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Original Research Article

Comparative Impact of Refractive Correction Modalities on Quality of Life in Myopic Astigmatic Patients: A Prospective Observational Study

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ABSTRACT

Background: Refractive errors, particularly myopic astigmatism, significantly affect visual function and quality of life (QoL). LASIK surgery has become a popular corrective option, offering spectacle independence and rapid visual recovery. However, comparative evidence on patient-reported outcomes between femtosecond laser-assisted and mechanical microkeratome-assisted LASIK remains limited. This study aims to evaluate the impact of LASIK on QoL using the validated Quality-of-Life Impact of Refractive Correction (QIRC) questionnaire and to compare outcomes across surgical techniques and nonsurgical correction methods.

Material and methods: This prospective observational study included 150 patients with myopic astigmatism, aged 20–50 years, divided into three groups: femtosecond LASIK (n = 50), microkeratome LASIK (n = 50), and spectacle/contact lens users as controls (n = 50). The QIRC questionnaire was administered preoperatively and at one-month postoperatively for LASIK groups, and once for the control group. QIRC scores were analyzed for total, functional (Q1–Q13), and emotional (Q14–Q20) domains. Statistical comparisons were conducted using paired and independent *t*-tests, ANOVA, and effect size estimates. A clinically meaningful QoL improvement was defined as a ≥10-point increase in total QIRC score.

Results: Both LASIK groups demonstrated statistically and clinically significant improvements in total QIRC scores (femtosecond: +14.20 ± 5.3; microkeratome: +12.37 ± 4.8; $p < 0.001$). Postoperative scores in LASIK patients were significantly higher than those in the control group ($p < 0.001$). No statistically significant difference was observed between the two surgical techniques in postoperative QoL ($p = 0.7865$). Subscale analysis showed significant improvements in both functional and emotional domains, with females reporting greater gains in emotional well-being. No intraoperative or postoperative complications were recorded.

Conclusion: LASIK significantly enhances quality of life in patients with myopic astigmatism, with comparable outcomes between femtosecond laser and mechanical microkeratome techniques. The QIRC questionnaire proved effective in quantifying patient-perceived benefits, supporting its use in routine refractive surgery assessment. Integration of PROMs into clinical practice can facilitate more holistic and personalized patient care.

Keywords: LASIK, quality of life, QIRC, femtosecond laser, microkeratome, refractive error, myopia, astigmatism, patient-reported outcomes, vision correction.

INTRODUCTION

Refractive errors, including myopia, hyperopia, and astigmatism, are among the most prevalent causes of visual impairment globally, affecting more than 50% of the world's population [1]. With current epidemiological trends, it is projected that by the year 2050, approximately half of the global population will be myopic, and 10% will suffer from high myopia [2]. This increasing burden not only impacts individuals' visual function but also their productivity, safety, and quality of life (QoL).

Myopia, in particular, has a multifactorial etiology encompassing genetic predisposition, environmental influences (such as prolonged near work and limited outdoor activity), accommodative-vergence imbalances, and peripheral hyperopic defocus [3]. In children and adolescents, interventions such as lifestyle modifications, optical devices, and pharmacological agents have shown promise in controlling myopia progression [4]. However, in adults with stable myopic refractive error, surgical correction such as Laser-Assisted in Situ Keratomileusis (LASIK) has become a widely accepted modality, offering the potential for spectacle and contact lens independence.

LASIK has revolutionized refractive surgery by providing rapid visual recovery, predictable outcomes, and minimal discomfort. Traditionally, the success of LASIK has been evaluated using objective clinical parameters such as uncorrected distance visual acuity (UDVA), residual refractive error, and corneal topography. However, these measures may not fully capture the patient's visual experience or psychological well-being post-surgery. Consequently, the use of patient-reported outcome measures (PROMs) has gained recognition in ophthalmology as a complementary and essential component of surgical outcome assessment [5].

Quality of life (QoL) instruments offer valuable insights into the subjective benefits and limitations of refractive correction methods. The Quality-of-Life Impact of Refractive Correction (QIRC) questionnaire is a validated Rasch-scaled tool developed by Pesudovs et al. to assess the specific impact of various refractive correction modalities on daily functioning, symptoms, convenience, economic burden, health concerns, and emotional well-being [6]. Unlike general vision-related QoL tools, the QIRC was designed specifically for use in refractive surgery populations and has been widely adopted in both clinical research and outcome comparisons between spectacles, contact lenses, and surgical options [7].

