

2. SUMMARY

Goal: The goal of this study was to evaluate the results and the efficiency of laser interventions where we use the femtosecond laser – FS-LASIK and ReLEx SMILE. We performed a retrospective data analysis by comparing the post-operational visual acuity development in a group of one hundred patients with lower and higher myopia and astigmatism. We also compared the influence of laser on the tear film and the macular thickness.

Method: The studied cohort of patients consisted of two major groups. The first group included patients with lower myopia and the second group included patients with higher myopia. In each group, one half of the patients underwent the femtoLASIK surgery and the other half underwent the ReLEx SMILE surgery. We thus observed 50 patients (100 eyes) with lower myopia and 50 patients (100 eyes) with higher myopia. In the retrospective data analysis, we included patients younger than 45 years with the spherical equivalent of the myopic refractive error ranging from -0,75 to -4,12, concerning the group suffering from lower myopia, and ranging from -6,25 to -11,5, concerning the group suffering from higher myopia. Before the operations, we measured the uncorrected visual acuity of 1,0 in all patients.

Results: During post-surgical check-ups, the values of uncorrected visual acuity in the group of patients with lower myopia were similar in both femtoLASIK and ReLEx SMILE methods. On the other hand, in the group of patients with higher myopia and measured shortly after the interventions, the values of uncorrected visual acuity were lower in the ReLEx SMILE method. However, after one year, the ReLEx SMILE method shows better values of uncorrected visual acuity than the femtoLASIK method. When comparing tear osmolality after a refractive surgery (measured on the TearLab™ Osmolairity System machine), the patients who underwent the femtoLASIK surgery showed higher values of tear osmolality in all post-operational periods, compared to the patients who underwent the ReLEx SMILE surgery. Furthermore, comparing the thickness of macula after a refractive cornea surgery (measured on the Cirrus OCT machine by Carl Zeiss company), we discovered comparable values of retina thickness in both groups, irrespective of the surgery type.

Conclusion: This study pointed out the comparability of post-operational refractive results, concerning the correction of lower myopia, and favoured the ReLEx SMILE method concerning the correction of higher myopia, mainly thanks to the stability of visual acuity

during longer observation periods and lower tears film quality disturbance during post-operational periods.

Key words: cornea, refractive surgery, ReLEx SMILE, femtoLASIK, RST, lower myopia, higher myopia, astigmatism, osmolarity, central retinal thickness