## **Inferior Steepening**

January 2000

This eight month post-op LASIK patient had an uneventful LASIK procedure. She has what appears to be an ""eccentric island" or "eccentric fixation" in her left eye. Below are preop, immediate postop and latest topography. Her uncorrected vision is right eye 20/25+2 and left eye 20/60-1. Can the left eye be treated?

Thibodaux, Lousisiana



Preop



4 days Postop



8 Month Postop

## **Dr Buzard's Response**

This patient appears to represent someone with a normal appearing topography pre-op and the immediate postoperative of inferior steepening. Serval possibilities exist, first this could be a fruste keratoconus with no topographic manifestation prior to surgery. The history is abbreviated and it would be helpful to know the age of the patient, how stable the refraction and keratometry was prior to surgery and preoperative pachymetry readings. Sometimes young patients (in their 20's) can have the disease of keratoconus which manifests later in life in their 30's or 40's. It is unusual to have no asymmetry in the topography pre-op but I have seen two patients with a similar presentation. Since we do not know the true etiology of keratoconus, it should not be surprising that with a relatively invasive and "thinning" procedure such as LASIK the cornea might respond with inferior ectasia. The diagnosis in this case will revolve around pachymetry performed inferiorly and centrally and compared to the contralateral eye. As an aside, I perform preparative pachymetry on all patients to identify those with thinner than normal corneas. The note does not mention the degree of correction attempted in this patient and it should be a noted that a minimum of 250 microns should be left in the bed of the treatment to avoid ectasia. Even if the surgeon calculates sufficient exists for the correction, it may well be that the microkeratome makes a deeper cut with a thicker flap resulting in thinning of the bed.

We are left with the question of what to do now. Multiple pachymetry readings would be the starting point along with an Orbscan plot of the cornea if available although I am skeptical of the accuracy of the Orbscan unit. Regardless of the outcome of the testing, the possibility remains that this may be keratoconus and the patient should be informed of this possibility and of the occult presentation, since no evidence of keratoconus appeared prior to surgery. It is also possible that this represents an irregular ablation caused by excess fluid on the bed or any number of factors. If pachymetry suggests that the problem is not thinning of the cornea, an attempt could be made to perform an eccentric ablation inferiorly. I would use a 3mm OZ centered inferiorly with the ablation depth determined by the flat steep ratio as described in my paper on "Treatment of Irregular Astigmatism with a Broad Beam Excimer Laser \*". In examining the topography I would use 15 microns with a 3mm spot as a beginning treatment. Before surgery however, I would tell the

patient that enhancement may well make the situation worse and that with or without enhancement a small but real possibility exists that a cornea transplant or at the very least the use of rigid contact lenses may be required to optimize best corrected vision. I would be quite interested to know what happens to this patient and look forward to the long term follow-up. If you have any questions, please feel free to contact me at the Buzard Eye Institute.

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