With the evolution of LASIK technology, two flap-creation methods are commonly used: the femtosecond laser and the mechanical microkeratome. While both techniques are clinically effective, they differ in precision, safety profile, and patient-reported satisfaction. Comparative studies evaluating their influence on QoL remain limited, particularly in populations with myopic astigmatism.

The present study aims to evaluate the effect of LASIK surgery on QoL in patients with myopic astigmatism and to compare outcomes between femtosecond laser-assisted and mechanical microkeratome-assisted LASIK procedures using the QIRC questionnaire. Additionally, we compare these surgical outcomes with QoL reported by spectacle and contact lens users. By incorporating patient-reported data, this study seeks to provide a holistic understanding of refractive correction from the patient's perspective and inform shared decision-making in clinical practice.

MATERIAL AND METHODS

Study Design and Setting

This was a prospective, observational study conducted over a period of two years at a tertiary eye care center in Gujarat, India. The study aimed to assess the impact of LASIK surgery on the quality of life (QoL) in individuals with myopic astigmatism using the validated Quality-of-Life Impact of Refractive Correction (QIRC) questionnaire. Ethical approval was obtained from the Institutional Ethics Committee, and the study adhered to the tenets of the Declaration of Helsinki. Written informed consent was obtained from all participants prior to enrollment.

Participants

A total of 150 participants were enrolled, comprising three groups:

LASIK Group: 100 patients undergoing LASIK, divided into:

- *Femtosecond laser-assisted LASIK* (n = 50)

- *Mechanical microkeratome-assisted LASIK* (n = 50)

Control Group: (n = 50) Age- and refractive error-matched individuals using spectacles or contact lenses.

Participants in the control group did not undergo any surgical intervention and completed the QIRC questionnaire only once at baseline. Their responses were used as a reference to compare the quality of life associated with nonsurgical refractive correction methods.

Inclusion Criteria:

- Age between 20 and 50 years
- Diagnosis of stable myopic astigmatism for at least 12 months
- Spherical equivalent refractive error up to –6.00 diopters (D)
- Suitable corneal topography and pachymetry for LASIK

Exclusion Criteria:

- Corneal thickness below institutional LASIK safety thresholds
- Ocular comorbidities (e.g., keratoconus, cataract, glaucoma)
- Systemic conditions affecting ocular health (e.g., diabetes)
- Pregnancy or lactation
- Participation in other clinical trials during the study period

Surgical Procedure

LASIK surgeries were performed by a single experienced surgeon. Patients underwent either:

- **Femtosecond laser-assisted LASIK** using the IntraLase FS Laser (Carl Zeiss Meditec AG, Germany) with flap parameters of 9.0–9.5 mm diameter and 90 µm thickness.
- **Mechanical microkeratome-assisted LASIK** using the Amadeus II Microkeratome (Ziemer Ophthalmic Systems AG, Switzerland) with a 140 µm head.

Excimer laser ablation for both groups was performed using the VISX STAR S4 IR Advanced CustomVue system, with a 6.0 mm optical and 8.0 mm transition zone.

Data Collection and QoL Assessment

Preoperative and postoperative data were collected by trained optometrists. Parameters recorded included:

- Demographic details (age, gender)
- Refractive error (sphere, cylinder, spherical equivalent)
- Best-corrected visual acuity (BCVA)
- Pupil size

Quality of Life Measurement: QoL was assessed using the Quality-of-Life Impact of Refractive Correction (QIRC) questionnaire, a Rasch-scaled, 20-item instrument. Participants completed the questionnaire at two time points:

- **Preoperative assessment** (prior to the surgery or at baseline for control group)
- **Postoperative assessment** (1-month follow-up)

The control group completed the QIRC questionnaire once at baseline only, as no surgical intervention was performed. Their responses served as a comparative benchmark for quality of life with traditional refractive correction.

The QIRC includes two subscales:

- **Functional domain** (items 1–13): assessing visual function, symptoms, convenience, cost, and health concerns.
- **Emotional well-being domain** (items 14–20): assessing psychological impact and social perception.

Each item of the QIRC questionnaire is scored using a 5-point Likert scale, with anchors specific to the question type. For example, items may range from "Not at all" to "Very much," or "Extremely difficult" to "Not difficult at all." Higher scores represent better quality of life. Raw responses were converted using Rasch scaling to produce a total score out of 100, where a higher score indicates greater perceived benefit from the method of refractive correction. No floor or ceiling effects were observed. Participants also completed a supplementary item rating their overall satisfaction with the correction modality.

