

## **DOWN-UP LASIK IN LOS ANGELES / BEVERLY HILLS**

### **ALSO SERVING ORANGE COUNTY, SANTA CLARITA AND LANCASTER PATIENTS**

**A bottom upwards technique creates a superior hinge, which is a more natural position than the nasal hinge.**

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**Special to Ocular Surgery News**  
September 1, 1997

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International congresses of refractive surgery and information published in the various ophthalmology journals show a very definitive trend in refractive surgery. An increasing number of cases of myopia, astigmatism and hyperopia are being treated with the elective procedure of intrastromal keratomileusis using an excimer laser (laser in situ keratomileusis [LASIK]).

Eight years have passed since 1989 when I performed both intrastromal ablation on the disk and LASIK, and the procedure has improved greatly.

In correcting myopia and astigmatism and hyperopia, the procedure now has a well defined process protocol: an automated microkeratome is used to cut a large superficial flap from the cornea (diameter of 8.5 to 9 mm for a thickness of 130 to 180  $\mu$ m); the cut starts from the temporal side and stops nasally before a complete circle has been cut (producing a nasal hinge of 1 to 1.5 mm). The flap is raised, and a multizone ablation is performed in situ with the excimer laser centered on the prepupillary area. The flap is then replaced without sutures.

The entire procedure is performed under topical anesthesia as an outpatient procedure.

The ACS (Automated Corneal Shaper) produced by Chiron (Claremont, Calif.) is the most popular instrument for this procedure and the laser that provides the best results is the Chiron Technolas. This article will analyze the pros and cons of a keratectomy originating on the temporal side with a nasal hinge and compare it with another approach, the down-up technique, which was presented at the International Society of Refractive Surgery (ISRS) meeting in Chicago.

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#### **More natural hinge**

The down-up technique, similar to the classic LASIK technique, differs in one very important detail, the way the cut is performed - from the bottom upwards. Most importantly, a superior hinge is created, which is a

much more natural position than the nasal hinge. The procedure is performed with the new Chiron microkeratome, the Hansatome.

In the classic LASIK technique, the flap is attached to the underlying cornea nasally. The tissue that remains attached; that is, the part that has not been cut cannot prevent the flap moving under the effect of the vertical blinking movements of the eyelids.

The flap with the nasal hinge can therefore move; movement of the flap is in fact one of the complications that is observed with greatest frequency in the postop period during the learning curve of this procedure. It occurs largely through incorrect positioning of the flap at the end of the operation, through inadequate adhesion of the flap to the underlying bed immediately postop and, more generally, in the case of epithelial defects or excessive lacrimation.

In the superior hinge technique, the continual normal movement of the upper eyelid helps keep the flap in position and actually helps smooth it completely. Moreover, the gravitational forces will tend to position the flap in the best position for healing.

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### **Lamellar centering and smoothing**

In the classic LASIK technique, the flap may be repositioned incorrectly; that is, it may be decentered slightly upward, downward or nasally; it might also not be distended correctly, and intralamellar microfolds may persist (which will cause considerable functional disturbances postop).

In the best scenario, the action of the eyelids will not change the situation, but in the worst scenario their movement may increase the degree of displacement and/or number of folds.

In the superior hinge technique, the up and down movement of the upper eyelid associated with its compression effect will encourage the distention and centering of the lamella even if it is slightly decentered temporally or nasally.

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### **Ablation with nasal or superior hinge**

In the classic LASIK technique, the cut flap is positioned nasally while the operation is being completed and the refractive procedure with the laser is being performed.

The nasal flap actually reduces the availability of tissue for ablation in the nasal sector that may influence the final refractive result, but more importantly it may affect the final visual function (an area that has not been treated nasally); this is particularly important in with-the-rule astigmatism because the ablation occurs along the horizontal axis and the treatment involves wider ablation zones.

In the down-up technique, the astigmatic treatment is considerably facilitated by the absence of the nasal hinge; astigmatic ablation (and more so the spherical) can be performed with a larger optical zone so particular, in astigmatic and hyperopic treatment the surgeon can take full use of the possibilities offered by the laser software.

Other, less important advantages of the down-up technique over the classical LASIK technique included:

The postop topographical examination of the patients receiving down-up shows that the treated area is more homogeneous and uniform within a shorter time span compared to the classic procedure. It would appear that the best visual acuity is reached more rapidly to the satisfaction of both the patient and the surgeon alike.

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### **Reduced foreign body sensation**

Postop sensation of foreign body is reduced. In the classic LASIK technique, there may be epithelial microlesions along the gutter that may produce sensations of irritation or foreign body during blinking; this will cause lacrimation (with the flap tending to swim in the lacrimal fluid) or the patient rubbing his eye because of the sensation of foreign body; both these situations can displace the flap.

In the down-up technique, the superior position of the hinge reduces the possibility of superior epithelial defects; moreover, the sensation of foreign body in the eye during blinking is reduced to a minimum and is considerably less than in the classic LASIK technique.

Postop enhancement is facilitated. The classic LASIK technique involves raising the flap at the temporal side and fold it back nasally. An in situ treatment is performed to correct the residual refractive error; as a result, partly because the flap is smoothed during the raising procedure and partly because the epithelial defect also is superior, there often is the sensation of foreign body particularly with eyelid movement; moreover, the distention of the flap may not be optimal.

In the down-up technique, repositioning is easier and healing is faster, but above all the irritating foreign body sensation induced is less because the upper portion of the cornea remains intact.

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### **Conclusion**

The down-up technique is a true step forward in the procedure of keratomileusis, especially with the newest Chiron microkeratome: the down-up LASIK is a superior technique.

