Guest Editorial

The Imperative of the Early Identification of Corneal Ectasia: The Importance of Routine Topographic/Tomographic Examination after Refractive Surgery

The past 50 years of treatment of corneal ectatic disease involved delaying surgical intervention until the patient was nonfunctional with any optical aids. Contact lens fitting was the primary mechanism to treat mild to moderate cases. The various skill levels of the contact lens practitioner and the forbearance and perseverance of the patient determined the point at which the next step—keratoplasty—was considered. Intermediate steps, such as intracorneal ring placements, could delay this sequence of events in some cases, but really did not change the overall care of these patients. Advances in keratoplasty with the resurgence and emergence of lamellar techniques have improved surgical outcomes but not the time course for treatment.

The development of corneal collagen cross-linking by Seiler et al[1,2] has completely changed the treatment of these patients. Instead of delegating the care of such patients to our contact lens practitioners until the time that their endeavors are impossible, we now must identify these patients at the earliest possible moment to halt the disease before it requires heroic contact lens efforts. In no area is this more important than with postrefractive surgery ectasia. These patients are particularly vulnerable to rapid progression that can be missed until the patient is in an unacceptable situation. For this reason, routine state of the art topographical and tomographical follow-up with statistical algorithms designed to identify corneas at risk long before they have visual consequences is mandatory in this environment. The time course for such evaluations should be driven by the time course of ectasia development. Some of the same statistical evaluations designed to screen pre-lasik corneas may be helpful in the early detection of postsurgical ectasia. Measurements of biomechanical properties may aid in the identification of early keratoconus and ectasia or eyes at risk. There will, almost certainly, be unique characteristics associated with postrefractive surgery ectasia that will distinguish these patients from early keratoconus.

It has been reported that the posterior surface is modified after a refractive procedure in a predicable manner.[3,4] The changes include increased posterior elevation, curvature and asphericity centrally as well as decreased elevation peripherally, all of which are reduced in magnitude over time. It is therefore important to perform routine tomography after refractive surgery so that an understanding of expected changes is developed, and destabilizing changes can be readily recognized as distinct. A single map of increased posterior elevation shortly after refractive surgery will not differentiate a normal postoperative result from an evolving ectasia. However, if the posterior elevation or curvature is increasing, rather than decreasing these patients should be carefully monitored and an intervention, such as cross-linking performed in the early stages. Changes on the anterior surface are less pronounced initially, as the epithelium can modulate the surface shape and thus mask the underlying ectasia. Since the posterior surface has minimal influence on overall corneal power and vision, it is an ideal marker for evolving disease, potentially prior to the condition becoming severe enough to affect vision.

Our responsibility to our patients no longer ends when the patient has an acceptable postrefractive surgery result and only take care of problems when they become visually manifest. We must now educate our patients as to the proper long-term maintenance of their surgical results so that interventions can take place in a timely fashion. Failure to do so may be seen as falling below standard of care in the future.

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