. Mean patellar tilt was significantly lower in the LPPF group than in the control group (3.61° vs. 6.88° , $p < 0.001$). Similarly, lateral patellar displacement was significantly reduced following LPPF (0.76 mm vs. 2.35 mm, $p < 0.001$).

No statistically significant difference was observed between groups regarding the congruence angle.

Patellofemoral Complications

Postoperative patellofemoral complications are presented in Table 2. Overall patellofemoral complications were significantly less frequent in the LPPF group than in the control group (2.7% vs. 12.8%, $p = 0.002$). Persistent lateral hyperpressure, patellar maltracking, retro-patellar synovitis, and secondary patellar resurfacing were individually less frequent after LPPF, although these individual comparisons did not reach statistical significance.

Discussion

Principal Findings

The present study evaluated the association between LPPF and postoperative outcomes following primary non-resurfaced TKA. The principal finding was that adding LPPF was associated with consistently superior patellofemoral outcomes at a minimum follow-up of 12 months. Compared with non-resurfaced TKA alone, LPPF was associated with lower anterior knee pain, better functional outcomes, improved patellofemoral alignment, greater patient satisfaction, and fewer patellofemoral complications.

Among these findings, the reduction in persistent anterior knee pain represents the most clinically relevant observation. Patients undergoing LPPF also achieved consistently better functional scores

without compromising postoperative range of motion, suggesting that the clinical benefits of the procedure extended beyond pain relief alone.

A major strength of the present study is the consistency of the observed improvements across multiple outcome domains. Better clinical outcomes were accompanied by superior functional performance, improved radiographic patellofemoral alignment, greater patient satisfaction, and fewer postoperative complications. Although causality cannot be established from this retrospective study, the concordance of these findings supports the hypothesis that optimization of patellofemoral biomechanics may contribute to the favorable outcomes associated with LPPF following primary non-resurfaced TKA.

LPPF and Anterior Knee Pain

Anterior knee pain remains a major cause of dissatisfaction following primary non-resurfaced TKA and continues to compromise functional recovery in a subset of patients [3–7]. In the present study, patients who underwent LPPF experienced significantly lower postoperative anterior knee pain and a markedly lower prevalence of persistent anterior knee pain than those treated without facetectomy, representing the most clinically relevant outcome of the present study.

The etiology of anterior knee pain after non-resurfaced TKA is multifactorial and includes component malposition, rotational malalignment, soft-tissue imbalance, residual osteophytes, synovial impingement, and abnormal patellofemoral kinematics. Among these factors, excessive lateral patellofemoral contact pressure is considered a key contributor to persistent postoperative pain [5–7, 15–17].

By partially resecting the lateral patellar facet, LPPF enlarges the lateral patellofemoral space, decreases lateral contact pressure, and facilitates smoother patellar tracking [18, 19, 22]. The significantly lower patellar tilt and lateral patellar displacement observed in the LPPF group provide radiographic support for this proposed biomechanical mechanism and are consistent with the reduction in anterior knee pain observed in our cohort.

Our findings are consistent with previous studies reporting reduced postoperative anterior knee pain following LPPF in non-resurfaced TKA. Although direct comparison is limited by differences in patient selection, implant design, surgical technique, and follow-up duration, the available evidence consistently supports the role of reducing lateral patellofemoral overload to improve postoperative symptoms [18–22]. By demonstrating concordant improvements in pain, function, radiographic alignment, patient satisfaction, and complications within the same cohort, the present study further strengthens the rationale for incorporating LPPF as an adjunctive procedure during primary non-resurfaced TKA.

Functional Outcomes

Beyond pain relief, patients who underwent LPPF demonstrated consistently superior functional outcomes across all validated assessment tools. Significant improvements were observed in the Knee Society Score (Knee and Function), Oxford Knee Score, and Kujala score, indicating that the benefits of LPPF extended beyond the reduction of anterior knee pain alone.

These complementary outcome measures assess different dimensions of postoperative recovery, including knee function, patient-reported functional limitations, and patellofemoral-specific symptoms. The consistent improvement observed across all scores suggests that the benefits associated with LPPF are multidimensional, affecting both objective knee function and patient-perceived outcomes.

