

# High-speed laser yields impressive results for primary LASIK and difficult retreatments

Cheryl Guttman  
in Paris

THE ultra fast 400 Hz Allegretto Eye-Q excimer laser (Wavelight) provides safe, effective, predictable, and stable results when used for conventional LASIK in eyes with myopia and myopic astigmatism and can also be used safely and effectively with a wavefront or topography-guided approach to treat complicated cases, early clinical results suggest.

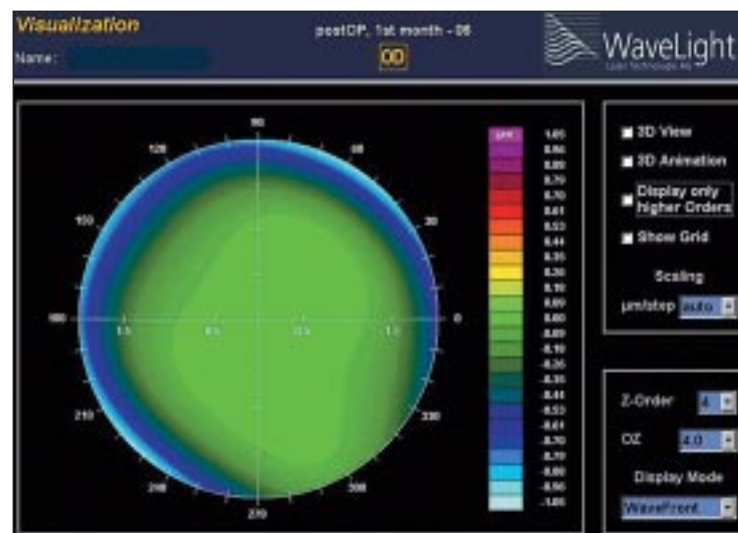
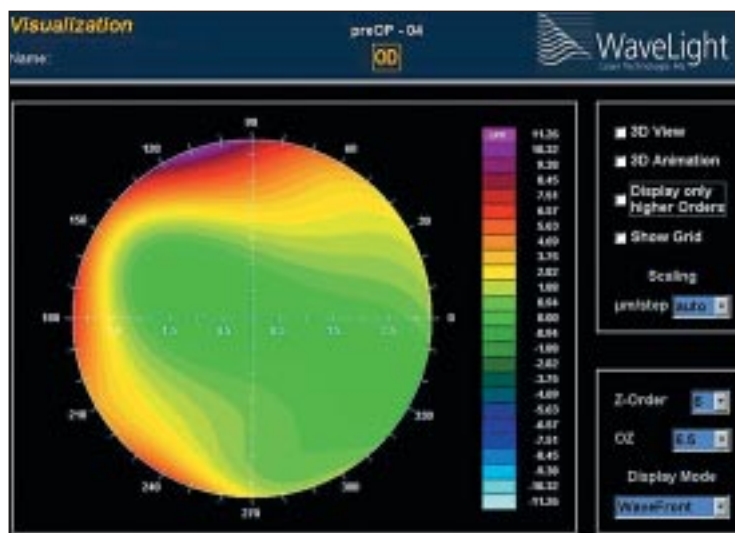
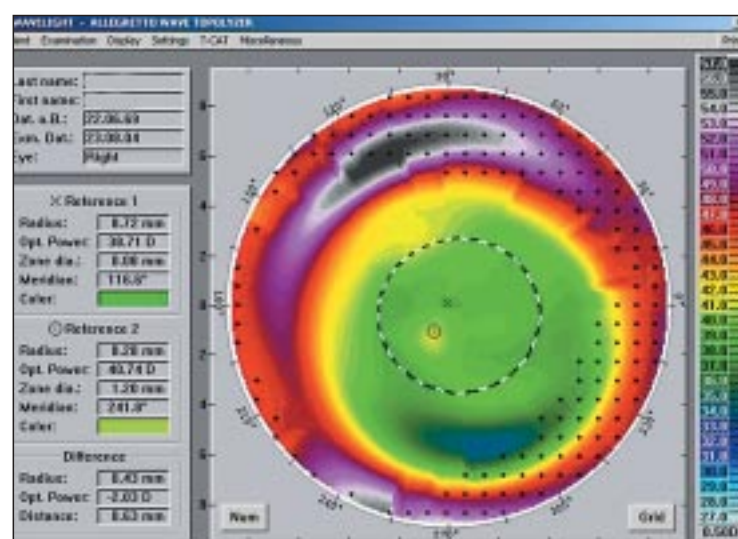
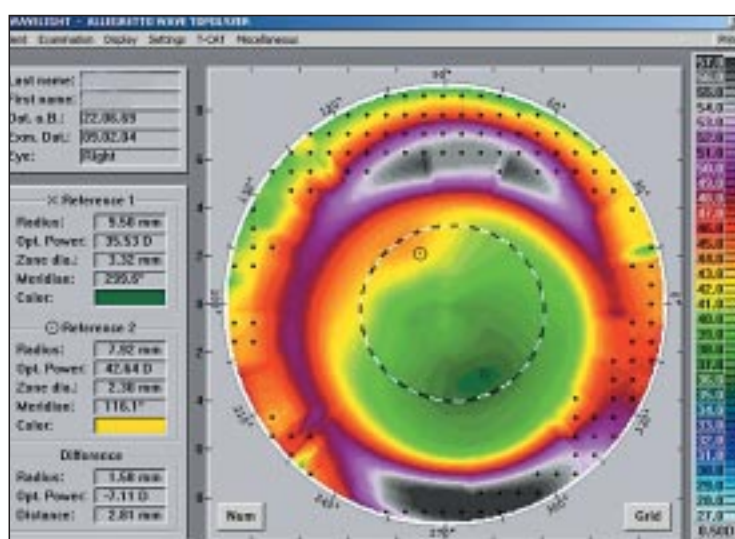
Speaking at the XXII Congress of the ESCRS, Michiel van Tilborg MD presented a retrospective study of 298 eyes undergoing primary LASIK with the Hansatome microkeratome for flap creation and the Allegretto Eye-Q laser for the ablation. The cohort included 45 pure myopes and 253 eyes with myopic astigmatism. The mean SE preoperatively was -4.70 D (range -0.75 to -11.0 D).

