The Akreos Adapt IOL
An experience-based assessment of this hydrophilic acrylic lens.

BY GIORGIO LOFOCO, MD

The Akreos Adapt IOL (not available in the US; Bausch & Lomb, Rochester, NY) has many ideal characteristics. Specifically, it is a biconvex lens that has a refractive index of 1.46, and its material is hydrophilic acrylic (a combination of HEMA and PMMA) with a water content of 26%.

The IOL’s optic and haptics feature square edges that inhibit the migration of lens epithelial cells. The optic’s diameter is 6mm, and the lens is available in sizes of 10.5, 10.7, and 11.0mm to accommodate lens capsules of various sizes. Table 1 shows the unique relationship of the lens’ diameter and power. The foldable IOL may be implanted with an Akreos PS-27 single-use injector (not available in the US; Bausch & Lomb) or with a forceps. This article shares the results of my long-term study of the Akreos Adapt IOL.

STUDY DESIGN
My retrospective review included 632 Akreos Adapt lenses implanted between 2001 and 2004. All of the subjects had follow-up records of greater than 12 months available. Each patient had undergone cataract extraction with a self-sealing clear corneal incision and phacoemulsification.

RESULTS
Behavior of the Lens
The Akreos Adapt IOL was quite flexible and required minimal compression during folding and implantation. It unfolded in a smooth, controlled manner, whether implanted with an injector or a forceps. No capsular damage occurred.

Visual Acuity
The mean postoperative UCVA was 20/25. In patients who had no disease of the posterior segment (540 eyes), the BCVA was 20/20. Centration of the IOL was excellent.

Complications
Intraoperative miosis occurred in seven eyes, with two instances each of cystoid macular edema and incomplete capsular overlap. Postoperatively, five eyes had corneal epithelial cells.

DISCUSSION
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striae that lasted more than 1 week, and 12 patients experienced ocular hypertension of greater than 21mmHg. The striae resolved after 4 weeks, and transient hypertension responded to topical therapy, which was discontinued in all cases after 2 to 8 weeks.

**Posterior Capsular Opacification**

In order to determine the rate of posterior capsular opacification (PCO), I measured 390 eyes with the EPCO 2000 System (available from Manfred Tetz, MD, in Berlin). The overall PCO score was 1.02, and the central posterior capsule's transparency score was 0.24. At 1 year postoperatively, only one of the 632 eyes required an Nd:YAG laser capsulotomy.

**CONCLUSION**

This long-term study demonstrated that the optical and physical performance of the Akreos Adapt IOL is excellent. Moreover, the square edges of the optic and haptics proved remarkably effective against the development of PCO. Given the excellent biocompatibility of the lens as well as its ease of use, I routinely implant the Akreos Adapt IOL in most cataract cases.

**REFERENCES**


**DISCUSSION**

Memorylens. The result is the paradox of a lens with excellent uveal biocompatibility that is quite unforgiving of even minimal amounts of a toxic substance, particularly if it is water soluble and thus easily able to enter the lens. One would think that stringent quality control could avert this problem, and core hydrophilic material indeed does not carry any inflammatory concerns. Rather, it appears to be well tolerated by the eye.

**POSTERIOR CAPSULAR OPACIFICATION**

Another concern regards the rapidity with which lens epithelial cells spread onto hydrophilic acrylic lenses. It has been suggested, therefore, that the rate of posterior capsular opacification would also increase. A 360º square edge, however, may indeed successfully block posterior capsular opacification. Although there are few reports on this subject, the experience of Dr. Lofoco is certainly encouraging, and animal work that my colleagues here at the John A. Moran Eye Center in Salt Lake City have conducted also shows that hydrophilic acrylic lenses with a well-made edge barrier perform as well as any other lens with a truncated edge.

**REFRACTIVE RESULTS**

Because hydrophilic acrylic lenses are formulated dry, one may worry that the final refractive result of these IOLs will be less accurate than that of hydrophobic lenses after the former swell. Such was the case for the Memorylens but, again, not to my knowledge with the Akreos Adapt IOL.

**CLOSING THOUGHTS**

Ophthalmologists assume that problems related to silicone oil in complicated cases are largely relevant to eyes with silicone IOLs. They often forget that the most forgiving material in regard to visualization in such cases is hydrophilic acrylic. If the problem of calcification appears to have been resolved with the latest modifications to the hydrophilic acrylic material, I predict that, in time, lenses such as the Akreos Adapt will make their way onto the US market.

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**TABLE 1. RELATIONSHIP OF IOL's DIAMETER AND POWER**

<table>
<thead>
<tr>
<th>Total Diameter (mm)</th>
<th>10.5</th>
<th>10.7</th>
<th>11.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diopteric Range</td>
<td>22.50 to 30.00</td>
<td>15.50 to 22.00</td>
<td>10.00 to 15.00</td>
</tr>
</tbody>
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