The observed functional improvements are likely multifactorial. Persistent anterior knee pain can impair quadriceps activation and limit activities such as stair climbing, rising from a chair, kneeling, and prolonged walking. By reducing lateral patellofemoral overload and improving patellar tracking, LPPF may restore more physiological patellofemoral kinematics, thereby facilitating functional recovery. The concomitant improvement in postoperative patellar tilt and lateral patellar displacement observed in our study supports this biomechanical explanation.

Our findings are consistent with previous reports demonstrating superior functional outcomes following LPPF in non-resurfaced TKA [18–22]. However, few studies have simultaneously evaluated functional scores, radiographic alignment, patient satisfaction, and postoperative complications. The present study therefore provides a more comprehensive evaluation of the clinical benefits associated with LPPF than previous reports.

Range of motion remains an important contributor to postoperative function after TKA [27]. Interestingly, despite significantly better functional scores, postoperative range of motion was comparable between groups. This finding suggests that the functional advantage associated with LPPF is unlikely to be explained by greater knee mobility alone, but rather by improved patellofemoral comfort and biomechanics during daily activities.

Radiographic Findings

The combined assessment of clinical, functional, and radiographic outcomes represents one of the major strengths of the present study and provides valuable insight into the mechanisms underlying the favorable results associated with LPPF.

Patients who underwent LPPF demonstrated significantly lower postoperative patellar tilt and lateral patellar displacement than those treated without facetectomy, indicating improved patellofemoral alignment. In contrast, no significant difference was observed in the congruence angle, suggesting that the primary radiographic effect of LPPF is the optimization of lateral patellar tracking rather than a global modification of patellofemoral congruence.

These findings provide a plausible biomechanical explanation for the clinical improvements observed in our study. Excessive lateral patellar tilt and lateral patellar displacement have been associated with increased lateral patellofemoral contact pressure, abnormal patellar tracking, and persistent anterior knee pain following non-resurfaced TKA [5–7, 15–19]. By reducing lateral mechanical overload and facilitating smoother patellar tracking, LPPF may improve the distribution of patellofemoral contact forces, thereby contributing to pain relief and improved function.

An important finding of the present study is the concordance between radiographic and clinical outcomes. Patients with better postoperative patellofemoral alignment also demonstrated lower anterior knee pain, superior functional outcomes, and greater patient satisfaction. Although causality cannot be established because of the retrospective design, this consistent pattern supports the hypothesis that improved patellofemoral biomechanics may contribute to the favorable outcomes associated with LPPF.

Few previous studies have simultaneously evaluated radiographic alignment together with validated clinical, functional, and patient-reported outcomes following LPPF. By integrating these complementary outcome measures within the same cohort, the present study provides additional evidence supporting the biomechanical rationale for incorporating LPPF during primary non-resurfaced TKA.

Patellofemoral Complications

All recorded patellofemoral complications occurred less frequently in patients who underwent LPPF than in those treated without facetectomy. Although none of the individual complication rates reached statistical significance, a consistent reduction was observed for persistent lateral patellar compression syndrome, patellar maltracking, retro-patellar synovitis, and secondary patellar resurfacing.

These findings should be interpreted with caution, as the low incidence of individual complications limited the statistical power for these comparisons.

This observation is biomechanically plausible. By decreasing lateral contact pressure and improving patellar tracking, LPPF may reduce repetitive mechanical irritation of the patellofemoral joint, thereby limiting the development of persistent lateral compression, secondary synovitis, and patellar maltracking [18, 19, 22]. Although causality cannot be established from the present study, this interpretation is supported by the concomitant improvements in radiographic alignment, anterior knee pain, and functional outcomes.

Few studies have specifically evaluated postoperative patellofemoral complications following LPPF, making direct comparison with the existing literature difficult. Nevertheless, our findings suggest that adding LPPF to primary non-resurfaced TKA is not associated with an increased risk of postoperative complications and further supports the favorable safety profile of this procedure.

Clinical Implications

The findings of the present study suggest that LPPF may represent a valuable adjunctive procedure during primary non-resurfaced TKA. Rather than advocating its routine use, our results support a selective approach in which LPPF may be considered when intraoperative assessment reveals evidence of lateral patellofemoral overload, such as degeneration of the lateral patellar facet, prominent lateral osteophytes, or mechanical impingement. In these situations, partial resection of the lateral patellar facet may optimize patellar tracking while preserving the native patella [18, 22].