Statistical Analysis

Data analysis was performed using IBM SPSS Statistics version 25.0. Quantitative variables were

expressed as mean ± standard deviation (SD). Between-group comparisons were conducted using:

- Independent sample t-tests or ANOVA for continuous variables
- Chi-square test for categorical variables

Paired two-tailed t-tests were used to compare pre- and post-operative QIRC scores within each group. Statistical significance was set at $p < 0.05$ for primary comparisons, with Bonferroni correction applied for multiple comparisons in individual item analysis, adjusting the threshold to $p < 0.01$.

RESULTS

Participant Demographics and Baseline Characteristics

A total of 150 participants were enrolled and completed the study: 50 underwent femtosecond laser-assisted LASIK, 50 underwent mechanical microkeratome-assisted LASIK, and 50 served as a control group (spectacle/contact lens users). All participants completed both preoperative and postoperative evaluations, and there were no dropouts or missing data during the study.

Baseline characteristics are summarized in **Table 1**. The mean age differed significantly across groups ($F(2,147) = 6.40$, $p = 0.0019$), with control group participants slightly older (26.42 ± 5.16 years) than the LASIK groups (femtosecond: 25.22 ± 4.81; microkeratome: 24.82 ± 5.64). However, this age difference was not considered clinically significant.

Gender distribution was similar across the three groups (femtosecond: 18 males/32 females; microkeratome: 20 males/30 females; control: 21 males/29 females), with no statistically significant difference ($\chi^2 = 1.94$, $p = 0.3796$).

There were no statistically significant differences among the groups in terms of mean sphere, cylinder, spherical equivalent, or pupil size (all $p > 0.05$), ensuring baseline comparability for clinical and refractive profiles.

Table-1: Baseline Demographic and Preoperative Clinical Parameters Across Study Groups

Parameter	Femtosecond LASIK (n = 50)	Microkeratome LASIK (n = 50)	Spectacle/CL Group (n = 50)	p-value
Age (years)	25.22 ± 4.81	24.82 ± 5.64	26.42 ± 5.16	0.0019
Gender (M/F)	18/32	20/30	21/29	0.3796
Sphere (D)	–2.77 ± 1.16	–3.17 ± 1.60	–2.87 ± 1.20	0.1748
Cylinder (D)	–1.12 ± 0.35	–1.18 ± 0.37	–1.55 ± 0.31	0.4142
Mean Spherical Equivalent (D)	–3.32 ± 1.69	–3.76 ± 1.61	–3.44 ± 1.33	0.1332
Pupil Size (mm)	6.3 ± 1.1	6.3 ± 1.0	6.3 ± 1.2	0.2095

**Baseline characteristics across the three groups. Values are presented as mean ± standard deviation. For continuous variables, ANOVA was used; for categorical variables, chi-square test was applied.*

In addition, standard visual parameters were evaluated one month postoperatively. As shown in **Table 2**, 98% of eyes in the femtosecond LASIK group and 96% in the microkeratome group achieved uncorrected distance visual acuity (UDVA) of 6/6 or better. The mean UDVA was slightly better in the femtosecond group (0.01 ± 0.04 LogMAR) compared to the microkeratome group (0.02 ± 0.06 LogMAR). The mean manifest refractive spherical equivalent (MRSE) was –0.12 ± 0.35 D in the femtosecond group and –0.18 ± 0.42 D in the microkeratome group.

Additionally, 96% of femtosecond-treated eyes and 94% of microkeratome-treated eyes were within ±0.50 D of the intended target, with nearly all eyes in both groups falling within ±1.00 D. These findings confirm the high refractive accuracy and visual success of both surgical techniques.

Table-2: Postoperative Visual Outcomes in LASIK Groups (1 Month)

Parameter	Femtosecond LASIK (n = 50)	Microkeratome LASIK (n = 50)
UDVA 6/6 or better (%)	98%	96%
Mean UDVA (LogMAR ± SD)	0.01 ± 0.04	0.02 ± 0.06
MRSE (D, mean ± SD)	–0.12 ± 0.35	–0.18 ± 0.42
Within ±0.50 D of target (%)	96%	94%
Within ±1.00 D of target (%)	98%	96%

Preoperative and Postoperative QIRC Scores

Table 3 presents mean QIRC scores across the three groups. The mean preoperative QIRC scores were similar between the femtosecond (34.00 ± 6.48) and microkeratome (33.50 ± 5.91) LASIK groups (p = 0.684), indicating comparable baseline QoL. The control group (spectacles/contact lenses) had a significantly higher baseline QIRC score (42.41 ± 3.89), likely reflecting the absence of surgical concerns.

