

Managing corneal astigmatism using iris registration-guided, femtosecond-laser assisted arcuate incisions performed during cataract surgery

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Statement of the Problem: Arcuate incisions (AI) are well established surgical procedure for the correction of residual astigmatism with cataract surgery. The advent of femtosecond laser in the field of corneal microsurgery has improved the safety, predictability and reproducibility of AIs. Purpose of the current study is to evaluate the outcomes of iris registration-guided, femtosecond laser-assisted arcuate incisions performed with cataract surgery in eyes with pre-existing astigmatism.

Methodology & Theoretical Orientation: This retrospective non-comparative study included 279 eyes of 203 patients with cataract and pre-existing astigmatism ranging from 0.50 D to 1.91 D. All eyes underwent LENSAR® femtosecond laser-assisted cataract surgery and AIs using Streamline™ Iris registration and wireless transfer of the preoperative undilated iris image to the laser system. The incision parameters were automatically generated by LENSAR®'s Arcuate Incision Planning software based on surgeon preference and surgically induced astigmatism. Cyclorotation was automatically compensated by adjusting incision placement. The primary outcome measure was residual astigmatism at two weeks and 3 months after surgery.

Findings: At postoperative 2 weeks, the mean residual sphere, cylinder and MRSE were -0.17 D, -0.09 D and -0.13 D respectively. In particular, 88.2% eyes had ≤ 0.25 D, 94.6% eyes had ≤ 0.5 D and 99.3% eyes had ≤ 0.75 D of residual astigmatism postoperatively. At postoperative 3 months, the mean residual sphere, cylinder and MRSE were -0.20, 0.17 and -0.11D respectively. Residual astigmatism was ≤ 0.25 D in 74.8% eyes, ≤ 0.5 D in 94.1% eyes and ≤ 0.75 D in 99.2% eyes at 3 months. No complications were observed.

Conclusion & Significance: The LENSAR® arcuate incision planning software using iris registration yielded safe and effective outcomes in cataract patients with low to moderate astigmatism.

Speaker Biography

Denise M Visco is an award winning Ocular Surgeon and Founder of Eyes of York. She is the current Secretary/Treasurer for the American College of Eye Surgeons and has served as President of the American Board of Eye Surgery. She is an alumnus of University of Delaware, Thomas Jefferson University and Penn State, where she completed her Ophthalmology training in 1995. She practices a comprehensive array of eye services within the Eyes of York practice which include refractive cataract surgery, presbyopic lens exchange surgery, corneal inlays, LASIK and PRK surgery. She also provides glaucoma management with medical treatment and MIGS when appropriate. She is noted as the first Surgeon in York to provide patients with the quality of a free standing laser center for laser vision correction and surgical center specializing in eyes.

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