Importantly, the improvements in anterior knee pain, functional recovery, patient satisfaction, and radiographic patellofemoral alignment observed in the present study were achieved without an apparent increase in postoperative patellofemoral complications. These findings suggest that, when appropriately indicated and carefully performed, LPPF may improve postoperative patellofemoral outcomes while maintaining a favorable safety profile.

Nevertheless, the present findings should be interpreted in light of the retrospective design of the study and should not be considered sufficient to recommend the routine use of LPPF in all patients undergoing non-resurfaced TKA [18]. Prospective multicenter randomized studies with longer follow-up are required to better define the indications for LPPF and identify the patients most likely to benefit from this procedure.

Strengths and Limitations

The present study has several strengths. It included a relatively large comparative cohort of patients undergoing primary non-resurfaced TKA and provided a comprehensive assessment by integrating clinical, functional, radiographic, patient-reported, and complication outcomes within the same cohort.

This comprehensive approach provides a broader understanding of the potential benefits associated with LPPF than studies focusing on a single outcome domain. In addition, all patients underwent a standardized rehabilitation protocol, were evaluated after a uniform minimum follow-up of 12 months, and were operated on by a team of three experienced knee arthroplasty surgeons.

Several limitations should also be acknowledged. The retrospective single-center design may have introduced selection bias and precludes causal inference. In addition, the decision to perform LPPF was based on intraoperative surgeon judgment rather than random allocation, introducing the possibility of treatment-selection bias. Although the overall sample size was relatively large, the low incidence of individual patellofemoral complications limited the statistical power for these specific outcomes. Finally, the 12-month follow-up precludes assessment of the long-term durability of the observed benefits, and no multivariable analysis was performed to account for potential confounding factors.

Despite these limitations, the consistency of the findings across multiple independent outcome domains strengthens the overall validity of the study and supports the potential role of LPPF as a valuable adjunctive procedure during primary non-resurfaced TKA. Larger prospective multicenter randomized studies with longer follow-up are warranted to confirm these findings and further refine the indications for this technique.

Conclusions

In conclusion, LPPF was associated with improved postoperative outcomes following primary non-resurfaced TKA. Compared with non-resurfaced TKA alone, LPPF was associated with reduced anterior

knee pain, superior functional recovery, improved patellofemoral alignment, higher patient satisfaction, and fewer patellofemoral complications, without compromising postoperative range of motion.

Overall, the present findings suggest that optimizing patellofemoral biomechanics through selective use of LPPF may enhance postoperative outcomes while preserving the native patella. When guided by appropriate intraoperative findings, LPPF may represent a valuable adjunctive procedure during primary non-resurfaced TKA.

Further prospective multicenter randomized studies with longer follow-up are warranted to confirm these findings, better define the indications for LPPF, and determine its long-term clinical benefits.

Abbreviations

AKP	
anterior knee pain	
BMI	
body mass index	
KSS	
Knee Society Score	
LPPF	
lateral partial patellar facetectomy	
OKS	
Oxford Knee Score	
TKA	
total knee arthroplasty	
VAS	
visual analogue scale.	

Declarations

Ethics approval and consent to participate

The study was conducted in accordance with the Declaration of Helsinki and was approved by the IRB or ethics committee of CLPP of the Military Hospital of Tunis at meeting no. 87 (decision no. 103/2026/CLPP). The requirement for informed consent was waived by the ethics committee because of the retrospective design of the study and the use of anonymized data.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

D.B. and Y.M. contributed to the conceptualization of the study. D.B., Y.M., and K.K. contributed to the study methodology. D.B., K.K., and E.Z. participated in data collection. D.B., Y.M., and K.K. performed the surgical procedures. E.Z. was responsible for data curation. D.B. and R.A. performed the statistical analysis. Y.M. and E.Z. performed the radiographic assessment. T.Z. contributed to the clinical interpretation of the findings. D.B. drafted the initial manuscript. All authors critically reviewed and edited the manuscript. K.A. supervised the study. All authors read and approved the final manuscript.