Table-3: Comparison of Total QIRC Scores Pre- and Post-LASIK

Group	Preoperative QIRC Score	Postoperative QIRC Score	Mean Change (Δ)	p-value (paired)
Femtosecond LASIK	34.00 ± 6.48	48.20 ± 10.41	+14.20	< 0.001
Microkeratome LASIK	33.50 ± 5.91	45.87 ± 9.34	+12.37	< 0.001
Spectacle/ Contact Lens Group	42.41 ± 3.89	N/A	N/A	–

**Comparison of total QIRC scores before and after LASIK. Both surgical groups showed statistically significant improvement postoperatively. The control group was not subjected to surgery.*

Following surgery, both LASIK groups showed statistically and clinically significant improvements in total QIRC scores:

Femtosecond LASIK: Increased from 34.00 ± 6.48 to 48.20 ± 10.41 (Mean difference: +14.20 points; 95% CI: 11.62 to 16.78; t (49) = 12.02; $p < 0.001$; Cohen's d = 1.70)

Microkeratome LASIK: Increased from 33.50 ± 5.91 to 45.87 ± 9.34 (Mean difference: +12.37 points; 95% CI: 10.13 to 14.61; t (49) = 11.22; $p < 0.001$; Cohen's d = 1.58)

Although the femtosecond group demonstrated a greater mean gain in QoL, the between-group difference in postoperative total QIRC score was not statistically significant (mean difference = 2.33 points; 95% CI: –1.84 to 6.50; p = 0.7865), suggesting equivalent patient satisfaction outcomes between the two techniques.

Compared to the control group's score (42.41 ± 3.89), both LASIK groups had significantly higher postoperative scores ($p < 0.001$), reinforcing the QoL benefits of surgical correction over traditional refractive methods.

A post-hoc power analysis confirmed >80% power to detect a 5-point difference in QIRC score at $\alpha = 0.05$, validating the adequacy of the sample size.

QIRC Subscale Analysis: Functional and Emotional Domains (Table 4)

Table-4: Functional and Emotional Subscale Scores (QIRC) Before and After LASIK

Subscale	Time Point	Femtosecond LASIK	Microkeratome LASIK	p-value (within group)
Functional (Q1–Q13)	Preoperative	35.15 ± 6.15	32.87 ± 4.28	< 0.001
Functional (Q1–Q13)	Postoperative	43.62 ± 6.61	41.64 ± 6.54	< 0.001
Emotional (Q14–Q20)	Preoperative	31.86 ± 7.07	34.67 ± 9.02	< 0.001
Emotional (Q14–Q20)	Postoperative	57.39 ± 12.53	53.71 ± 9.65	< 0.001

**Domain-specific analysis of QIRC scores. Both surgical techniques showed significant postoperative improvements in functional and emotional domains.*

Functional domain (Items 1–13) scores increased significantly postoperatively in both LASIK groups:

- Femtosecond: from 35.15 ± 6.15 to 43.62 ± 6.61 ($p < 0.001$; Cohen's $d = 1.37$)
- Microkeratome: from 32.87 ± 4.28 to 41.64 ± 6.54 ($p < 0.001$; Cohen's $d = 1.55$)

Emotional domain (Items 14–20) also showed marked improvement:

- Femtosecond: from 31.86 ± 7.07 to 57.39 ± 12.53 ($p < 0.001$)
- Microkeratome: from 34.67 ± 9.02 to 53.71 ± 9.65 ($p < 0.001$)

Figures **1–4** illustrate the item-wise and total QIRC score changes in each LASIK group.

