CATARACT SURGERY FOCUS ON TORIC IOLS

Comparing the STAAR and AcrySof Toric IOLs

An analysis of the lenses' rotational stability.

BY DAVID F. CHANG, MD

The STAAR Toric IOL (STAAR Surgical Company, Monrovia, CA) was approved by the FDA in November 1998, and it was the only toric IOL on the US market until recently. The 10.8-mm long TF model lens was the design studied in the FDA clinical trials. In an effort to decrease malrotation of the lens, the company released the longer 11.2-mm TL model in 1999.

Early postoperative rotation of the smaller TF IOL was a significant problem. In the FDA-monitored clinical study, 24% of the IOLs ended up more than 10° off axis (12% were more than 20° off, 8% were more than 30° off, and 5% were more than 45° off axis). Subsequently, a number of clinical studies of the STAAR toric IOL were published confirming a significant incidence of rotation greater than 10° to 15° postoperatively with the TF model[1-4] (Table 1).

I undertook my own study of the rotational stability of the longer TL model when it became available.[5] My evaluation of 90 consecutive toric IOL implantations included 80 TL IOLs and 10 TF IOLs (the TL model is not available in powers greater than 24.00 D). Of the TL toric implants, 73% were within 5°, 89% were within 10°, and 96% were within 15° of the targeted axis. My repositioning rate was 2.5% (two of 80) with the TL IOL and 3.3% overall (one of 10 TF IOLs was repositioned). Until my study, all of the published articles looking at the STAAR Toric IOL had reported on the only available model at the time, the TF. With respect to the TL model, the published literature on rotational stability was therefore misleading.

The recently approved AcrySof Toric IOL (Alcon Laboratories, Inc., Fort Worth, TX) has demonstrated excellent rotational stability in the FDA-monitored clinical study with an average of less than 4° postoperative rotation. The rotational stability of my first 20 AcrySof Toric IOLs confirms these results at 1-month minimum follow-up; 85% of the IOLs were within 5° of the targeted axis, and 100% were within 10° of the targeted axis.

The widespread adoption of the STAAR Toric IOL was hampered by surgeons' misperception that the TL model also exhibited poor rotational stability and their general reluctance to use silicone plate haptic lenses. Having a single-piece hydrophobic acrylic toric IOL available is therefore a welcome option. ■

TABLE 1. EARLY POSTOPERATIVE ROTATION IN STUDIES OF THE STAAR TORIC TF IOL

Study	Reported Rotation*
FDA clinical trial	12% > 20° (1%)
Sun et al[1]	25% > 20° (1%)
Ruhswurm et al[2]	19% > 10° (11%)
Leyland et al[3]	18% > 30° (1%)
Till et al[4]	14% > 15° [37% TL]† (3%)

**All of the studies shown except for that by Till et al[4] exclusively used the shorter TF model. Comparative results from Chang[5,6] using the longer TL model appear in parentheses. †In this study, 37% of the IOLs used were the TL model.*

David F. Chang, MD, is Clinical Professor at the University of California, San Francisco, and is in private practice in Los Altos, California. He is a consultant for Advanced Medical Optics, Inc., Alcon Laboratories, Inc., and Visiogen, Inc. Dr. Chang may be reached at (650) 948-9123; dceye@earthlink.net.

1. Sun XY, Vicary D, Montgomery P, Griffiths, M. Toric intraocular lenses for correcting astigmatism in 130 eyes. *Ophthalmology.* 2000;107:1776-1781; discussion:1781-1782.
2. Ruhswurm I, Scholz U, Zehetmayer M, et al. Astigmatism correction with foldable toric intraocular lens in cataract patients. *J Cataract Refract Surg.* 2000;26:1022-1027.
3. Leyland M, Zinicola P, Bloom P, Lee N. Prospective evaluation of a plate haptic toric intraocular lens. *Eye.* 2001;15:202-205.
4. Till JS, Yoder PR, Wilcox TK, Spielman JL. Toric intraocular lens implantation: 100 consecutive cases. *J Cataract Refract Surg.* 2002;28:295-301.
5. Chang DF. Early rotational stability of the longer STAAR Toric IOL—50 consecutive (TL) IOLs. *J Cataract Refract Surg.* 2003;29:935-940.
6. Chang DF. Early rotational stability of the longer STAAR Toric IOL: 70 consecutive cases. Paper presented at: The ASCRS/ASOA Symposium on Cataract, IOL and Refractive Surgery; April 14, 2003; San Francisco, CA.