Flattening the Recalcitrant LASIK Flap Fold & Epithelial Ingrowth after Lasik

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Flattening the Recalcitrant LASIK Flap Fold

Lasik flap folds can induce irregular astigmatism with optical aberrations and loss of BCVA especially if they involve the visual axis. ‘Macrofolds’ are easily seen by slitlamp exam and represent full thickness flap tenting in a linear fashion. On the other hand, ‘microfolds’ within the flap itself may represent wrinkles in Bowman’s layer or in the epithelial basement membrane. They are best seen as negative staining lines with sodium fluorescein. The incidence of folds requiring intervention ranges between 0.2% and 1.5%.

Flap folds result from uneven alignment of the flap edge and the peripheral epithelial ring. This can occur with unequally hydrated stromal bed prior to flap repositioning. Thinner and larger flaps tend to shift more readily with resultant surface wrinkling. Uneven sponge smoothing can result in radial (with centrifugal movement) or circumferential folds (with centripetal movement). A higher incidence of flap folds is usually found in higher myopes and is sometimes unavoidable. This is due to the reduced central convexity and stromal support resulting in flap redundancy that may be quite difficult to flatten.

Management ranges from simple lifting and refloating of the flap to placement of sutures to stretch the flap in position. Probst et al. described a technique using the red reflex as a way to better detect flap wrinkles during flattening procedures. Smoothing of the flap should aim towards an even distribution of forces applied to the surface. This can be performed with methylcellulose sponges or their equivalent. Instruments such as the Pineda corneal LASIK iron can also be used to flatten isolated flaps at the slit lamp or under the operating microscope by gently pressing on them. Other reported strategies include hydrating the flap with hypotonic saline (60-80%) which may facilitate leveling of the flap surface.

Fixed folds are sometimes encountered and probably occur when epithelial hyperplasia has time to form in the crevices formed by the folds. Superficial epithelial incisions or frank epithelial debridement over the wrinkled area may relieve contractures that occur secondary to the presumed epithelial hyperplasia in these longer standing folds. Recalcitrant wrinkling is reported to respond well to placement of running torque-antitorque 10-0 or 11-0 nylon sutures.

Epithelial Ingrowth after Lasik
Epithelium in growth under the corneal flap can cause irregular astigmatism and induced hyperopia secondary to stromal melting. A swift intervention is sometimes needed to prevent these complications.

Once the epithelium is noted to progress towards the visual axis or once a significant hyperopic shift or loss of BCVA is encountered, lifting of the flap and scraping of the epithelium should be performed promptly. This can be performed with a #69 blade or the equivalent. It is important to remember to scrape both the stromal bed as well as the stromal aspect of the flap. Flap folds connected to the peripheral epithelial ring are a special source of concern as they provide a conduit for epithelial cells infiltration. Similarly, an epithelial defect adjacent to the edge of the flap should be followed closely due to the presence of high epithelial mitotic activity.

Which epithelium is safe to leave? Small epithelial pearls are usually self-limited and do not progress. Epithelial tongues connected to the flap edge are more worrisome, they do not need to be scraped unless they exhibit a quick rate of progression or if they already involving/threatening the visual axis.

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www.slackinc.com Dr. Melki is a experienced Boston affordable LASIK surgeon, Laser Eye Surgery, Vision Correction and Cosmetic Surgery