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Tables

Table 1. Baseline demographic, clinical, functional, and radiographic characteristics of the study population

Variable	LPPF (n=147)	Control (n=156)	p value
Demographic characteristics			
Age (years)	66.8 ± 6.0	65.6 ± 6.4	0.12
Female sex, n (%)	101 (68.7)	106 (67.9)	0.87
Body mass index (kg/m ²)	29.8 ± 3.9	30.0 ± 5.0	0.74
Clinical assessment			
Overall VAS	7.1 ± 1.3	7.1 ± 1.3	0.95
Anterior VAS	7.0 ± 1.2	7.0 ± 1.3	0.99
Anterior knee pain, n (%)	105 (71.4)	105 (67.3)	0.43
Knee flexion (°)	99.3 ± 14.2	99.6 ± 14.1	0.82
Knee extension (°)	5.2 ± 4.2	5.9 ± 4.2	0.18
Functional assessment			
KSS Knee	46.2 ± 11.9	45.7 ± 12.0	0.68
KSS Function	50.2 ± 12.0	49.8 ± 11.7	0.77
Oxford Knee Score	21.0 ± 7.4	21.0 ± 7.3	0.99
Kujala score	44.1 ± 9.6	44.7 ± 9.6	0.63
Radiographic assessment			
Insall–Salvati index	1.02 ± 0.18	1.05 ± 0.18	0.18
Caton–Deschamps index	0.98 ± 0.20	1.02 ± 0.19	0.10
Patellar tilt (°)	9.1 ± 4.5	8.9 ± 3.9	0.62
Congruence angle (°)	6.3 ± 18.4	5.3 ± 17.9	0.65
Lateral patellar displacement (mm)	3.07 ± 2.51	2.86 ± 2.61	0.48

Table 2. Clinical, functional, radiographic outcomes and patellofemoral complications at 12-month follow-up

Outcome	LPPF (n = 147)	Control (n = 156)	p value
Pain assessment			
Overall VAS	1.52 ± 1.10	2.31 ± 1.25	0.004
Anterior VAS	1.39 ± 1.02	2.05 ± 1.14	0.002
Persistent AKP, n (%)	8 (5.4)	28 (17.9)	0.012
Range of motion			
Knee flexion (°)	115.24 ± 9.86	114.88 ± 9.08	0.733
Knee extension (°)	1.37 ± 3.06	1.13 ± 3.01	0.278
Functional outcomes			
KSS Knee	88.4 ± 7.1	83.5 ± 8.6	<0.001
KSS Function	83.9 ± 9.2	78.1 ± 10.7	0.002
Oxford Knee Score	41.8 ± 6.1	38.2 ± 6.8	0.003
Kujala score	77.4 ± 8.2	72.1 ± 8.5	0.001
Patient satisfaction			
Very satisfied, n (%)	94 (64.2)	70 (44.9)	0.010
Dissatisfied, n (%)	3 (2.0)	14 (9.0)	0.010
Radiographic outcomes			
Insall–Salvati index	1.02 ± 0.19	1.05 ± 0.19	0.171
Caton–Deschamps index	0.98 ± 0.21	1.00 ± 0.18	0.375
Patellar tilt (°)	3.61 ± 3.76	6.88 ± 4.69	<0.001
Lateral patellar displacement (mm)	0.76 ± 2.41	2.35 ± 3.64	<0.001
Congruence angle (°)	-4.90 ± 9.57	-3.61 ± 12.21	0.305
Patellofemoral complications			
Any patellofemoral complication, n (%)	4 (2.7)	20 (12.8)	0.002†
Persistent lateral patellar compression syndrome, n (%)	2 (1.4)	8 (5.1)	0.105‡
Maltracking / patellofemoral instability, n (%)	1 (0.7)	5 (3.2)	0.215‡
Retro-patellar synovitis, n (%)	1 (0.7)	4 (2.6)	0.372‡
Secondary patellar resurfacing, n (%)	0 (0.0)	3 (1.9)	0.248‡

Values are expressed as mean ± standard deviation or n (%). AKP, anterior knee pain; VAS, visual analogue scale; KSS, Knee Society Score; LPPF, lateral partial patellar facetectomy. † p value calculated for overall patellofemoral complications. ‡ p values calculated using Fisher’s exact test because of low event counts.

