

## Femtosecond laser arcuate incisions: Delivering accuracy and reproducibility

by Eric D. Donnenfeld, M.D.



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**T**here are many steps within the cataract procedure, when performed manually, that contain an inherent level of variability. These steps include capsulotomy, making the primary and secondary incisions, and making arcuate incisions in the cornea. Many surgeons have avoided performing similar types of incisions like manual arcuate incisions during cataract surgery. Manual arcuate incisions require significant expertise and produce some degree of unpredictability. As a result, manual arcuate incisions are largely avoided by the great majority of cataract surgeons due to concerns about accuracy.

The LenSx Laser (Alcon, Fort Worth, Texas) utilizes image-guided surgical planning with 3D visualization for the surgeon. This enables surgeons to plan and execute the necessary corneal incisions to address the needs of the patient at the time of cataract surgery with computer-controlled arcuate incisions of precise depth, length, and position. The integrated imaging system ensures incisions of accurate width and tunnel length and geometric shape.

My early experiences with the femtosecond laser for refractive cataract surgery demonstrate that the femtosecond laser will provide another layer of precision by creating reproducible arcuate incisions at the desired optical zone. Incorporating femtosecond laser arcuate incisions into my armamentarium has given me the confidence to know I'm offering the most advanced technologies on the market today to my patients.

### Adjust arcuate incisions

The surgeon's ability to adjust surgical parameters and thereby titrate the amount of residual tissue attachments in the incision enables another distinct advantage. Utilizing this feature, the surgeon can adjust the arcuate incision width by using a blunt manual instrument.

These kinds of incisions also could be likened to a LASIK flap. The surgeon must lift the flap by hand to make use of the incision. Likewise, until the cataract femtosecond incisions are opened manually, the



The LenSx Laser

Source: Alcon

fenestrations the surgeon has made with the laser have not been realized.

A great majority of ophthalmologists aren't doing any type of manual arcuate incision during cataract surgery due to fear of cutting deeply into the cornea and risking perforation. Using the femtosecond laser allows any ophthalmologist to perform a quality arcuate incision. Surgeons can be assured that this is being done with the accuracy and precision of a laser that is as good as any surgeon, even one with years of experience.

### Accuracy and reproducibility

My personal belief is that femtosecond cataract surgery is a more accu-

rate and reproducible way of doing cataract surgery. If I can incorporate that technology into my cataract surgery, I will do so at any opportunity. I'm getting better reproducibility with my femtosecond incisions than I ever got with my manual incisions. Using the femtosecond laser to create those incisions is more reproducible, gives me adjustable incisions, and provides a level of accuracy that I cannot consistently achieve manually.

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