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Service (sector) Refractive Surgery N° CEP

**Retreating refractive errors after excimer surgery of the cornea:  
Wavefront guided versus Standard laser in situ keratomileusis**

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Purpose: To evaluate the 6-month refractive outcomes of wavefront-guided LASIK (Zyoptix, Bausch & Lomb) versus standard LASIK (PlanoScan, Bausch & Lomb) in retreatment of primary LASIK. Methods: In a prospective randomized study, 16 patients had retreatment using Zyoptix LASIK in 1 eye and PlanoScan LASIK in the contralateral eye. The mean patient age was  $33 \pm 7.6$  (SD) years and the mean preoperative spherical equivalent (SE) was  $-1.36 \pm 0.90$  for Zyoptix and  $-1.34 \pm 0.69$  for PlanoScan group. Wavefront analysis was achieved with a Hartmann-Shack aberrometer (Zywave) and surgeries were performed with the Technolas 217z excimer laser system (Bausch & Lomb). The clinical outcomes of retreatment were evaluated in terms of visual acuity, manifest refraction, contrast sensitivity and ocular aberrations. Results: At 6 months, mean SE was  $0.02 \pm 0.33$  for Zyoptix and  $-0.24 \pm 0.28$  for PlanoScan group ( $p=.02$ ). In the Zyoptix group, 100% had a UCVA  $\geq 20/20$ , 75%  $\geq 20/15$  and 25% of 20/12.5 and in the PlanoScan group, 93.8%  $\geq 20/20$ , 56,3%  $\geq 20/15$  and 6,3% of 20/12.5. An SE of  $\pm 0.50$  D was achieved by 93,8% and 81,3% in the Zyoptix group and PlanoScan group, respectively and all patients had an SE  $\pm 1.00$  D. No Zyoptix patients had lost lines of BSCVA, 31,3% gained 1 line and 18.8% 2 lines, while 6.3% of PlanoScan patients lost 1 line, and 50 % gained 1 line. Contrast sensitivity improved significantly at 3, 6 and 18 cycles/degree in the Zyoptix group ( $p<.01$ ) and at 6 cycles/degree in the PlanoScan group ( $p<.05$ ). Zyoptix ablation was more effective in the correction of defocus, coma, third order and total order aberrations than Planoscan group ( $p<.01$ ). Conclusions: Wavefront-guided LASIK with Zyoptix had superior refractive outcomes and better correction of ocular aberrations than standard LASIK with PlanoScan in retreatment of refractive errors after primary LASIK.