Figures

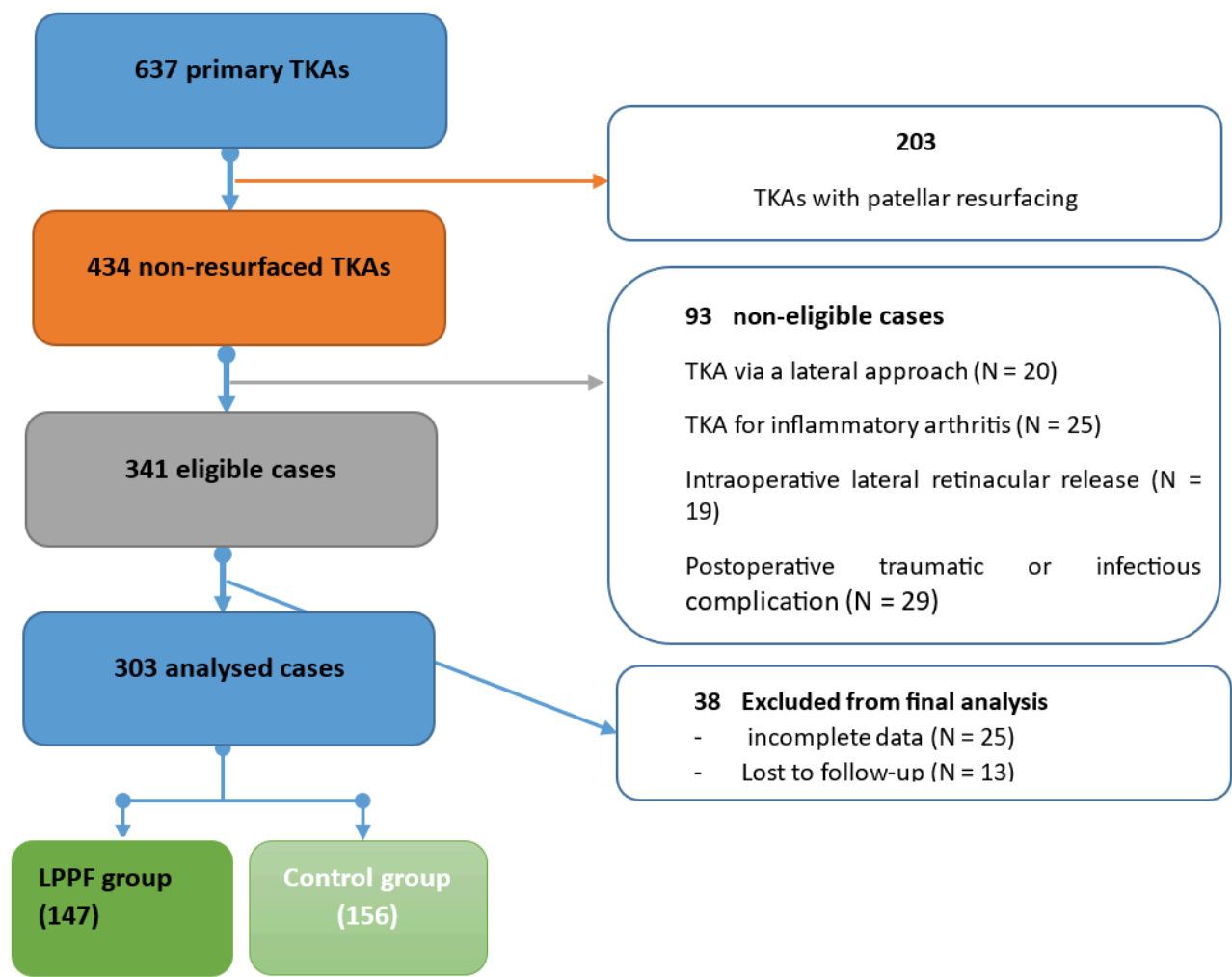


Figure 1

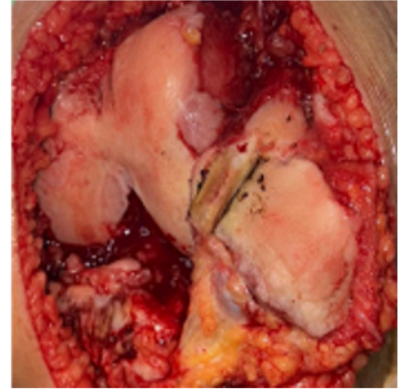
Patient selection flow diagram.



1. Before resection



2. Planned resection



3. After resection

Figure 2

Surgical steps of lateral partial patellar facetectomy.