

RADIAL KERATOTOMY OF LASER RETREATMENT AFTER PHOTOREFRACTIVE KERATECTOMY UNDERCORRECTION A RETROSPECTIVE SERIES OF 33 CASES

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Purpose: To evaluate the efficacy of radial keratotomy (RK) and photorefractive keratectomy (PRK) after PRK undercorrection of low and moderate myopia.

Setting: Institut Edith Cavell, Bruxelles, Belgium.

Methods: RK induced reduction of myopia after undercorrected PRK was evaluated in 22 eyes of 15 patients and the outcomes of laser retreatment after PRK undercorrection were evaluated in a series of 11 eyes (8 patients). Minimum follow-up in both series was 4 months.

Results: Reduction in spherical equivalent was 3.20 diopters after RK retreatment and 2.56 diopters after laser retreatment. Overcorrection was negligible (maximum + 0.25 dpt) and there was no instance of aggravated haze.

Conclusion: Both RK and laser retreatment proved to be safe and effective in PRK undercorrection.

About 10 to 20 % of photorefractive keratectomy (PRK) for myopia result in undercorrection.¹⁻⁸ As the residual refraction is sometimes as high as 3 diopters, retreatment may be required. Two methods are available for that purpose:

1. Photorefractive keratectomy (PRK) retreatment³⁻⁸, which works successfully although less than the initial procedure in some patients.

Laser retreatment has also the disadvantage of subjecting the patient to a second period of slow vision restoration.

2. Radial keratotomy (RK) retreatment was recently recommended in France¹, in the UK² and in Canada⁵. The results seemed to be as good as in other series using PRK to retreat residual myopia.

This study reports on our first 33 cases of RK or laser retreatment.

PATIENTS AND METHODS

This retrospective study comprised 22 eyes having RK to treat undercorrected myopia after PRK and 11 eyes treated by a second PRK for the same purpose.

All the procedures were performed by one surgeon (G.M.). Mean refractive error before the first PRK was -5.96 D (range -3.25 to -9.75 D) in the RK series

(fig. I) and -5.23 D (range -2.25 to - 8.5 D) in the PRK series (fig. II).

After the first PRK, residual refractive error was -2.76 D (range -1.25 to -5.5 D) in RK retreated series (fig. I) and -2.67 D (range -1.25 to -5.5 D) in PRK retreated series (fig. II).

Mean interval between first PRK and RK retreatment was 8.17 mos (range 3 to 14) and between first PRK and laser retreatment 8.27 mos (range 5 to 11).

All the patients were given 1 mg of lormetazepam pre-operatively as a tranquilizer. Oxybuprocaine 0.4 % drops were instilled as a topical anesthetic.

RK protocol

The surgeon's standard nomogram was used. The double cutting diamond blade was set at 100 % of central pachymetry and go-and-back incisions were performed. Four incisions were made in the vast majority of the cases. At the end of the procedure the patient was given dexamethasone and chloramphenicol drops and the eye was not patched.

PRK protocol

We used the Lasersight Laserscan™ excimer laser. The epithelium was removed by scraping with a blunt spatula for an optical zone of 7.0 mm. When the corneal photoablation was over drops of diclofenac sodium and tobramycin plus dexamethasone were instilled and the eye patched.

RESULTS

RK Retreatment

1. Refraction: The mean spherical equivalent was - 5.96 before PRK, -2.76 D after laser and -0.82 after RK retreatment (fig. I). The percentage of eyes within ±1.0 D was 91 % (fig. III) and there were only 2 cases of slight overcorrection (+0.25 D and +0.125 D). There were no other complications including surgical perforation, infection and haze worsening.

2. Visual acuity: Mean uncorrected visual acuity (UCVA) was 0.84 including a case of amblyopia (VA: 0.63). Nineteen patients (86 %) had a UCVA of 0.5 or better (90 % excluding the amblyopic eye). Mean best corrected visual acuity (BCVA) was 0.98 including

the same case of amblyopia.

Laser treatment

1. Refraction: The mean spherical equivalent was -5.23 D before PRK, -2.67 D after and -0.5 D after laser retreatment (fig. II). The percentage of eyes within ± 1.0 D was 91 % (fig. IV) and there was only one instance of very slight overcorrection (+0.125 D). There were neither induced astigmatism nor haze worsening.

2. Visual acuity: Mean UCVA was 0.82. Ten patients (91 %) had an UCVA of 0.5 or better. Mean BCVA was 0.97.

CONCLUSIONS

This study confirms that eyes which regress back to myopia after PRK can be retreated with either laser reablation or incisional surgery. Both techniques give similar refractive outcome. The results are consistent with what is reported by various investigators. The incisional retreatment seems to be as good as the laser one and has the advantages of economy and faster restoration of visual functions.

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