

Capsule bending critical in PCO reducing effect of sharp optic edge

Stefanie Petrou Binder MD
in Paris



Oliver Findl

CAPSULE bending may be more crucial than a square optic edge in the prevention of PCO, said Oliver Findl MD, Medical University of Vienna, Austria.

In a randomised, double-masked trial in which patients underwent implantation of a single-piece IOL in one eye and a three-piece Acrysof IOL in the fellow eye showed comparable amounts of PCO with both lenses, Dr Findl told the XXII Congress of the ESCRS.

The study included 104 eyes of 52 patients with age-related cataract. The average age was 74 years. Patients had bilateral cataract surgery by the same surgeon using a standardised technique. All patients in the study underwent all examinations on both eyes using high-resolution digital retroillumination images of the posterior capsule. They also underwent clinical evaluations with regard to subjective symptoms such as edge glare.

One year postoperatively, the intensity of regenerative PCO as

measured with automated image analysis software (AQUA, scale 0-10: 0 = no PCO, 10 = massive PCO) was slightly higher for the single-piece Acrysof eyes (AQUA score 1.3) than for the multi-piece Acrysof eyes (score 0.9).

However, at two years there was no significant difference between the two groups and Dr Findl performed no Nd:YAG Laser capsulotomies for any of the study eyes. In addition, there was no significant difference between the two IOLs in terms of best-corrected visual acuity, rhexis/IOL overlap, capsular folds, or the amount of fibrotic anterior capsule opacification during the follow-up period.

"While eyes with the single-piece Acrysof lens initially showed slightly more regenerative PCO than the multi-piece Acrysof, the barrier effect of both the single and multi-piece designs was comparable, revealing low PCO, at two years time," he said.

Lack of capsule fusion at haptic-optic junction in single-piece IOL

Dr Findl said that due to a broad haptic-optic junction, the single-piece Acrysof IOL does not have a sharp posterior edge around the entire optic circumference. In this region, there is a lack of capsule fusion due to the bulky, thick haptic, and without capsule fusion there will be no capsule bending in this region, he explained.

He said that the junction is postulated to be a gateway for lens epithelial cells to gain access to the posterior capsule behind the optic and cause PCO, due to the lack of capsule fusion and capsule bending. He said that when PCO was evident in the three-piece lens, it was usually seen at the optic-haptic junction,

if at all.

Although the results of several studies reveal the sharp posterior optic edge to be very effective in PCO prevention, Dr Findl said that the outcome of his research indicated that another force was at work. He suggested that of the two mechanisms of PCO prevention—contact inhibition and high pressure on the posterior capsule edge / capsule bending, the latter was more likely.

He observed capsular folds in both groups, with somewhat more folds in the single-piece eyes than in the multi-piece eyes, shortly after surgery.

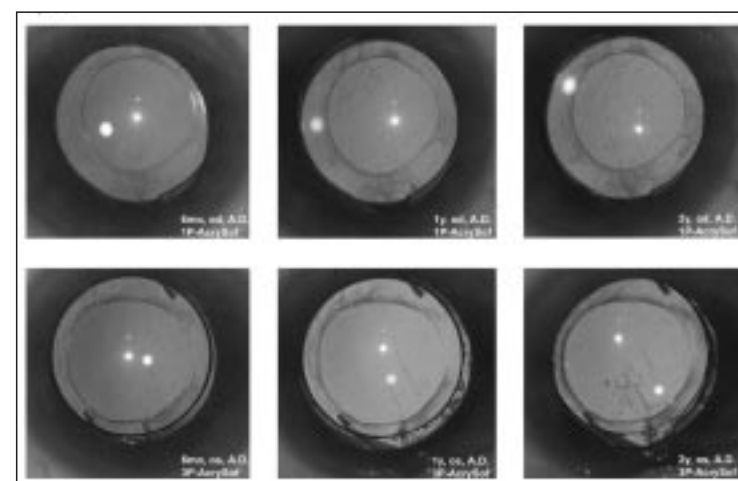
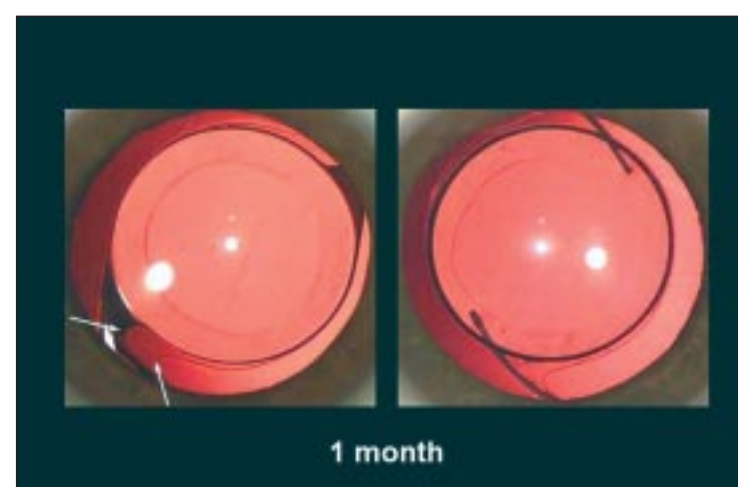
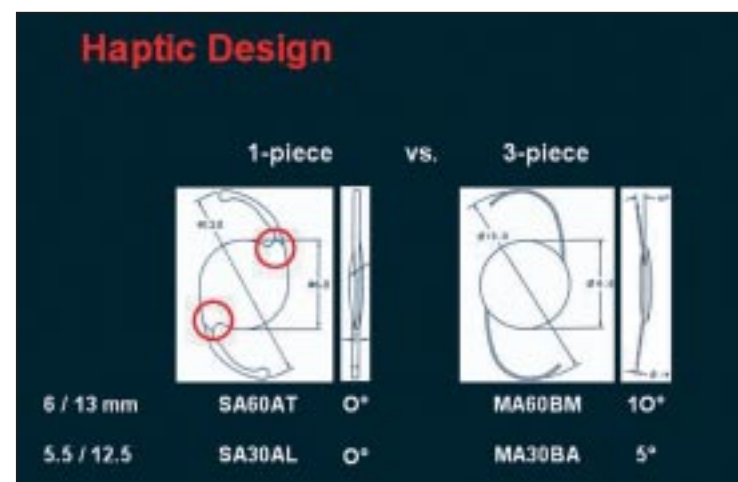
Charlotta Zetterstrom MD commented that having more folds in eyes implanted with the one-piece lens may be due to the fact that the memory of the lens material is much better, than in the three-piece lens haptics.

However, although the Acrysof lens material has a very strong memory, Dr Findl pointed out that when folds were present, they were usually in eyes with larger capsular bags, such as are found in highly myopic eyes. Capsular folds in eyes with large capsular bags were caused by the tips of the haptics, he said. The folds were not strong however, most of them being rather minute, he explained.

In eyes with smaller capsular bags, the haptics tended to be folded inward and therefore more snug along the contours of the capsular bag equator, not causing folds, he said.

Dr Findl said that he will be collecting the three and five-year follow-up results in this comparative intra-individual study.

Oliver Findl MD
oliver.findl@meduniwien.ac.at



Courtesy of Oliver Findl MD