

Two does become one

Announcing a remarkable step forward in femtosecond laser technology and a new excimer treatment for presbyopia

Felicity Thomas

A remarkable step forward in femtosecond laser technology, was the view of *OTEurope's* editorial advisory board member, Prof. Gerd Auffarth about the combined cataract and refractive capabilities of CUSTOMLENS from Technolas Perfect Vision.

The new femtosecond laser procedure has been designed to perform anterior capsulotomy, lens fragmentation and corneal incision, as well as astigmatic cuts for related astigmatism correction. This will be available on the company's Femtosecond Workstation, enabling both cataract and refractive surgery to be performed with one single device.

Prof. Auffarth detailed his clinical experiences of performing capsulorhexis and lens fragmentation using the CUSTOMLENS procedure at this year's annual ESCRS meeting in Paris.

In describing an example of capsulorhexis Prof. Auffarth stated that after the initial calculation of the procedure using the system's interface the surgeon can view the different procedures on the workstation. An on-line OCT allows the doctor to view the curvature of the cornea, epithelium of the cornea, endothelium of the cornea, the iris, the lens and the anterior segment. He explained that it is possible to mark out the capsulorhexis and also view the positioning for accuracy (Figure 1). Further to this he added that the range at which the capsulorhexis needs to be performed can be programmed into the system and if required this can be altered so that the whole capsule is 100% perforated. Another feature of the system is that if the patient moves at all during the procedure the system compensates for it ensuring 100% accuracy.

Prof. Auffarth expressed that the laser only takes a few seconds and once completed the rhexis is easily removed. Additionally, he remarked that this procedure is very useful for more complicated surgery, for example, Marsden Syndrome where the patient shakes, and could also be considered suitable for children and other difficult situations.

Prof. Auffarth also discussed the different approaches available for lens fragmentation. He mentioned the various ways to cut the lens, including circular or horizontal, and that the surgeon knows the depth of the cuts as well as the distance from the posterior capsule. Additionally, he noted that

pre-fragmentation of the nucleus is possible, which means that the final energy needed to remove the lens is lower than previously required and ultrasound is not necessary from the beginning of the procedure. In cases of traumatic cataract where the capsule is moving a little bit it is possible to use the technique so that no damage is caused. "This will especially increase possibilities in cognitive cases," he affirmed.

He used an example of lens fragmentation where he made six cuts in the middle of the lens, then cut horizontally and performed the capsulorhexis to soften the centre of the lens. Also, he stated that with this system it is possible to separate the different layers of the lens, which enables the surgeon to pull it apart and finally remove the lens.

In conclusion Prof. Auffarth said: "This is a very promising addition to an already working and functioning procedure for cataract surgery, the capsulorhexis is very nice, the lens fragmentation is very impressive and the corneal incision in the eye is something that we have as an adjunct to it, which is quite interesting for astigmatic control." He added: "We can offer the patient the premium cataract procedure similar to premium lenses or we can go for complicated situations where we can pre-operate entire internal procedures on the lens before running into trouble. Being able to perform femtosecond laser-assisted cataract surgery with the Technolas system is a remarkable step forward in femtosecond laser technology. I already perform the

Figure 1: Example of the CUSTOMLENS capsulotomy procedure.



Intracore procedure with the system, as well as use it to create flaps and for perforating keratoplasty. So, the option to also perform the cataract steps with CUSTOMLENS module is a very exciting development."

The combined cataract and refractive procedure will be commercially available in 2011.



Special Contributor

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Corneal approach of treating presbyopia

At the same presentation during ESCRS, Dr Jorge Castanera, Instituto de Oftalmología Castanera, discussed the corneal approach of treating presbyopia using an excimer laser. He performed a study on 46 eyes using the Technolas SUPRACOR technology, which is an aberration-optimized presbyopic algorithm designed for use on myopic, hyperopic and emmetropic eyes as well as post-LASIK patients.

In his study Dr Castanera was looking for very low induction of aberrations with a bifocal treatment so that both eyes are treated in the same way with the same protocol. He continued to say: "The most important point of SUPRACOR is that the near vision is done in a different ablation

profile to minimize the induction of aberration in the pupil area." Aberration in this region of the eye is a common factor when performing presbyopic correction and can reduce the quality of both near and distance vision.

In a normal presbyopic eye the distance vision is good but the near vision is bad and when using a standard bifocal optic the distance vision can be maintained and near vision improved but the intermediate vision suffers. However, with traditional hyperopic treatments good intermediate vision can be obtained as well as near but the distance vision suffers. Dr Castanera results demonstrated that the SUPRACOR enabled the patient to mainly achieve

an improvement in both near and distance vision (Figure 2).

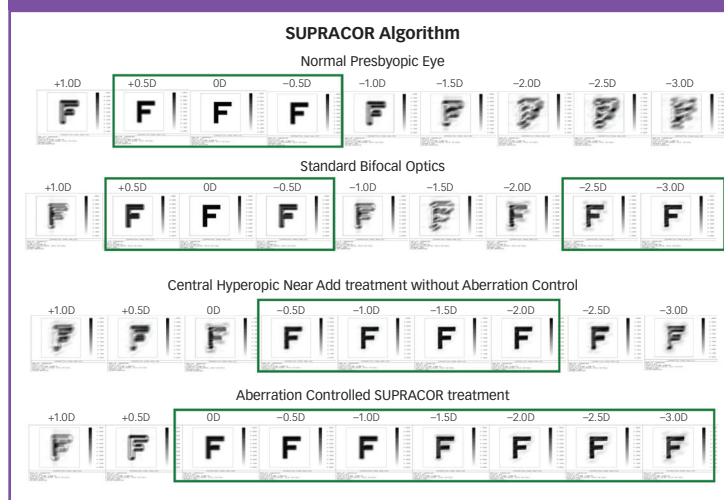
He found that of the 23 patients, who were all over 50 years old and as such fully presbyopic, 68% achieved 20/30, or better, uncorrected distance vision and 92% achieved 20/30 uncorrected near vision. Dr Castanera also stated that 4% of the patients found they suffered a loss in vision but this was reported to be a result of dry eye and he explained that after treatment for dry eye and some time the patient's vision should improve.

Additionally, he revealed that 100% of his patients claimed that they no longer needed glasses to read a newspaper or to work on the computer after surgery and that 96% of his patients were very happy with the results and would recommend it to a friend.

Dr Castanera concluded that: "this is a very fine algorithm for treating presbyopia that will change the way surgeons view presbyopic patients."

All the patients in this study were hyperopic patients but further studies are being performed. SUPRACOR is expected to receive the CE mark in 2011.

Figure 2: The SUPRACOR algorithm, demonstrating the sight improvements for various treatment options.



European Multi-Center Clinical Study:

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