3. Summary

Laser treatment of refractive errors is performed for the last twenty years, and now-a-days is considered as a standard surgical method. In the submitted work, we evaluated laser operations using LASIK and PRK methods. For each procedure we compared two method types. The first was done under standard conditions – we only corrected the spherical and cylindrical errors. The second was performed according to wave-front analysis – correction of not only the spherical and cylindrical errors, but also of higher order aberrations (ORK – Optimized Refractive Keratectomy).
All groups (LASIK standard, LASIK ORK, PRK standard, PRK ORK) had an improved uncorrected visual acuity and best corrected visual acuity. Values of HO RMS were statistically significantly lower in the PRK groups compared to the standard LASIK and PRK. Values of coma and third – order aberrations did not differ between standard and ORK and between LASIK and PRK. Spherical and fourth– order aberrations were statistically significantly lower using methods with wave–front analysis compared to standard methods.

ORK method definitely induces fewer aberrations after laser treatment than the standard method, and that for LASIK as well as PRK. Decrease of postoperative higher order aberrations leads to improved visual quality, decrease of undesirable phenomena and increase of the patients' satisfaction.