



Visual Outcomes after LASIK Surgery with Different Femtosecond Laser Platforms and Mechanical Microkeratome

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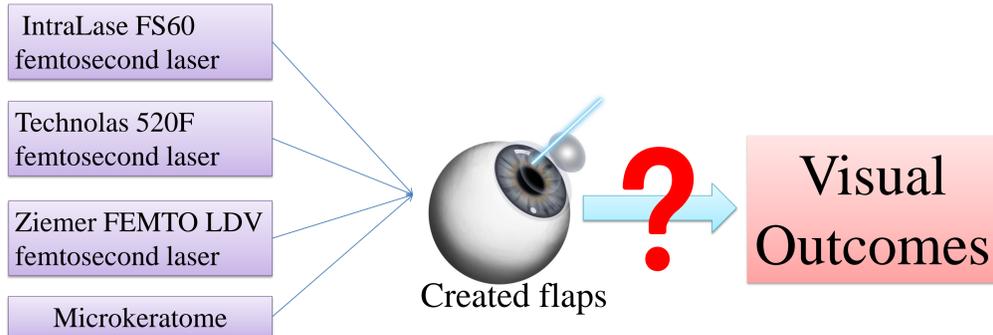
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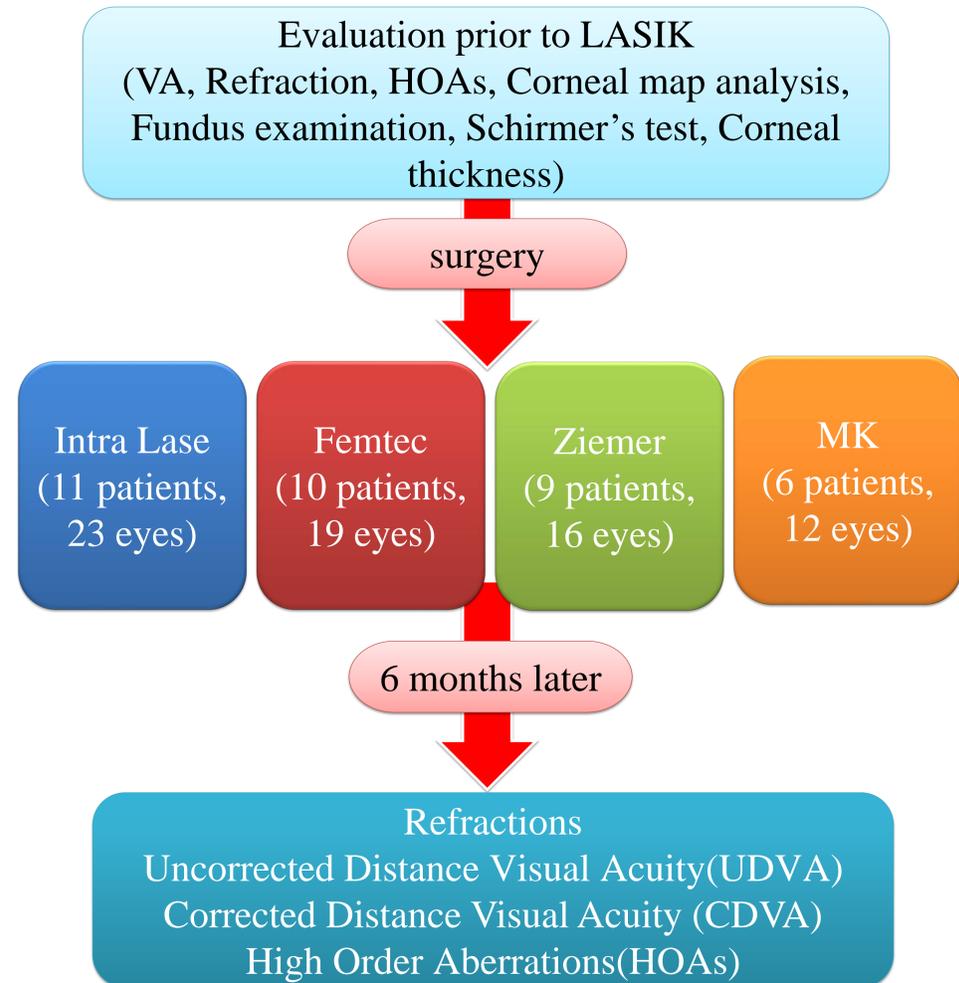
Introduction