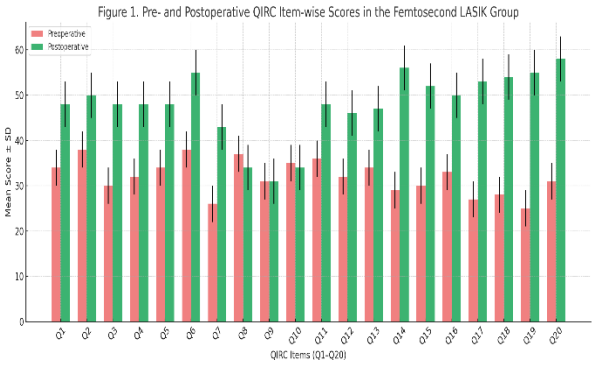

Figure-1: Pre- and Postoperative QIRC Item-wise Scores in the Femtosecond LASIK Group.

**Item-wise changes in QIRC responses before and after femtosecond LASIK. Significant improvements were observed across most items.*

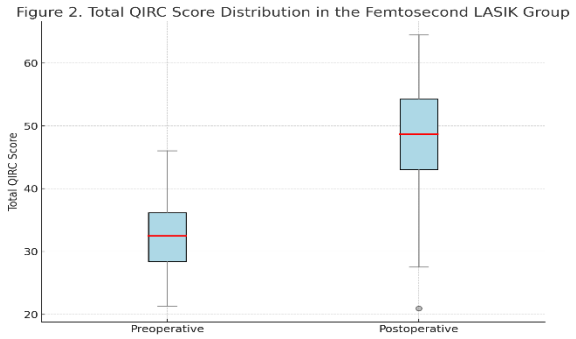

Figure-2: Total QIRC Score Distribution in the Femtosecond LASIK Group

**Distribution of total QIRC scores in femtosecond LASIK group, demonstrating overall improvement in quality of life.*

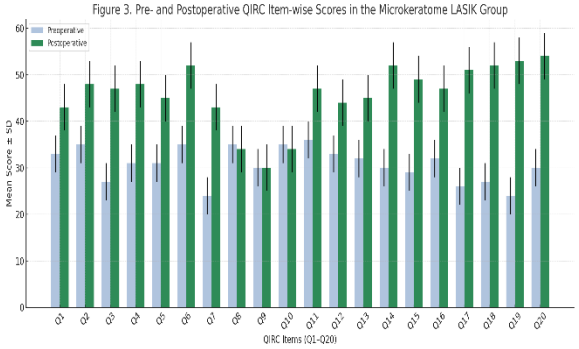

Figure-3: Pre- and Postoperative QIRC Item-wise Scores in the Microkeratome LASIK Group

**Item-wise QIRC responses before and after microkeratome LASIK. Similar trends of improvement were seen.*

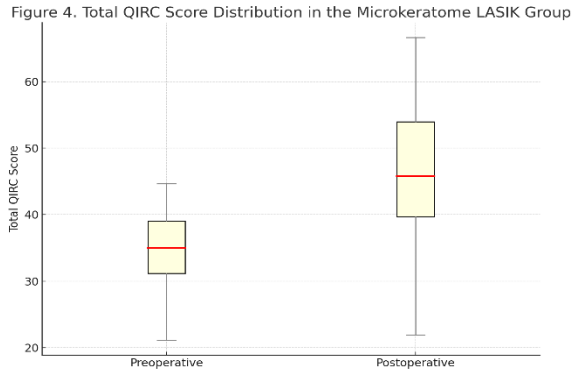

Figure-4: Total QIRC Score Distribution in the Microkeratome LASIK Group

**Overall QIRC score improvements among patients undergoing microkeratome-assisted LASIK.*

Clinically meaningful improvement was defined as a ≥10-point increase in total QIRC score. A greater proportion of femtosecond LASIK patients (78%) achieved this threshold compared to microkeratome patients (66%), although the difference was not statistically significant ($\chi^2 = 2.13$, $p = 0.144$).

Gender-Based Analysis

Preoperative QoL was significantly lower in females compared to males across all groups (mean: 39.06 ± 4.54 vs. 41.68 ± 3.51; $p = 0.011$). Postoperatively, both genders experienced significant improvements in QoL ($p < 0.001$), with females reporting greater gains in emotional well-being—particularly in items related to self-confidence, appearance, and perceived social impression ($p < 0.05$).

Individual QIRC Item Analysis

Paired *t*-test analysis of each QIRC item revealed that 17 out of 20 items improved significantly after LASIK in both groups ($p < 0.01$). The largest improvements were noted in:

Item 5: "Not being able to see on waking"
Item 6: "Unaided vision for swimming"
Item 17: "Feeling confident"
Item 16: "Receiving compliments"

Economic concern items (Q8 and Q9) did not show significant change postoperatively ($p > 0.05$), suggesting continued concern about procedure affordability and maintenance.

