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BOOK OF ABSTRACTS

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EFFECTIVENESS OF FEMTO-LASIK AND RELEX SMILE TECHNIQUES IN SURGICAL TREATMENT OF MYOPIA AND MYOPIC ASTIGMATISM

N. G. Zavgorodnia [1], Y.Y. Doroshenko[2]
1. Zaporizhzhia State Medical and Pharmaceutical University (ZSMFU)
2. Modern Ophthalmology "VIZUS"

Relevance. In modern ophthalmology, the choice of an optimal method for laser vision correction in patients with myopia and myopic astigmatism remains a significant clinical issue. Among the most advanced technologies, ReLEx SMILE and Femto-LASIK stand out due to their high precision, minimal invasiveness, and long-term stability of outcomes. Femto-LASIK, being a well-studied and time-tested technique, continues to demonstrate high clinical effectiveness. In turn, ReLEx SMILE, representing a new generation of refractive procedures, combines precise laser correction with minimal tissue trauma, contributing to faster rehabilitation and a reduced incidence of postoperative complications.

Aim of the Study. To assess the predictability of achieving the desired visual outcomes following refractive surgery using ReLEx SMILE and Femto-LASIK in patients with myopia and myopic astigmatism.

Materials and Methods. The study included 45patients (90 eyes) diagnosed with low to moderate myopia combined with myopic astigmatism, who underwent laser refractive surgery. Based on the surgical technique used, all patients were divided into two clinical groups.

The first group consisted of 25 patients (50 eyes) who underwent vision correction using the ReLEx SMILE method. In this group, 50% of eyes had low-grade myopia, while the remaining 50% had moderate myopia.

The second group included 20 patients (40 eyes) who underwent Femto-LASIK surgery. Among them, 50% of eyes presented with low myopia, and the other 50% with moderate myopia.

Both groups were comparable in terms of age, gender distribution, and degree of refractive error, which ensured objectivity in comparative analysis. Visual and refractive outcomes were evaluated dynamically at 1, 6, and 12 months postoperatively. Only patients with a best-corrected preoperative visual acuity of 1.0 were included to eliminate the influence of concomitant ocular pathology.

Results. Following ReLEx SMILE correction in the first group, a stable improvement in uncorrected visual acuity (UCVA) was observed. At one month after surgery, mean UCVA reached 0.98±0.01 in eyes with low myopia and 0.98±0.07 in eyes with moderate myopia ($p<0.05$). These values remained high at both 6 and 12 months, maintaining levels of 0.98±0.05 and 0.98±0.08, respectively.

In the second group, where Femto-LASIK was performed, similar results were observed one month postoperatively: 0.98±0.05 (low myopia) and 0.98±0.08 (moderate myopia). However, a slight decline in UCVA was noted over time. At 6 and 12 months, visual acuity averaged 0.95±0.01 and 0.90±0.08 for low and moderate myopia, respectively, though still within clinically favorable limits. Refraction analysis confirmed a statistically significant reduction in both myopia and astigmatism across both groups. In the ReLEx SMILE group, refractive power decreased by an average of 85.5% ($p<0.05$) within the first month. For eyes with low myopia, spherical refraction changed from –2.39±0.13 D to –0.06±0.08 D, and cylindrical from -0.87±0.12 D to +0.13±0.13 D. In moderate myopia, values changed from -4.86±0.14 D and -0.99±0.10 D to -0.07±0.06 D and +0.10±0.11 D, respectively. These improvements remained stable at 6 and 12 months, with residual refractions averaging –0.1±0.15 D (spherical) and -0.2±0.13 D (cylindrical) for low myopia, and -0.1±0.15 D and –0.25±0.2 D, respectively, for moderate myopia ($p < 0.05$). In the Femto-LASIK group, a marked reduction in refractive error was also recorded. For low myopia, spherical reduction within the first month averaged 1.6±0.12 D, with negligible change in cylindrical power. In moderate myopia, spherical reduction reached 4.6±0.1 D, while cylindrical correction averaged 0.48±0.07 D ($p<0.05$). Overall, the refractive correction amounted to approximately 87%. In low myopia cases, values improved from -1.48±0.15 D and -0.21±0.09 D to -0.02± 0.09 D and -0.35±0.14 D, respectively. For moderate myopia, refraction improved from -4.41±0.8 D and -0.6±0.4 D to -0.03±0.09 D and -0.12±0.6 D, correspondingly.

These results also remained stable through the 12-month follow-up period.

Conclusion. The findings of this study confirm that refractive surgery involving femtosecond laser technology-whether applied independently via ReLEx SMILE or in combination with excimerlaser ablation through Femto-LASIK-ensures high accuracy of correction, rapid postoperative visual rehabilitation, and long-term stability of outcomes. Both approaches demonstrate excellent effectiveness in the treatment of myopia and myopic astigmatism.