Irregular Astigmatism after RK

The patient is a 39 year old Spanish American male from Texas. In 1993 he had radial keratotomy in each eye with 3 enhancement procedures. The result was 32 incisions from the radial keratotomy, with multiple intersecting T cuts in opposing merida in each eye, with an approximate 1.5 mm optical zone. In 1996, the original surgeon performed a Lasik procedure in the left eye, resulting in improved glasses thickness but no improvement in vision. The patient was seen in my office for the first time on 2-15-97, with complaints of severe glare and extremely variable vision from morning to evening and day to day. This was best correctable in our office on automated keratometry to approximately 20/80, with 9.5 diopters of irregular astigmatism in the right, and 15.75 diopters in the left. The patient had reached the point in his life in which he could





PhotoKeratometry Left Eye

PhotoKeratometry Right Eye

no longer safely drive and his job was threatened. The use of multiple variations of soft and hard contact lenses had resulted in minimal improvement in vision. Pre-operative photokeratometries are shown above The incisions themselves showed intersecting incisions with evidence of abnormal corneal wound healing and retained epithelial plugs. The cornea was grossly unstable on slit lamp examination and observation of the photokeratometries (breaking of mires and extreme irregular astigmatism). This was confirmed by the history given above. Multiple visits to eye doctors had failed to satisfactorily solve this man's problem. Most had suggested the use of hard contact lenses, which were both uncomfortable and failed to provide much improvement in vision.

On the initial consultation it was clear that remedial refractive surgical procedures would only provide a measure of improvement, without really addressing the fact that the cornea was totally unstable and the incisions were closely impinging on the visual axis. With this in mind, bilateral corneal transplantation was suggested and performed in the left eye in February, 1997, and in the right eye in April, 1997, with excellent post-operative results. Best corrected vision improved to 20/20 in each eye, with a $-10.75 + 1.75 \times 58$ in the left and $-15.00 + 3.00 \times 80$ in the right. These grafts were performed using a torque/anti-torque suture pattern described by Dr. Troutman. Post-operatively, at one year, all sutures were removed with little

change in the refraction. The patient underwent LASIK in each eye with a good post-operative result of 20/ 30 uncorrected in the right and 20/25 uncorrected in the left.

This case illustrates the importance of recognizing wound healing abnormalities that are likely to be unresponsive to even repeated intervention with suturing. It further demonstrates the important role that corneal transplantation can play in such cases, particularly with post-operative LASIK enhancement. The application of corneal transplant at an earlier stage in many corneal abnormalities is possible because of the gradual but significant improvements made over time. These improvements are described in our recent paper "Corneal transplant for keratoconus: Results in early and late disease." J. Cataract Refract Surg., Vol. 23, April 1997. Just as in keratoconus, corneal transplantation is an effective and safe approach to irregular corneal astigmatism and scarring, and should be considered at an earlier stage in the treatment of patients such as the one described above.



Final PK Appearance



Torque-Antitorque Suture Pattern



Final Topography Left Eye



Detail Showing PK with Peripheral Radial Incisions



Detail Showing PK with Peripheral Radial Incisions