Radar plots (**Figure 5**) and line graphs (**Figure 6**) visually depict post-surgical improvements across QIRC items and domains.

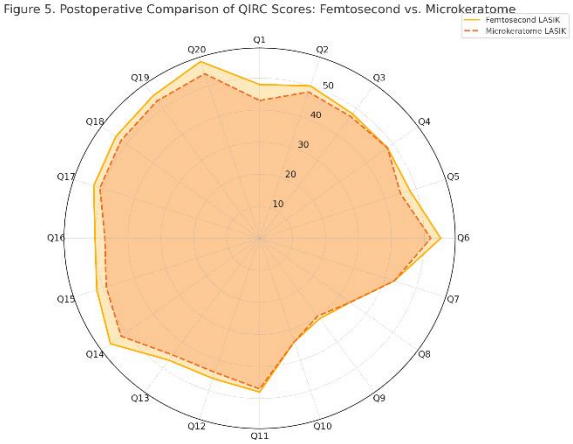

Figure-5: Postoperative Comparison of QIRC Scores: Femtosecond vs. Microkeratome as a radar chart.

**Postoperative item-wise QIRC score comparison between femtosecond and microkeratome LASIK techniques. No significant differences observed.*

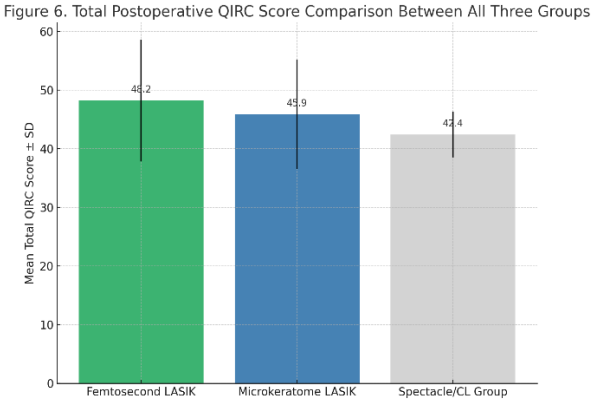

Figure-6: Total Postoperative QIRC Score Comparison Between All Three Groups

**Comparison of mean total QIRC scores postoperatively across surgical groups and the non-surgical control group. LASIK patients reported significantly higher QoL than the control group.*

Comparison of LASIK Techniques

Although the femtosecond group showed numerically higher postoperative scores across most QIRC items, the difference did not reach statistical significance in total or subscale scores (all $p > 0.05$). This reinforces the clinical equivalence of both techniques in terms of QoL outcomes.

However, patients in the femtosecond group expressed slightly greater postoperative satisfaction on emotional well-being items, particularly regarding confidence, perceived attractiveness, and independence.

Patient Satisfaction and Overall QoL Perception

On the supplementary global QoL satisfaction item, 86% of all LASIK patients agreed or strongly agreed that their quality of life had improved due to surgery. Those reporting improved QoL had significantly higher total QIRC scores than those who were neutral or disagreed ($p < 0.001$).

Safety and Adverse Events

No intraoperative or postoperative complications (e.g., flap dislocation, infection, ectasia) were observed in either LASIK group during the 1-month follow-up. No patient required enhancement or retreatment. All patients reported visual stability and comfort by the end of the observation period.

DISCUSSION

This study evaluated the impact of LASIK surgery on quality of life (QoL) in individuals with myopic astigmatism and compared outcomes between femtosecond laser-assisted and mechanical microkeratome-assisted LASIK techniques using the Rasch-scaled, validated QIRC questionnaire. The findings demonstrate that both techniques lead to substantial improvements in patient-reported QoL, with no statistically significant difference between them. Additionally, LASIK-treated patients reported significantly higher QoL than those wearing spectacles or contact lenses.

Interpretation of Results in Light of Existing Evidence

The mean QIRC score improvement of over 12 points in both surgical groups exceeded the threshold typically considered clinically meaningful. These results are consistent with previous studies demonstrating enhanced visual satisfaction, daily convenience, and psychosocial well-being after LASIK [11,12]. The lack of significant difference between femtosecond and microkeratome techniques in total or domain-specific QIRC scores aligns with prior literature indicating comparable visual and patient satisfaction outcomes [9,10].

