

Gradual diminish of post Lasik corneal ectasia with a rigid gas permeable lensSantos Shan-Yu Tseng¹, David Chao-Kai Chang², John Ching-Jen Hsiao^{3,4,*}¹Walmart Vision Centre, Ontario, Canada²Nobel Eye Clinic, Taipei City, Taiwan³School of Optometry, Chung Shan Medical University, Taichung City, Taiwan⁴Department of Ophthalmology, Chung Shan Medical University Hospital, Taichung City, Taiwanjohnchhsiao@yahoo.com.tw

Abstract: Corneal ectasia following Laser in situ keratomileusis (Lasik), a known complication can only be treated with the use of rigid gas permeable contact lens, penetrating keratoplasty or corneal cross-linking surgery. A 33 year old Asian male was diagnosed with corneal ectasia in the right eye several months after bilateral Lasik and was fitted with a rigid gas permeable contact lens in our center. During weeks and months of following visits, the ectasia gradually diminished to protrusion-free corneal shape with the aided visual acuity of 20/20 by the 11 months' time. Patient's cornea however did return to its ectatic state in about 9 days once the rigid lens was ceased to wear as a test of corneal stability. During the follow up visit in 5 years later, without the trace of ectasia, a steeper base curve of rigid lens was needed for a better fitting pattern, suggesting the cornea had protruded further even under the event of lens wear. The rigid lens seems to have a biomechanical influence on patient's ectasia condition following Lasik. [Santos Shan-Yu Tseng, David Chao-Kai Chang, John Ching-Jen Hsiao. **Gradual diminish of post Lasik corneal ectasia with a rigid gas permeable lens.** *Life Sci J.* 2012, 9(4):5793-5795] (ISSN:1097-8135). <http://www.lifesciencesite.com>.863

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1. Introduction

Corneal ectasia is progressive steepening and thinning of the cornea after excimer laser corneal refractive surgery that reduces uncorrected and often best spectacle-corrected visual acuity.¹ Management of keratectasia requires the use of rigid contact lenses or penetrating keratoplasty.² In this paper, we fitted a rigid gas permeable contact lens on a patient with post Lasik ectasia in his right eye. During the course of following visits, the ectasia was gradually diminished by our daily wear rigid lens. To our surprise, by the 11 months' time, the ectasia disappeared completely and there was no sign of any corneal protrusion remains. To test the stability of cornea, patient was told to cease lens wear for 2 weeks. The ectasia returned when patient came back at 9th day follow up. In view of the return of ectasia, the patient was instructed to continue wearing of the same lens until a steeper design of rigid lens was fitted 5 years later.

2. Material and Methods

Best corrected visual acuity was done by using Topcon phoropter. Documenting ectatic condition was done by Dicon topographer (Paradigm Medical, USA) and keratometry reading via Topcon keratometer. Contact lenses used were traditional tri-curve rigid gas-permeable lens.

3. Results

A 33 year old Asian male with unremarkable health condition had a Lasik refractive surgery done to his both eyes. The pre-operation manifest refraction were -5.25 - 2.50 x 042 in the right eye, and -5.50 - 0.75 x 175 in the left eye. Both eyes had the corrected vision of 20/20. The keratometric values were 43.50@032/45.75@122 in the right eye and 43.25@170/44.25@080 in the left eye. Corneal pachymetries (Orbscan) were 568 µm in the right eye and 562 µm in the left eye. Surgery was performed with the Moria microkeratome and the VisxStar S4 excimer laser. During the post operation follow-ups, the unaided acuities were 20/20 OD and 20/20 OS for 1 week and 1 month time. At 10 week follow up visit, the acuity was 20/30 OD and 20/20 OS. At the 19 week follow up visit, the patient had noticed significant worsen of his OD vision. The acuity was 20/200 OD and still 20/20 OS. Corneal topography was taken (Fig. 1) and confirmed corneal ectasia for his right eye. Keratometry readings were 42.75@044/44.50@134. After many trial fitting lens, the first rigid lens with parameters 7.80/9.6/-7.25 giving an acuity of 20/40- was ordered and given to the patient. After a couple of days of lens adaptation, due to unacceptable lens sensation, a second steeper rigid lens with 7.75/9.6/-4.00 was given to patient to wear as a fitting trial. The patient returned 1 week

later. The patient was pleased with sensation and the corrected vision of the trial lens which gave a visual acuity of 20/30 with an over refraction of -0.75 D only. A topography map and keratometry (43.00@005/43.50@095) were performed and both showed a less ectatic condition than in the previous visit. The patient was told to continue wearing the same lens until next follow up visit.

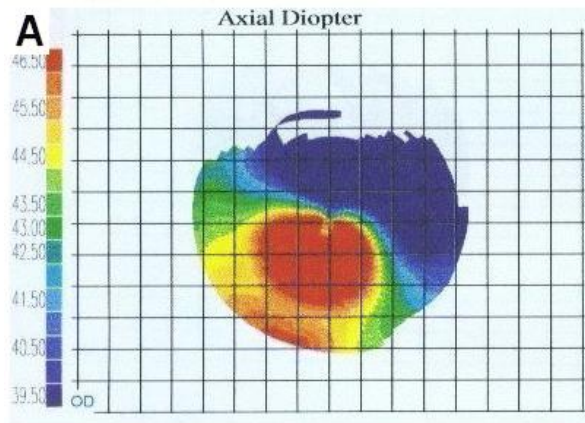


Fig. 1. Corneal ectasia found at 19 weeks after LASIK surgery, before rigid lens fitting.

