SMILE as Re-treatment for a Thick LASIK Flap

The enhancement of late refractive regression after LASIK continues to present a challenge for refractive surgeons. For this reason, we read with great interest the article by Catalan-Lopez et al. about a case of residual refractive error re-treated 10 years after LASIK using the small incision lenticule extraction (SMILE) technique. Although the authors provided good visual and refractive outcomes, we have some concerns about performing a SMILE procedure within a LASIK flap to correct low myopia.

First, we think that the risk of the original LASIK flap dislocation when dissecting the two surfaces of the intrastromal lenticule would be expected to be relatively high. Second, the lenticule thickness removed when performing SMILE (46 μm for treating -2.25 diopters in the current case) is much higher than the amount of stromal tissue that needs to be ablated with an excimer laser to correct the same refractive defect. Furthermore, the predictability of SMILE when used to correct low myopia is far from ideal because only 84% of the patients are within ±0.50 diopters after the procedure.

We previously reported our experience in creating a new femtosecond laser–assisted flap over a primary LASIK flap to enhance cases of late regression after LASIK. The new flap, which we refer to as a “mini-flap,” is thinner (100 μm) and smaller in diameter (7 mm) than the original LASIK flap. In this way, the excimer laser ablation is performed over the deepest lamellae of the original flap and not over the original stromal bed, so the original residual stromal bed thickness is unchanged. For this reason, this technique is suitable in corneas with a thin residual stromal bed (such as the case reported by Catalan-Lopez et al.), in which a manual flap-lift re-treatment is not recommended. Moreover, by creating a mini-flap that is smaller in diameter than the original flap, the adhesion of the primary flap edges and peripheral interface remain intact, thus decreasing the risk of dislocation of the original LASIK flap. Furthermore, manual dissection is reduced, because only one surgical plane needs to be dissected, so the intra-flap manipulation is clearly minimized. In fact, no intraoperative or postoperative complications developed in the first 10 cases we reported.

Based on our promising preliminary results, and given the fact that SMILE has been related to a slightly slower visual recovery, lower final uncorrected distance visual acuity, more myopic residual spherical equivalent, and higher level of coma aberrations compared to femtosecond laser–assisted LASIK, we believe that performing a mini-flap should be preferred to SMILE for the treatment of late regression after LASIK.

REFERENCES

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Reply

Creating a new “mini-flap” over the primary LASIK flap is a reasonable option for this case of residual refractive error after LASIK. However, given the presence of an intense dry eye syndrome in our patient (305 mOsm/L with TearLab Osmolarity System), we decided to perform the technique of small incision lenticule extraction (SMILE) for re-treatment because it was a good option due to the presence of a previous thick flap.

SMILE is described as a safe procedure, the refractive outcome is similar to that of femtosecond laser–assisted LASIK for myopia (no differences were found in terms of final refractive spherical equivalent and uncorrected distance visual acuity), and fewer dry eye symptoms are seen with this procedure in comparison with LASIK techniques.

Given the successful visual and refractive results of SMILE in our patient and looking at the comparative studies between both techniques that are published, we believed that SMILE could be a good option for re-treatment in select patients as in our case, with the advantage of not worsening previous dry eye syndrome.
REFERENCES


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