http://www.escrs.org/EVENTS/08berlin/freepaperlisting.asp?title=Combined%20Refractive%20Surgery%20-%206%20minutes&id=1592&day=14/09/2008&venue=Hall%2014/2

Toric piggyback 'add-on' intraocular lens implantation to correct pseudophakic high refractive surprise and high astigmatism

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Purpose: No report of toric piggyback 'add-on' intraocular lens (IOL) implantation to correct high refractive surprise and high astigmatism after cataract surgery was published; we derive a method for the calculation of the power of Toric piggyback 'add-on' IOL.

SETTING: International Vision Correction Research Centre, Department of Ophthalmology, University of Heidelberg, Heidelberg, Germany.

METHODS: A set of formulas to calculate power of Toric piggyback 'add-on' IOL and to predict postoperative refraction was derived by geometric optical theories. 2 cases of pseudophakia with high refractive surprise and high astigmatism after primary IOL implantation were investigated. Cornea refractive power was calculated by optical formulas using topographic measurement. Spherical power and toric power of the toric IOL as well as the toric axis were calculated by our method. Toric piggyback 'add-on' IOL (Dr. Schmidt) was implanted in sulcus uneventfully.

RESULTS: There were good results of postoperative refractions: for case 1, preoperative refraction was +2.25DS/-5.0DC@45°; cornea astigmatism was 4.41D. Calculated IOL was -3.0D spherical power and +6.0D toric power. Postoperative refraction was +1.0DS/-1.0DC@75°. The prediction error of spherical equivalent (SE) was 0.183D. For case 2, preoperative refraction was +2.0DS/-6.0DC@15°, cornea astigmatism was 6.63D. Calculated IOL was -5.0D spherical power and +7.0D toric power. Postoperative refraction was +1.0DS/-1.0DC@115°. The prediction error of SE was 0.381D.

CONCLUSIONS: Perfect results of toric piggyback IOL implantation to correct high refractive surprise and high astigmatism can be achieved with improved IOL power calculation methods.