Advancing Refractive Technologies

Quality of Vision = Quality of Life

EuroTimes Satellite Education Programme

XXIII Congress of the ESCRS Lisbon


F. Carones *ITALY*

Francesco Carones MD Milan discussed his initial experience with the latest upgrade of the LADARVision platform, the LADAR 6000. He highlighted several innovative hardware and software upgrades that allow shorter procedure times and improved patient flow.

"One of the issues I think is important in refractive surgery is to have more user-friendly systems and improved patient flow. When I received the LADAR 6000 at the beginning of the year, my hope was to maintain the quality results I had come to expect from the LADARVision 4000 platform while improving the control and ease-of-use of the system."

"One of the issues I think is important in refractive surgery is to have more user-friendly systems and improved patient flow."

"In my opinion the LADARVision 6000 offers the state of-the-art technology for refractive laser surgery. We saw results equal to LADARVision 4000, with improved efficiency and consistency. I also noticed that patients treated with the faster system appeared to have a faster recovery time."

Principal enhancements include a new excimer laser component that provides a repetition rate of 100 Hz, a 40% increase in ablation speed over the previous system. The LADARWave component has also been improved. Autoregistration software provides automatic alignment of the pupil and limbus reticules during wavefront capture. These improvements have two important benefits - more accurate treatment, and significant time savings.

"A majority of custom and standard treatment patients, 98% and 93%, respectively, achieved uncorrected acuity of 20/20."

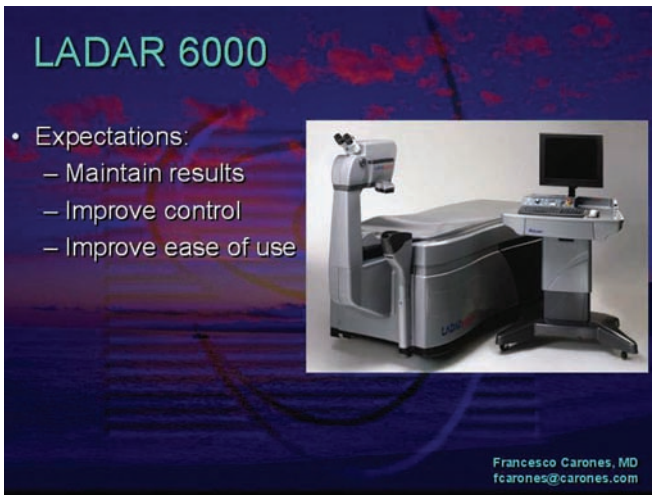
The LADAR 6000 incorporates several innovations to make the system more practice-friendly for surgeon, staff and patient. This includes simple things such as a new console, with more room for charts and files.

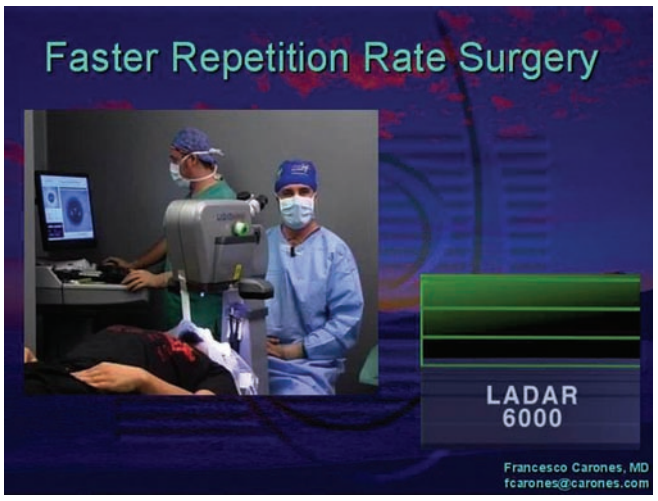
The laser microscope has also been improved significantly, with higher illumination. A ring light array simplifies patient fixation, while off axis lights improve the working distance, leaving more room to create the lamellar flap.

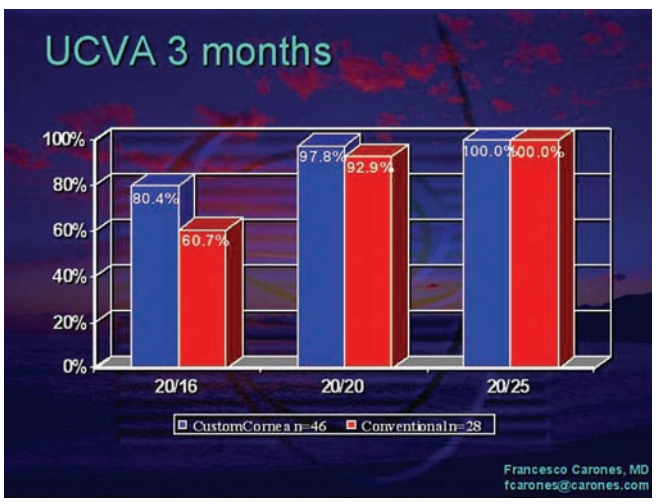
The monitor is now easier to orient during the surgery. One very useful enhancement has been to include a display of the image captured by the LADARWave that can be viewed during the procedure.

