

Comparison of Visual Acuity and Higher-Order Aberrations after Femtosecond Lenticule Extraction and Small Incision Lenticule Extraction

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Purpose

- To compare postoperative visual acuity and higher-order aberrations (HOAs) after femtosecond lenticule extraction (FLEx) and after small incision lenticule extraction (SMILE).

Methods

- Medical records of refractive lenticule extraction patients were retrospectively reviewed
- 20 patients were treated with FLEX. A comparable group of 20 SMILE patients were retrospectively identified.
- Only one eye of each patient was randomly chosen for the study.

Methods

- Visual acuity, subjective manifest refraction and corneal topography before and 6 months after the surgery were analyzed for both groups.
- Total high order aberrations, spherical aberration, coma and trefoil were calculated from topography data over the 4- and 6-mm-diameter central corneal zone

Results

- Mean preoperative SE was $-4,03 \pm 1,61$ in SMILE group and $-4,46 \pm 1,61$ in FLEX group.
- Mean SE was $-0,33 \pm 0,25$ in SMILE group and $-0,31 \pm 0,41$ in FLEX group 1 year after surgery ($p=0,86$).
- In both groups 95% of the patients were within $\pm 1,00$ D of the intended correction. %80 of FLEX eyes and % 95 of SMILE eyes had an UDVA of 20/25 or better ($p=0,34$).

Results

- Total high order aberrations, spherical aberration, coma and trefoil increased postoperatively in both groups.
- However, there was no statistically significant difference between the groups preoperatively and postoperatively.

Conclusion

- FLEX and SMILE results in comparable refractive results.
- In addition corneal aberrations induced by different techniques of lenticule extraction seemed similar to each other.