Although the femtosecond LASIK group showed marginally higher mean postoperative scores, this did not reach statistical significance. The observed benefits, however, reinforce its theoretical advantages, such as enhanced flap precision, reduced complication risk, and better biomechanical outcomes—especially in patients with thinner corneas or higher refractive errors [10].

Improvement in Emotional and Functional Well-being

A notable strength of this study lies in its dual assessment of functional and emotional QoL domains. Participants not only reported improvements in convenience, unaided visual tasks, and reduced dependency on refractive aids but also described higher self-confidence, satisfaction with appearance, and perceived social acceptance. These findings underscore the multidimensional value of refractive surgery—extending beyond refractive correction to holistic personal and psychological enhancement.

Such improvements are particularly relevant in a predominantly young, professionally active population where visual aesthetics, lifestyle flexibility, and social perceptions hold significant weight.

Gender Differences and Psychosocial Considerations

Our study revealed that females had significantly lower preoperative QoL scores, primarily in emotional and appearance-related domains, but demonstrated greater gains after surgery. This is consistent with prior findings that women are more likely to seek refractive surgery for lifestyle and cosmetic motivations [8,14]. These findings advocate for gender-sensitive preoperative counselling that acknowledges emotional and psychosocial factors influencing motivation and satisfaction.

Persistent concern about economic burden (reflected by unchanged scores in QIRC items 8 and 9) despite surgery suggests that financial considerations remain important in-patient perception, even when outcomes are successful. This highlights the need for clearer communication regarding long-term cost-benefit trade-offs, including freedom from ongoing spectacle or contact lens replacement costs.

Preoperative anxiety, though not formally measured, is also worth noting. Prior work such as that by Katzen[15] has emphasized the role of anxiety in refractive surgery decision-making and outcomes. Emotional reassurance, accurate expectation-setting, and education should be central to preoperative evaluation.

Comparison to Spectacle/Contact Lens Wearers

Compared to the control group of spectacle/contact lens users, LASIK patients reported significantly higher QoL, especially in tasks requiring visual independence and in social or emotional domains. This supports findings by Pesudovs and others that contact lens and spectacle wearers may experience subtle daily limitations in activities and confidence [3,6,13]. LASIK, by offering long-term independence from corrective devices, represents an important lifestyle intervention.

Global and Clinical Relevance

Given the global surge in myopia prevalence, especially among younger populations, these findings are timely and widely applicable. The demonstrated benefits of LASIK across both advanced (femtosecond) and conventional (microkeratome) techniques offer flexibility in clinical decision-making, particularly in settings where resource constraints may limit access to femtosecond technology.

Routine integration of validated QoL instruments such as the QIRC into pre- and postoperative evaluations may help clinicians personalize care, improve patient satisfaction, and support shared decision-making. As healthcare systems increasingly emphasize value-based outcomes, incorporating patient-reported outcome measures (PROMs) is essential.

Overall, the findings affirm that LASIK surgery substantially improves both functional and emotional aspects of quality of life in patients with myopic astigmatism. Both femtosecond laser and mechanical microkeratome-assisted techniques are effective, with no statistically significant differences in QoL outcomes. The study supports the use of PROMs like QIRC in refractive surgery and reinforces the need to address emotional, psychological, and financial aspects alongside clinical decision-making.

Limitations

This study is subject to certain limitations. The follow-up period of one month is relatively short and may not fully capture long-term QoL changes or late-onset

complications. Additionally, although the QIRC is a validated instrument, it relies on subjective reporting, which can be influenced by mood, expectations, or social factors. Visual acuity, contrast sensitivity, and objective ocular surface evaluations were not included and may further clarify the functional benefit of each LASIK technique.

Furthermore, socioeconomic variables, occupation, or psychological traits such as preoperative anxiety or satisfaction thresholds were not assessed, though they may influence QoL perception.

CONCLUSIONS

This prospective observational study demonstrates that LASIK surgery significantly enhances quality of life in patients with myopic astigmatism, as measured using the QIRC questionnaire. Both femtosecond laser and mechanical microkeratome-assisted LASIK yielded substantial and comparable improvements in functional and emotional domains of patient-reported QoL.

The majority of patients reported high satisfaction, improved visual independence, and increased emotional well-being, particularly in areas related to self-confidence, appearance, and lifestyle convenience. No adverse events or complications were observed, confirming the safety of both surgical modalities within the studied population.