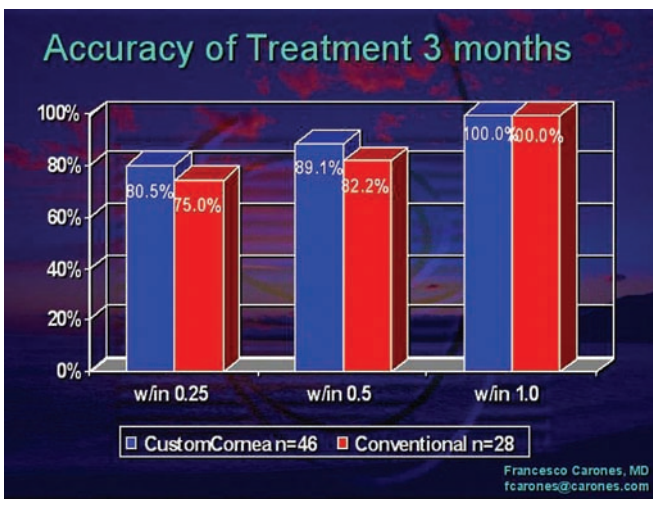
"I like the way the monitor displays the image captured by the LADARWave. This helps you to control alignment during surgery, which increases your consistency for better registration, and makes the whole process easier."

Another practice-friendly improvement is a new gas cavity that requires less maintenance. The gas now only needs to be changed on a weekly basis rather than every day as with the LADAR 4000 system.









LADAR 6000 Results

Dr Carones reviewed his early results with the LADAR 6000 platform. He treated 46 patients with CustomCornea ablation, while 28 patients had conventional LASIK.

Patients chosen to undergo CustomCornea treatment had higher refractive errors, with a mean sphere of -4.19 D (-0.37 to -9.00), and more cylinder, with a mean of -0.68D (0.00 to -3.50). Patients in the conventional treatment group had a mean preoperative refraction of -2.57D (-0.50 to -6.12), with mean sphere of -0.58 D (0.00 to -1.75). The patients with greater errors were specifically selected to undergo CustomCornea procedures, based on the idea that they would derive the most benefit from this approach, Dr Carones noted.

At three months follow-up, 80% of the custom-treated patients were 20/16 uncorrected, as were 60% of patients in the conventional group. A majority of custom and standard treatment patients, 98% and 93%, respectively, achieved uncorrected acuity of 20/20. All patients achieved at least 20/25.

"The conventional treatment results were really quite satisfactory, while the custom treatment results were extremely good. The accuracy was good for both approaches with 80.5 % of custom-treated patients and 75% of conventional treatment patients within 0.25 D of the intended correction. All of our patients were within 1.0 D of the intended correction."

The results were similarly impressive in terms of best corrected visual acuity. Half of custom treatment patients and 40% of conventional LASIK patents gained one line of vision. A few patients gained two lines. Only one patient, who had received the standard treatment lost a line, but he retained visual acuity of 20/20.

In terms of quality of vision, custom-treated patients showed marked difference in higher order aberrations (HOAs) compared with conventionally treated patients. In particular, custom-treated patients showed a mean decline in spherical aberrations, while those treated conventionally had a slight gain in spherical aberrations over the three month follow-up. Standard treatment patients also showed increases in coma and trefoil, changes not observed in the custom treatment group.


E. Donnenfeld *USA*

Advances in Registration Technology

Eric Donnenfeld MD USA discussed several important advances in registration technology that are included in the new LADARVision 6000 platform.

"Advances in registration technology are the single most important concept in the future of refractive surgery. The future is extraordinarily bright. We are getting very good results right now, so some would say 'why change, I'm already getting good results?'. I would respond that what builds a good refractive practice and characterises a good refractive surgeon is the drive to exceed the patients' expectations. We are not just looking for good results, we are looking for results that are better than the patient ever expected to achieve."

He affirmed that accurate registration of the wavefront image is the key to achieving that goal. The excimer laser works in submicron accuracy, but if the laser is applied to the wrong area, off by even 0.5 mm, the accuracy of the laser is lost. This is why it is essential to achieve a good pre-operative wavefront, then match it to the eye at the time of surgery with accurate registration.