Ectasia After SMILE: Correct Interpretation of Biomechanical Hypothesis

We read the case report by Mattila and Holopainen on bilateral ectasia after SMILE in the July 2016 issue with great interest. It is evident that preoperative examination with topography, tomography, and slit-lamp examination needs to be strictly followed by surgeons before small incision lenticule extraction (SMILE), LASIK, and other refractive procedures. The editorial by Dr. Randleman in the same issue summarizes that SMILE could possibly leave a stronger cornea than LASIK. We wish to explain that this is of relevance only if the preoperative biomechanical state of the cornea was normal.

As all of the previously published case reports have shown, refractive surgery was performed in eyes with features of forme fruste keratoconus and/or thin irregularly shaped corneas. In one case report, ectasia after LASIK was attributed to natural progression of keratoconus in the operated eye. The diagnoses of the features of the affected corneas was based on different topographic and tomographic metrics of ectasia, which were device specific. Thus, the underlying hypothesis behind the theoretical biomechanical superiority of SMILE over LASIK needs to be interpreted only in normal corneas with no signs of disease. In vivo evidence of this hypothesis is still lacking in clinical literature and needs further investigation. Until then, complementing the laser procedure with corneal cross-linking may be suitable to reduce or eliminate the risks of ectasia in suspect eyes.

Therefore, in the report by Mattila and Holopainen, combining SMILE with corneal cross-linking in forme fruste keratoconus and the fellow eye could have possibly avoided ectasia. This also needs further investigation through analyses of long-term outcomes of comparative procedures (ie, SMILE vs SMILE plus corneal cross-linking and similarly with LASIK). Thus, it may be prudent to avoid SMILE and LASIK in suspect eyes unless the tissue is strengthened after the reshaping procedure with corneal cross-linking.

REFERENCES

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Editor’s Note: The authors declined to comment on this letter.