TO INVESTIGATE THE SAFETY, EFFICACY, AND STABILITY OF LASIK PERFORMED WITH A NEW SOLID-STATE LASER AFTER 9 MONTHS FOLLOW UP.

Dr Ashish Nagpal FRCS

Centre for Corneal Disease and Surgery

Ahmedabad, INDIA

drashishnagpal@gmail.com

NO FINANCIAL INTEREST

PURPOSE

TO INVESTIGATE THE SAFETY, EFFICACY, AND STABILITY OF LASIK PERFORMED WITH A NEW SOLID-STATE LASER .

Refractive procedures were performed with the small spot size, high-repetition rate, all-solid-state LaserSoft (Katana Technologies, Berlin, Germany), which is a stabilized, tunable short-pulse, Q-switched, frequency-shifted, and diode-pumped laser. Sequential frequency conversions chain with nonlinear crystals to shift the wavelength of the laser radiation to a range between 200 and 210 nm.

The spot in the target plane has a Gaussian intensity distribution with a beam diameter D of 0.25 mm, taken at 1/e-level of peak fluence Fo (Fo = 4E/D2, where E is the laser pulse energy). The measured shot-to-shot stability is 1.4% of the root-mean-square in deep ultraviolet light. Repetition rate was set to 2 kHz.

The laser's eye tracker system has a latency of 1 millisecond.

METHODS

- 23 eyes of eleven patients underwent LASIK.

- Preoperative assessment included uncorrected visual acuity (UCVA), best spectacle-corrected visual acuity (BSCVA),tonometry, corneal tomography, cycloplegia refraction, ophthalmoscopy, pupillometry and endothelial microscopy.

- Patients were excluded if they had change in refraction within
- the past year, corneal pathology, glaucoma, or systemic diseases (eg, diabetes and immunologic disorders).
- Informed consent was obtained from all patients.

- One surgeon (APN) performed LASIK with ML 7- Microkeratome (Medlogics, USA) and LaserSoft (Katana Technologies, Berlin, Germany)

- Spot diameter was 0.2 mm and the ablation zone varied up to 9 mm. All patients received drops of antibiotics, steroids, and artificial tears 4 times daily The Examinations were performed at 1, 3, 6, and 12 months postoperatively,and UCVA, BSCVA, corneal topography, and transparency were assessed.

OBSERVATIONS AND RESULTS

	PREOPERATIVE					POSTOPERATIVE				
Eye	UCVA	BSCVA	Sphere	Cylinder	SE	UCVA	BSCVA	Sphere	Cylinder	SE
1	<20/200	20/25	-6.50	-1.00	-7.00	20/25	20/25	-0.50	0	-0.50
2	<20/200	20/20	-7.00	0	-7.00	20/25	20/25	0	0	0
3	20/100	20/20	-3.00	0	-3.00	20/20	20/20	0	0	0
4	20/100	20/20	-3.50	0	-3.50	20/25	20/20	-0.25	0	-0.25
5	20/100	20/20	-3.75	-1.00	-4.25	20/20	20/20	0	0	0
6	20/100	20/20	-3.75	-1.00	-4.25	20/20	20/20	0	0	0
7	20/50	20/20	-1.50	0	-1.50	20/20	20/20	0	0	0
8	20/50	20/20	-1.50	0	-1.50	20/20	20/20	0	0	0
9	20/40	20/20	-1.00	0	-1.00	20/20	20/20	0	0	0
10	20/40	20/20	-1.00	-0.50	-1.25	20/20	20/20	0	0	0
11	20/100	20/20	-3.75	-2.00	-4.75	20/25	20/20	-0.50	0	-0.50
12	20/100	20/20	-3.25	-1.75	-4.12	20/25	20/20	+0.50	0	+0.50
13	<20/200	20/25	-6.50	-0.50	-6.75	20/25	20/25	0	0	0
14	<20/200	20/25	-5.75	-0.50	-5.75	20/25	20/25	0	0	0
15	20/200	20/20	-4.00	0	-4.00	20/20	20/20	0	0	0
16	20/200	20/20	-4.25	0	-4.25	20/20	20/20	0	0	0
17	20/50	20/20	-1.25	0	-1.25	20/20	20/20	0	0	0
18	20/50	20/20	-1.50	0	-1.50	20/20	20/20	0	0	0
19	20/100	20/20	-2.25	-0.50	-2.50	20/20	20/20	0	0	0
20	20/100	20/20	-2.50	0	-2.50	20/25	20/20	-0.50	0	-0.50
21	20/50	20/20	-1.00	0	-1.00	20/20	20/20	0	0	0
22	20/200	20/20	-8.00	0	-8.00	20/40	20/20	+0.75	0	+0.75
23	20/200	20/20	-8.25	0	-8.25	20/40	20/20	+0.75	0	+0.75

UCVA - UnCorrected Visual Acuity BSCVA - Best Spectacle Corrected Visual Acuity

CENTRE FOR CORNEAL DISEASE & SURGERY

OBSERVATIONS AND RESULTS

VISUAL ACUITY

At 9 month follow up no eye lost lines of BSCVA and UCVA improved in all eyes. All eyes were within 1.00 diopters(D) and 21 eyes were within 0.50 D of emmetropia

CORNEAL TOPOGRAPHY

Corneal maps demonstrated a smooth regular pattern with well centered ablation zones.

CORNEAL SPECULAR ENDOTHELIAL MICROSCOPY

The post operative endothelial cell morphology and cell count were comparable to the pre operative documentation.

SUMMARY

Clinical results at 9 months were promising, with good safety profile, efficacy, and stability of the visual and refractive outcome.

Stability of results and good predictability observed in this small group of patients was promising, however further investigation is required with a greater number of eyes treated to further confirm this data.

The other non clinical observation was the lower noise level during operation which helped increase patient comfort during the procedure.