At the follow up visits of 3 weeks, and 4 months (Fig. 2), corneal topography maps continued to show reduced protrusion although no much change were found on Keratometry readings. At 11 months post RGP treatment follow up visit, the patient's Ks were 44.00@170/44.75@080, over refraction was +0.25D, and VA was 20/20-. Manifest spectacle refraction was -3.75 -1.25 x 127 giving an acuity of 20/30. A topographic map (Fig. 3) showed no remaining trace of corneal ectasia.

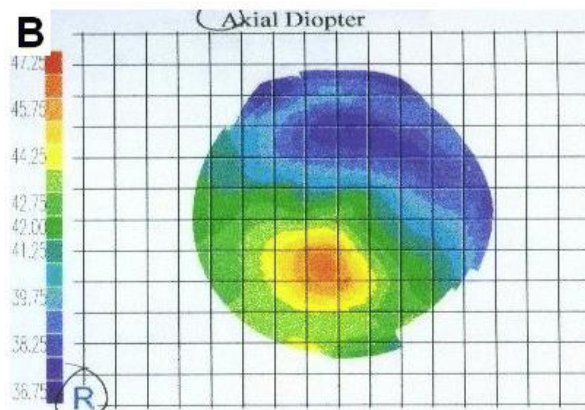


Fig. 2. Four months post rigid lens treatment.

The patient was then told to stop wearing the rigid lens as a test of corneal stability. Without too much delay, the patient's right cornea returned to its

ectatic state in the region where the protrusion had previously presented (Fig. 4). Ks were 46.75@010/47.75@100, and manifest refraction was -7.75 -2.50 x 065, giving an acuity of 20/40. This indicates that the patient's corneal shape is unstable and it requires a rigid lens to help maintaining its curvature. The patient was instructed to resume lens wear.

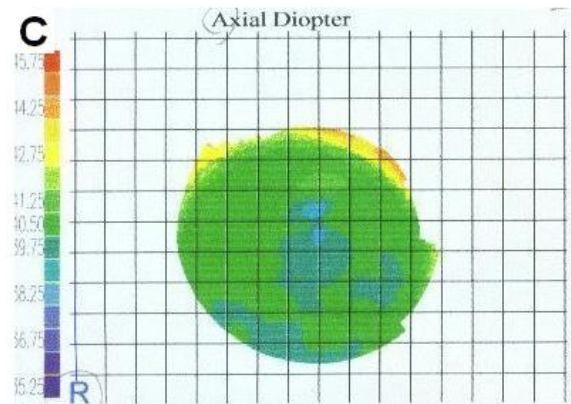


Fig. 3. Eleven months post rigid lens treatment.

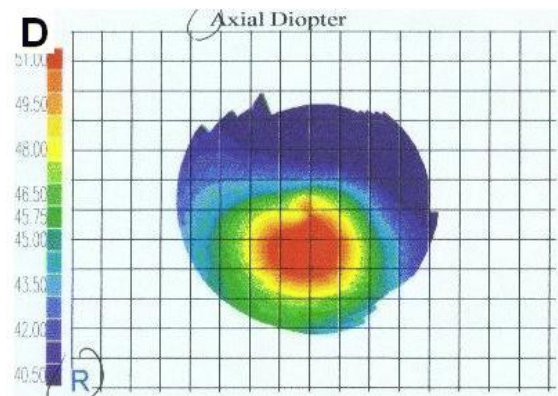


Fig. 4. Nine days after cease of rigid lens

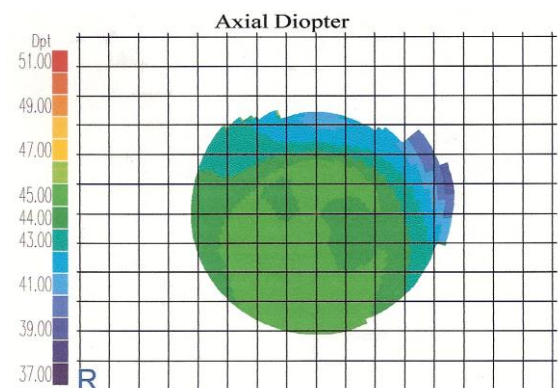


Fig 5: Five years post rigid lens treatment.

At the follow up visit of 5 years later, although still no trace of corneal ectasia on the topography map (Fig. 5), the patient's corneal curvature had steepened and was refitted with a steeper base curve of rigid lens for a better fitting pattern. The new lens design was 7.65/9.6/-4.50.

5. Conclusion

Corneal ectasia after LASIK represents a unique alteration in corneal integrity that presents as progressive inferior corneal steepening, an increase in myopia, an increase in astigmatism loss of uncorrected visual acuity, and often loss of BCVA.⁶ In views of corneal curvatures changes in our patient's post Lasik ectatic eye, we conclude that the use of rigid gas permeable contact lens may help to restrict, slow down or reverse the corneal protrusion following Lasik surgery.

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