

# FS-CATARACT LENSES

Designs use precise capsulotomy for stability, dysphotopsia reduction.

*Howard Larkin reports*

Intraocular lenses (IOLs) designed to snap into the precise capsulotomies made possible with femtosecond laser-assisted cataract surgery are now in clinical tests, presenters told the XXXII ESCRS Congress in London. Capturing the capsulotomy in a peripheral groove may make these lenses more stable and their position more predictable, and could eliminate negative dysphotopsias associated with in-the-bag IOL placement.

Ludger Hanneken MD, Cologne, Germany, reported on his experience with the Oculentis Lentis, of which he has implanted three in the first round of human tests. The lens has a special rhexis clip design which fixes the IOL

within the capsulotomy. Two large haptics longitudinal and two smaller haptics transversal on the anterior ensure the lens remains firmly in place after fixation in the capsulotomy. The aspheric lens is designed to be aberration neutral with an optic of 5.7mm diameter, and total posterior haptic diameter of 10.5mm.

Potential advantages include precise lens centration, as well as greater resistance to dislocation, tilt and rotation, Dr Hanneken said. These may result in better predictability and stability of lens placement, potentially improving refractive outcomes. The stability and precise positioning may enhance the performance of multifocal, toric and enhanced depth-of-focus lenses.

The lens was inserted through a 2.2mm incision and required some manipulation to position the haptics inside and outside the capsular bag, Dr Hanneken said. While this sounds and even looks complicated on video, it was not difficult to position the lens, he added.

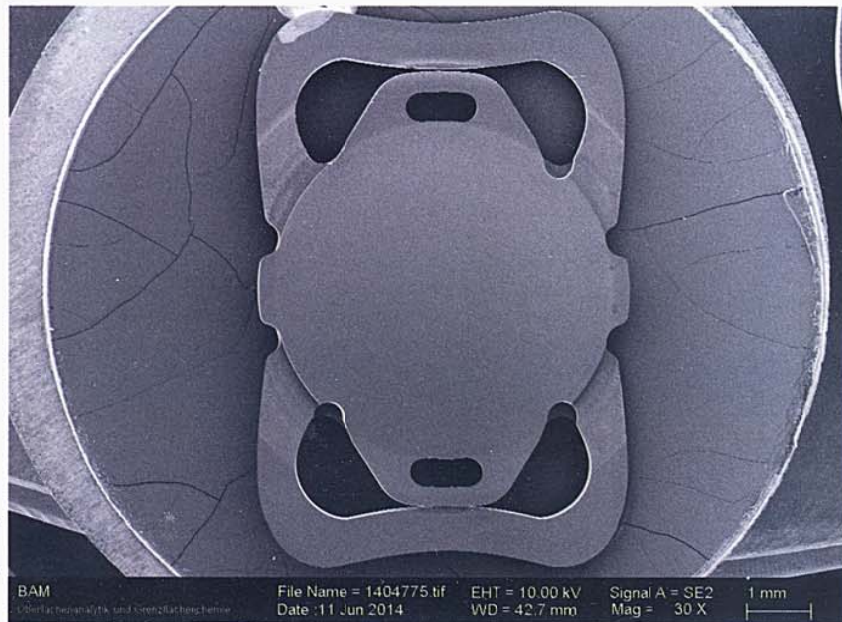
Perfect centration was achieved with all three lenses, Dr Hanneken said. No intraoperative complications were experienced, and the lens should have a short learning curve. He cautioned, however, that all OVD must be removed from the bag before the lens is inserted as the lens completely seals the capsule.

An open-label prospective multicentre international trial of the Lentis lens is now under way, with Gerd Auffarth MD, Heidelberg, Germany, as principal investigator.

## ANTI-DYSPHOTOPIC IOL

In a related presentation, Samuel Masket MD, Los Angeles, US, described an IOL designed to prevent negative dysphotopsias. Sometimes likened to horse blinders, these shadows have been reported in up to 15 per cent of patients immediately after surgery and persist indefinitely in one to three per cent of cases. They may be the leading cause of patient complaints after what seems to be perfect surgery, he said.

In Dr Masket's clinical experience, negative dysphotopsias can be treated in most cases by overlapping the edge of the IOL over the edge of the anterior capsulotomy, either by raising the edge of the IOL optic out of the bag or implanting a piggyback lens or sulcus supported lens. In contrast, changing lenses implanted completely in the bag seldom eliminates dysphotopsias, leading Dr Masket to conclude the overlap of the capsule over the lens edge is involved.



One-piece posterior chamber lens with aspherical surface for laser assisted cataract surgery and easy fixation in the capsulorhexis



Courtesy of Samuel Masket MD

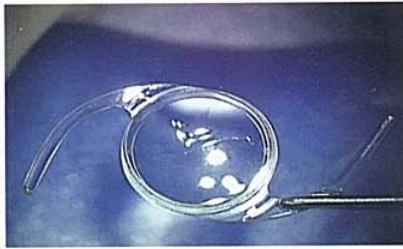


Figure 1: Overview of Morcher 90S (Masket™) IOL

Dr Masket's design features a groove around the periphery of the anterior optic that would allow the lens optic to snap into and overlap the edge of a precisely-sized anterior capsulotomy. This feature has been incorporated into the Morcher 90S hydrophobic acrylic lens, which has now been implanted in 12 human eyes, Dr Masket said.

Burkhard Dick MD, PhD, Bochum, Germany, implanted six lenses using a Catalis femtosecond laser system (AMO)

to cut 4.9mm capsulotomies, inserting the lens through a 2.4mm corneal incision, Dr Masket said. But while the design is "perfectly matched" to femtosecond laser-cut capsulotomies, the lens also can be implanted in measured manual capsulorhexis, he added. Oliver Findl MD, PhD, Vienna, Austria, has successfully implanted six lenses using a Zeiss Callisto system to guide creation of the manual capsulorhexis.

Three months after surgery, none of the 12 eyes reported any dysphotopsia, and no iris chafe was observed, Dr Masket reported.

"Clinical experience and peer reviewed literature say that negative dysphotopsia can be prevented or relieved if the optic edge overrides the capsulotomy. The Morcher 90S IOL does that."

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Figure 2: Callisto (Zeiss) projected anterior capsulotomy

Courtesy of Prof Oliver Findl

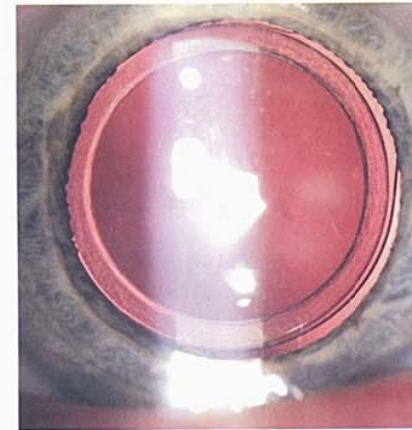


Figure 3: Postoperative view of Morcher 90S (Masket™) IOL. Note the peripheral groove and excellent centration

Courtesy of Prof Burkhard Dick and Dr Tim Schultz



Potential advantages include precise lens centration, as well as greater resistance to dislocation, tilt and rotation

Ludger Hanneken MD



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