Clinicians should consider the full spectrum of patient experiences—including visual function, convenience, psychological factors, and financial considerations—when recommending refractive surgery. Incorporating QoL assessments such as QIRC into routine clinical practice can enhance personalized care, optimize outcomes, and ensure that treatment decisions are aligned with patient expectations.

Future research should focus on long-term QoL trajectories, comparative cost-effectiveness of LASIK techniques, and integration of PROMs with objective visual and ocular surface parameters. Understanding patient experiences across diverse demographic and socioeconomic backgrounds will be key to advancing refractive surgery outcomes globally.

REFERENCES

1. GBD 2019 Blindness and Vision Impairment Collaborators; Vision Loss Expert Group of the Global Burden of Disease Study. Causes of blindness and vision impairment in 2020 and trends over 30 years, and prevalence of avoidable blindness in relation to VISION 2020: the Right to Sight: an analysis for the Global Burden of Disease Study. *Lancet Glob Health*. 2021;9(2):e144–60. doi:10.1016/S2214-109X(20)30489-7

2. Nouraeinejad A. More than fifty percent of the world population will be myopic by 2050. *Beyoglu Eye J*. 2021;6(4):255–6. doi:10.14744/bej.2021.27146

3. Kandel H, Khadka J, Goggin M, Pesudovs K. Impact of refractive error on quality of life: a qualitative study. *Clin Exp Ophthalmol*. 2017;45. doi:10.1111/ceo.12954

4. Lawrenson JG, Shah R, Huntjens B, Downie LE, Virgili G, Dhakal R, et al. Interventions for myopia control in children: a living systematic review and network meta-analysis. *Cochrane Database Syst Rev*. 2023;2(2):CD014758. doi:10.1002/14651858.CD014758.pub2

5. Sakimoto T, Rosenblatt M, Azar D. Laser eye surgery for refractive errors. *Lancet*. 2006;367:1432–47. doi:10.1016/S0140-6736(06)68275-5

6. Kandel H, Khadka J, Lundström M, Goggin M, Pesudovs K. Questionnaires for measuring refractive surgery outcomes. *J Refract Surg*. 2017;33(6):416–24. doi:10.3928/1081597X-20170310-01

7. Pesudovs K, Garamendi E, Elliott D. The Quality of Life Impact of Refractive Correction (QIRC) Questionnaire: development and validation. *Optom Vis Sci*. 2004;81(10):769–77. doi:10.1097/00006324-200410000-00009

8. Shoja MR, Besharati MR. Dry eye after Lasik for myopia: incidence and risk factors. *Eur J Ophthalmol*. 2007;17(1):1–6. doi:10.1177/112067210701700101

9. Hashmani S, Hashmani N, Rajani H, Ramesh P, Soomro JA, Hussain Shah SR, et al. Comparison of visual acuity, refractive outcomes, and satisfaction between LASIK performed with a microkeratome and a femto laser. *Clin Ophthalmol*. 2017;11:1009–14. doi:10.2147/OPTH.S137451

10. Tanna M, Schallhorn SC, Hettinger KA. Femtosecond laser versus mechanical microkeratome: a retrospective comparison of visual outcomes at 3 months. *J Refract Surg*. 2009;25(7 Suppl):S668–71. doi:10.3928/1081597X-20090611-08

11. Eydelman M, Hilmantel G, Tarver ME, Hofmeister EM, May J, Hammel K, et al. Symptoms and satisfaction of patients in the Patient-Reported Outcomes With Laser In Situ Keratomileusis (PROWL) studies. *JAMA Ophthalmol*. 2017;135(1):13–22. doi:10.1001/jamaophthalmol.2016.4587

12. Sugar A, Hood C, Mian S. Patient-reported outcomes following LASIK quality of life in the PROWL studies. *JAMA*. 2017;317:204. doi:10.1001/jama.2016.19323

13. Jutai J, Day H, Woolrich W, Strong G. The predictability of retention and discontinuation of contact lenses. *Optometry*. 2003;74(5):299–308.

14. Lesueur L, Munoz-Sastre MT, Mullet E, Dabadie B, Arné JL. Les prédicteurs de qualité de vie en chirurgie réfractive [Predictors of quality of life in refractive surgery]. *J Fr Ophtalmol*. 2003;26(7):699–709.

15. Katzen J. Management of anxiety in the refractive surgery patient. *Insight (Am Soc Ophthalmic Regist Nurses)*. 2002;27(4):103–9.

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