

High-cylinder toric intraocular lens implantation versus combined surgery of low-cylinder intraocular lens implantation and limbal relaxing incision for high-astigmatism eyes

Masayuki Ouchi^{1,2}

¹Ouchi Eye Clinic, Kyoto, Japan; ²Department of Ophthalmology, Kyoto Prefectural University of Medicine, Kyoto, Japan

Abstract: Clinical outcomes were compared between high-cylinder toric intraocular lens (IOL) implantation and the combined surgery of low-cylinder toric IOL implantation and limbal relaxing incision (LRI) for correcting preexisting high-amplitude corneal astigmatism. Fifty-seven eyes with preexisting corneal astigmatism of 2.5 diopter (D) or greater were divided into the following two groups: (1) eyes that underwent Alcon AcrySof® IQ Toric T6, T7, T8, or T9 IOL implantation (toric group); and (2) eyes that underwent the combined surgery of AcrySof® IQ Toric T5 IOL implantation and LRI (LRI group). Uncorrected visual acuity (UCVA), best-corrected visual acuity (BCVA), manifest, refractive and corneal cylinder (MC, RC, CC), were compared postoperatively. Corneal and ocular higher-order aberrations (HOA) were also compared. At 1 day postoperative, UCVA was significantly better and MC and RC were significantly less in the toric group, however, at 1 and 6 months postoperative, there was no significant difference in those parameters. Postoperative corneal and ocular HOA were significantly greater in the LRI Group. For correcting astigmatism in eyes with a high amount of preexisting astigmatism, high-cylinder toric IOL implantation achieves better clinical outcomes, especially in the early postoperative period, than the combined procedure of moderate-cylinder toric IOL implantation and LRI.

Keywords: toric intraocular lens, limbal relaxing incision, high-cylinder astigmatism, cataract surgery

Introduction

Until 2011 in the United States and Japan, the AcrySof® IQ Toric SN60 intraocular lens (IOL) (Alcon Laboratories, Inc., Fort Worth, TX, USA) model line-up consisted of models T3, T4, and T5, for which the maximum cylinder correction effect was 2.06 diopters (D) at the corneal plane. Hence, it was necessary for ophthalmologists to perform the combined surgery of toric IOL implantation and limbal relaxing incision (LRI) due to the shortcomings of the AcrySof® IQ Toric SN60AT5 (T5) for cases of astigmatism greater than 2.0D.¹ However, in 2011, new higher-cylinder-power IOL models (AcrySof® IQ Toric SN60 T6, T7, T8, and T9; Alcon Laboratories, Inc.)^{2,3} became available in both the US and Japan, thus offering surgeons new options for treating eyes with high-amplitude astigmatism.

Several surgical options currently exist for the correction of astigmatism during cataract surgery, such as LRI or toric IOL implantation. There have been several studies comparing the various surgical methods for correcting astigmatism; eg, toric IOL

Correspondence: Masayuki Ouchi
Ouchi Eye Clinic, 47-1 Karahashi
Rajomon-cho, Minami-ku,
Kyoto 601-8453, Japan
Tel +81 75 662 7117
Fax +81 75 662 7118
Email mouchi@skyblue.ocn.ne.jp

