

**TABLE 3-1. COMPLICATIONS OF SURFACE PHOTOABLATIVE REFRACTIVE SURGERY**

| CRITERIA OF SEVERITY     |                                   | CRITERIA OF TIME   |                 |
|--------------------------|-----------------------------------|--------------------|-----------------|
| Minor                    | Major                             | Transitory         | Permanent       |
| Hypocorrection           | Severe infective keratitis (rare) | Pain               | Hypocorrection  |
| Hypercorrection          |                                   | Fluctuating vision | Hypercorrection |
| Haloes                   |                                   | Haloes             | Leukoma (rare)  |
| Glare                    |                                   | Glare              | Haloes (rare)   |
| Haze                     |                                   |                    | Glare (rare)    |
| Mild infective keratitis |                                   |                    |                 |

Further findings from the research into re-epithelialization have shown how progression following PRK is asymmetric and the speed is greater in the temporal sector and lower in the superior sectors. These differences may be connected to the dynamics of the eyelid movements and with the different gradients of corneal eccentricity between the peripheral nasal and temporal zones. Another important finding is the greater speed of re-epithelialization following less profound ablations (up to -5 D) in relation to the less steep edges in the peripheral areas of the ablated zone and the more regular surface with respect to the elevated myopias. Clinical findings have shown better results in terms of visual acuity and refraction stability in eyes subjected to smoothing.

*MEDICAL THERAPY*

Medical therapy is largely topical with antibiotic eye drops administered until the epithelium closure has been completed and low penetration cortisone eye drops applied for 1 month. Artificial tears can be used after surgery, until the regeneration of the anterior stromal nerve complex has been completed. Oral nonsteroidal anti-inflammatory drugs (NSAIDs) can be taken for the first 2 to 3 days following surgery to attenuate any ocular pain that may be present.

*COMPLICATIONS*

The complications associated with a surface refractive surgery technique can be classified on the basis of severity (minor or major) or on the basis of time (transitory or permanent) as shown in Table 3-1.

Foreign-body sensation to perceived pain can appear 24 to 48 hours after surgery. The continual administration of artificial tears can relieve discom-

fort while oral NSAIDs may prove useful. A delay in re-epithelialization is considered to be a cause of all the minor or major complications of surface refractive surgery. The term “delay in re-epithelialization” is equivocal, as a minimum time for the closure of the surgical abrasion has not been defined. Kinetic studies on man have suggested that full re-epithelialization can be considered delayed at 84 hours. A delay in re-epithelialization activates a series of events at a molecular level responsible for the formation of haze and refractive regression, as described previously.

Under-correction is a complication that is observed in between 0% and 10% of the surface treatments, a completely different figure compared to the statistics of the 1990s, when approximately 40% of treated eyes required an enhancement treatment. The reason for the improved accuracy, predictability, and stability of the result is associated with the more uniform surface, which remains at the end of the photoablation treatment, performed with the most recent excimer laser systems, with or without the addition of postoperative smoothing. The simplest way of managing under-correction is the prescription of spectacles. Contact lenses can also be prescribed but they expose the patient to the risk of infections common to contact lens wearers. Residual myopia or residual hyperopia can also be corrected with further standard or customized surface photoablation procedures.

Over-correction can also be observed in the initial postoperative period. It is more frequently seen following hyperopic PRK than myopic PRK and will persist for 1 to 2 months after surgery. In mild cases, it does not require any therapeutic treatment; nevertheless, the patient must be fully informed of the reasons behind possible blurring of his or her close vision (over-correction in myopes) or his distance