Producing a high quality corneal flap is the key to a successful LASIK, where complications usually take place thus affecting the visual quality. Different instruments and methods used would create different corneal flaps. In the past corneal flaps were produced using Mechanical Microkeratome, but Femtosecond Laser has slowly took over Mechanical Microkeratome recently.

Purpose



Method



Result

1. Comparison of VA and Refractive error

It shows that 6months after LASIK, there are no significant difference between UDVA, CDVA, Spherical refraction, Astigmatism, and the SE groups. (fig.1)

Fig.1 Comparison of refraction and visual acuity between 4 groups

	<i>IntraLase</i>	<i>Femtec</i>	<i>Ziemer</i>	<i>MK</i>	<i>P</i>	<i>F</i>
	Mean ± Standard					
<i>UDVA (logMar)</i>	0.26±0.10	0.05±0.12	0.918±0.40	-0.01±0.29	0.29	1.27
<i>CDVA (logMar)</i>	-0.02±0.58	0.04±0.21	-0.01±0.44	-0.04±0.05	0.19	1.641
<i>Sphere(D)</i>	0.20±0.54	-0.01±0.92	0.02±0.48	0.19±0.34	0.58	0.65
<i>Cylinder(D)</i>	-0.30±0.48	-0.37±0.35	-0.38±0.31	-0.29±0.33	0.264	0.851
<i>SE(D)</i>	0±0.38	-0.14±0.82	-0.38±0.31	-0.29±0.33	0.264	0.851

2. Comparison of High Order Aberrations

6 months after LASIK, it is shown that under the All HOA RMS, Femtec has a higher number compared to Ziemer group. For Coma and Trefoil, Femtec were also has higher than the rest. While for Spherical aberration, Intralase group is higher than Ziemer group and MK is higher than Femtec and Ziemer group. As for Trefoil aberration, RMS4, RMS5 and RMS6, there are no significant difference. (fig.2)

Fig.2 Comparison of High Order Aberrations between 4 groups

	<i>IntraLase</i>	<i>Femtec</i>	<i>Ziemer</i>	<i>MK</i>	<i>P</i>	<i>F</i>
	Mean ± Standard(μm)					
<i>All HOA RMS</i>	0.67±0.20	0.80±0.24*	0.65±0.24*	0.71±0.25	0.03	
<i>Coma</i>	0.52±0.27	0.75±0.38	0.49±0.22	0.42±0.22	0.01	4.12
<i>Trefoil</i>	0.21±0.11	0.19±0.12	0.21±0.12	0.23±0.16	0.63	0.58
<i>Spherical</i>	0.40±0.20	0.35±0.21	0.34±0.26	0.55±0.21	0.04	2.99
<i>RMS3</i>	0.73±0.31*	0.93±0.40*†‡	0.70±0.23†	0.65±0.34‡		
<i>RMS4</i>	0.65±0.22	0.63±0.22	0.66±0.31	0.79±0.28	0.38	1.05
<i>RMS5</i>	0.27±0.16	0.33±0.15	0.32±0.19	0.23±0.70	0.57	0.67
<i>RMS6</i>	0.22±0.09	0.23±0.07	0.20±0.09	0.20±0.05	0.10	2.15

*P=0.039
† P=0.038
‡ P=0.030

Conclusion

Using IntraLase FS60 femtosecond laser, Ziemer FEMTO LDV femtosecond laser and mechanical microkeratome to create corneal flap have better visual quality 6 months after surgery compare to Technolas 520F femtosecond laser.