

LASIK in high hyperopia with WaveLight Allegretto Eye-Q excimer laser – One year results

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PURPOSE: To present one-year results after LASIK in high hyperopia with spherical equivalent (SEQ) of more than 3D using WaveLight Allegretto Wave 400Hz excimer laser and WaveLight Rondo microkeratome.

METHODS: Fifty-one eyes of 30 patients underwent LASIK to correct hyperopia. WaveLight Allegretto Wave 400 Hz excimer laser was used and flaps were created with WaveLight Rondo microkeratome. Mean preoperative SEQ was $+4.16 \pm 1.44$ D (range: +3.25 to +8.00), and mean cylinder was -1.44 ± 1.52 D (range: 0 to -5.00). Mean preoperative UVA was 0.10 ± 0.12 (range: 0.01 to 0.40), while mean BSCVA was 0.69 ± 0.18 (range: 0.40 to 1.00). Uncorrected and best spectacle corrected visual acuities (UVA and BSCVA), as well as manifest refraction, were recorded at 1, 6 and 12 months after the treatment.

RESULTS: One month postoperatively UVA and BSCVA increased to 0.52 ± 0.23 (range: 0.3 to 0.8) and 0.66 ± 0.19 (range 0.4 to 1.0) respectively and did not change statistically over 1-year interval ($p=0.154$ and $p=0.196$ respectively). One eye lost one line, 35 maintained, and 5 eyes gained one line of BSCVA. Manifest SEQ decreased to -0.35 ± 0.88 D (range: -2.00 to +1.00) at 1 month and stabilized at -0.16 ± 0.65 D (range: -0.75 to +1.00) at 1-year follow-up ($p<0.05$). Manifest cylinder decreased to -0.41 ± 0.50 D (range: -2.00 to 0) at 1 month and did not change statistically over 1-year ($p=0.500$).

CONCLUSIONS: LASIK in high hyperopia using WaveLight Allegretto Wave provided predictable and stable results over the period of 1 year follow-up, comparable to the outcomes of low to moderate hyperopia. An initial overcorrection was planned to counteract a possible regression.

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INTRODUCTION

Over the past years, we could witness the rapid development of surgical methods for the correction of hyperopia. Keratophakia, together with epikeratophakia and keratomileusis, was introduced by Barraquer and was used during the 80's, but due to the complexity of the procedure and equipment, the inaccuracy of refractive results, postoperative complications, and delayed visual rehabilitation¹, it is rarely performed today, even after recent studies of the laser

assisted lenticule lathing². Other techniques, such as automated lamellar keratoplasty, thermal keratoplasty, non-contact holmium:YAG laser thermal keratoplasty (LTK), phakic and aphakic IOL implantation, cover quite a specific and small proportion of the patients where the results are not better than reasonable³⁻⁹. Laser assisted procedures as PRK¹⁰ and LASIK¹¹ have also been reported in the last few years for the correction of hyperopia, with pleasing results in low and moderate hyperopia, whereas the outcomes for the higher and secondary hyperopia were not satisfactory¹².

The aim of this paper is to evaluate the refractive results after LASIK for hyperopia with the WaveLight ALLEGRETTO WAVE Eye-Q Excimer Laser System and WaveLight Rondo microkeratome.

MATERIALS AND METHODS

Forty-one consecutive eyes of 23 patients underwent LASIK for hyperopia or hyperopic astigmatism.

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