At the three month post-operative visit mean SE was -0.03 D, ranging from -2.0 D to +2.0 D. A full 99% of eyes were within 1.0 D of the intended correction and 91% were within 0.5 D. Comparison with the refractive outcomes from the one month visit showed almost no change.

While UCVA was 0.4 or worse preoperatively in 96% of eyes, at the three-month visit it was 0.5 or better in 100% of eyes and 1.0 or better in 82%. The safety analyses showed that no eyes lost two or more lines of BSCVA and only 10% had a one line loss at three months, while 37% had gained a line and four percent gained two lines.

**“The results from the three month visit well exceed the FDA efficacy and safety guidelines for LASIK.”**

The results were relatively better among non-astigmatic myopes, but were still excellent for those with myopic astigmatism, who comprised 85% of the treated population, reported Dr van Tilborg, a research fellow at Lasik Centrum Zuid-Nederland, Boxtel.



“This study excludes patients who did not return for the three month visit, but we expect they were probably lost to follow-up because they were satisfied with their outcomes. The results from the three month visit well exceed the FDA efficacy and safety guidelines for LASIK, and our preliminary analyses from the six month visit indicate even better outcomes than those seen at the earlier assessments,” he said.

## Topography and wavefront-guided options

Cornelis Verdoorn MD, who is one of the eye surgeons at the same centre, provided some examples of eyes retreated using the Eye-Q laser in a topography-guided or wavefront-guided approach. The topography-based treatment is used particularly in cases where there has been an eccentric or irregular ablation or in eyes with scar tissue post-PRK. Candidates for a wavefront-guided procedure include those with visual quality complaints,

such as night driving problems, that may be accounted for by higher order aberrations detected on a good wavefront map.

Dr Verdoorn told attendees that so far, the customised treatments with this ultra fast laser have provided favourable results.

“Our preference is to treat virgin eyes with conventional LASIK and to reserve these customised ablations for retreatment of difficult cases, and so far we have seen that it can be used to improve vision dramatically to provide happy results,” he said.

The topography-guided treatments were performed based on data acquired with the Allegretto Wave Topolyzer and analysed with the T Cat software.

One patient with an eccentric ablation and a greater than 2.5 D difference in power in the centre of the cornea benefited from the topography-guided enhancement with enlargement of the optical

zone. Two months later, a second retreatment was performed to correct residual refractive error.

0.8. After the wavefront treatment, the patient was plano and vision improved to 0.9.

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In another referred case where there was a -7.0 D difference in corneal power in the centre after an erratic treatment, the topography-guided treatment was effective in reducing the central optical power to -2.0 D.

In a wavefront-guided case using data acquired with the Wavelight WaveAnalyzer and translated into an ablation plan with the A Cat software, a patient with -5.0 D of myopia and -4.0 D of cylinder with BCVA of 0.7 underwent conventional LASIK that resulted in BCVA of

Another patient with significant coma and complaints of night vision problems after conventional LASIK was also treated with the wavefront-guided technique and achieved improvement in BCVA from 0.9 to 1.2 with amelioration of visual complaints.

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