

# Safety and Visual Outcomes of Novel Abexterno AKREOS® Single Pass Method of Transscleral Sutured Posterior Chamber IOL Implantation

Andrew Wallmann MSIV, Bryan Monson MD, Daniel Adelberg MD  
Southwestern Eye Center Mesa, AZ

## Abstract

We present the safety and efficacy of a novel transscleral sutured posterior chamber intraocular lens (TSSPCIOL) implantation approach utilizing 25 gauge vitrectomy and a foldable posterior chamber intraocular lens implant (AKREOS AO60, Bausch & Lomb). Postoperative complications included retinal detachment in 2 eyes (2.5%), Irvine-Gass cystoid macular edema in 3 eyes (3.75%), with 2 of those cases occurring late, persistent postoperative corneal edema in 1 eye (1.25%), hyphema in 2 eyes (2.5%) and 1 case of postoperative vitreous hemorrhage with spontaneous clearing. 82.5% of eyes had improved best corrected visual acuity (BCVA), 15% had no change, and 2.5% had worsening of BCVA. The modified external approach with AKREOS® TSSPCIOL placement with 25 gauge vitrectomy has relatively few complications, improves visual acuity in patients requiring TSSPCIOL, and offers several advantages over traditional anterior chamber or conventional scleral sutured techniques.

## Methods

80 consecutive eyes that underwent single surgeon TSSPCIOL implantation between October 2008 and July 2012 at a referral-based retina institution were analyzed for best spectacle-corrected visual acuity (BCVA) and safety indicators

## Akreos A060 IOL

- Haptic design with four point closed loop fixation
- Foldable for insertion through small incision
- Aero aberration aspheric optics – no distortion with tilt or decentration, equal power center to edge
- Hydrophilic-stable, less tendency for inflammatory cell attachment
- Less tendency for folding marks
- Low index of refraction – less dysphotopsia

## Surgical Technique

1. Conjunctival periotomy
2. Limbal scleral groove, tunnel
3. Scleral flaps at 3:00 & 9:00 with four 25G punctures, 4.0mm apart, 2.0mm posterior to the limbus
4. Complete 25G vitrectomy
5. External to internal pass of 25G forcep with 9-0 prolene suture, without needle, through temporal sclerostomy A into posterior chamber, iris plane
6. Hand off suture to 20G forcep placed through limbal incision and remove suture through limbus
7. Pass suture through both eyelets on temporal side of Akreos PCIOL
8. 20G forcep with suture through limbal incision into iris plane and handoff suture to 25G forcep placed through temporal sclerostomy B
9. Remove 25G forcep through temporal sclerostomy B, externalizing prolene suture
10. Repeat for nasal sclerostomy C & D
11. Fold IOL with folding forceps then transfer to an IOL insertion forcep for implantation
12. Permanent tying of suture A to B and C to D
13. Four point IOL fixation
14. Limbal incision closure with 9-0 nylon optional

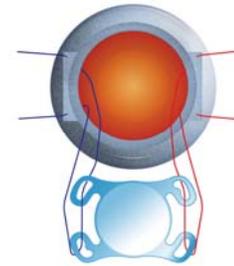


Figure 1: Abexterno pass of 9-0 prolene suture is made into the posterior chamber, and removed through the limbal incision. This suture is then passed through both eyelets on the temporal haptic side of an AKREOS PCIOL, passed through the limbal incision and externalized through the temporal sclerostomy

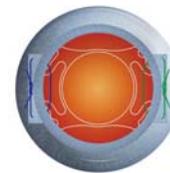


Figure 2: The sutures are adjusted to achieve optimal centration of the IOL before being permanently tied.

Preoperative Diagnosis	Post BCVA, n (%)					
	20/40 or better	20/50 to 20/100	Worse than 20/100	Improved	No Change	Worse
<b>Aphakia</b>						
Post complex RD repair	0	1	6	5	2	0
Post complex cataract sx	6	5	1	11	1	0
Post complex IOL exchange	1	0	0	1	0	0
Trauma	2	2	1	4	1	0
<b>Retained lens/Lens Fragment</b>						
Post complex cataract sx	1	2	4	6	1	0
<b>Dislocated/subluxated crystalline lens</b>						
Trauma	0	0	2	1	1	0
Marfan	1	0	0	1	0	0
<b>Dislocated/subluxated PC IOL</b>						
Post complex RD repair	6	3	4	11	1	1
Post complex cataract sx	1	2	0	2	1	0
Post complex IOL exchange	0	1	0	1	0	0
Trauma	1	0	2	3	0	0
Other	10	4	4	14	3	1
Pseudoexfoliation	2	0	1	3	0	0
Avenfield syndrome	1	0	0	1	0	0
<b>Exchange of ACIOL</b>						
Secondary to UGH syndrome	0	0	1	0	1	0
Traumatic cataract	1	0	1	2	0	0
<b>Total</b>	<b>33 (41.3%)</b>	<b>20 (25%)</b>	<b>27 (33.8%)</b>	<b>66 (82.5%)</b>	<b>12 (15%)</b>	<b>2 (2.5%)</b>

Table 1: BCVA results highlight the high rate of improved visual acuity postoperatively observed among patients (82.5%) with 41.3% of eyes having a visual acuity 20/40 or better.

## Results

80 eyes of 77 patients (43 men, 34 women) were included. Mean age was 68.2 years  $\pm$  14.9 (SD) (range 24-99). Mean follow-up was 8.8  $\pm$  8.4 months (range 1-41 months).

Detailed BCVA results are noted in Table 1. 82.5% of eyes had improved BCVA, 15% had no change, and 2.5% had worsening of BCVA

No patient was observed to have postoperative subluxation or dislocation. Postoperative vitreous hemorrhage with spontaneous clearing was noted in one patient (1.25%). A postoperative (47 days) rhegmatogenous retinal detachment was successfully repaired in one patient (1.25%). Late cystoid macular edema was treated with topical therapy in two patients (2.5%). Optic opacification was observed in one patient (1.25%).

Mean operative time was 40 minutes

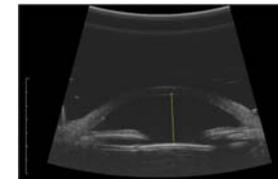


Figure 3: Anterior segment ultrasound biomicroscopy showing transscleral sutured posterior chamber intraocular lens with AKREOS® AO60 is well centered and positioned

## Conclusion

This procedure allows for a technically efficient, reliable and reproducible procedure, with intraoperative time reduced compared to previously reported techniques. Anatomic outcomes are excellent with encouraging visual results and low complications. Long term postoperative dislocation remains a serious potential and indeterminate risk.

## Acknowledgements

We acknowledge Annie Culver, H2 Digital Productions for the animated drawings