OptiGraft® CAIRS

Precision Laser-Cut and Sterile

Reshaping Vision with Confidence



Elevate your CAIRS keratoplasty outcomes with the next generation of precision femtosecond laser cut CAIRS.

Developed using Lions World Vision Institute's proprietary tissue processing and advanced femtosecond laser technology, our comprehensive portfolio of shapes and sizes is offered to deliver predictable, reproducible results.

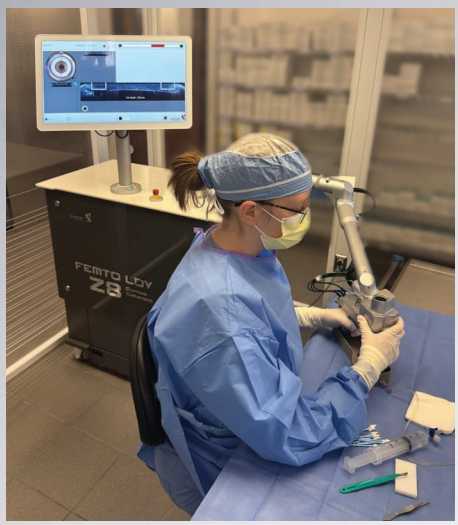
LIONS
WORLD VISION
INSTITUTE™

So the world can see.

OptiGraft® CAIRS

Innovative Processing to Advance CAIRS Keratoplasty

Reshaping Vision with Confidence

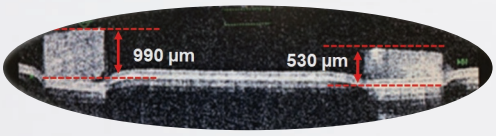


Precision-Prepared CAIRS for Predictable Outcomes

OptiGraft® CAIRS are sterile, laser prepared allogenic grafts developed for use in Corneal Allogenic Intrastromal Ring Segments (CAIRS) keratoplasty procedures. These allografts offer unmatched precision, consistency, and biocompatibility for the surgical management of keratoconus and other ectatic disorders.

Manual Variability Measured With OCT

Manually punched CAIRS can show thickness variability, often related to donor corneal edema. OCT analysis has shown meaningful intra-graft thickness variability in manually prepared segments, which may contribute to less predictable biomechanical effects. In contrast, OptiGraft CAIRS are prepared with a femtosecond laser after we have returned the donor cornea to near physiological hydration to achieve uniform thickness and precisely defined geometry.



Measured via OCT



CAIRS Expert Perspective

"Since creating the CAIRS technique in 2015, I've been honored by its global impact and proud to advance continued innovation through my work with Lions World Vision Institute."

—Soosan Jacob, MS, FRCS, DNB

Clinical Evidence

Foundational work by Jacob et al. supports that precise control of segment volume, thickness, arc length, and taper directly influences corneal flattening and surgical predictability[1]. Clinical studies by Awwad et al. confirm that femtosecond prepared CAIRS enhance accuracy, safety, and repeatability while improving visual and tomographic results[2].

Lions World Vision Institute's sterile, femtosecond laser prepared CAIRS delivers uniform thickness, defined volume, and a portfolio of geometries empowering surgeons with predictable, reproducible biomechanical control.

1. Soosan Jacob, Amar Agarwal, Shady T Awwad, Cosimo Mazzotta, Parnika Parashar, Sambath Jambulingam

2. Yara Bteich, MD; Jad F. Assaf, MD; Jeremiah E. Gendy, FICO, MRCSEd, MSc; Fabian Muller, PhD; Soosan Jacob, MS, DNB; Farhad Hafezi, MD, PhD; Shady T. Awwad, MD



Lions World Vision Institute pioneered its proprietary High Pressure Artificial Anterior Chamber (HPAC) to stabilize tissue for ultrathin DSAEK graft preparation. This proven approach is now carried into CAIRS processing, where HPAC stabilizes the cornea before the laser makes its precision cuts to ensure the most consistent and accurate outcomes.

Only OptiGraft CAIRS uses all three unique processing steps to deliver consistency, safety and performance: HPAC → Femtosecond Laser → Electron Beam Sterilization

1. High-Pressure Anterior Chamber (HPAC) Preparation	Restores corneal tissue to near-physiologic hydration and eliminates variable edema, ensuring consistent tissue properties before cutting.
2. Precision Femtosecond Laser-Cutting	Using the Ziemer Z8 femtosecond laser, each corneal segment is cut to a uniform 550 µm depth and precise concentric and asymmetrical width options delivering predictable outcomes and enabling confident surgical planning.
3. Electron Beam Sterilization & Shelf Stability	Sterilized utilizing validated electron-beam irradiation to achieve a sterility assurance level (SAL) of 10^{-6}—the same SAL as a sterile medical device implant. The allograft maintains sterility and functional integrity for up to two years under controlled room-temperature storage offering reliable, off-the-shelf quality and availability whenever you need it.

OptiGraft CAIRS Advantages

- Proprietary processing and femtosecond laser precision provide uniform thickness
- Precisely defined and reproducible segment volume
- Off the shelf portfolio of various arc width and tapered geometries
- Geometric consistency supporting predictable biomechanical flattening
- Sterile room temperature storage with 2-year shelf life

OptiGraft CAIRS are sterile, femtosecond laser prepared allografts. The LWVI portfolio offers off the shelf variable widths and geometries with defined volume, enhancing surgeon's biomechanical control with predictable, reproducible surgical consistency.



CAIRS Expert Perspective

"Sterile, femtosecond precision-prepared OptiGraft CAIRS promotes a more reproducible CAIRS keratoplasty that is far more accessible to surgeons worldwide."

—Shady T. Awwad, MD

Key Advantages of OptiGraft® CAIRS in CAIRS Keratoplasty Procedures

Cornea Segment Depth: Each segment is laser dissected to a precise stromal depth ensuring uniform thickness. This precision optimizes the biomechanical effects resulting in predictable outcomes.

Concentric Arc Accuracy: Segments are cut to precise widths that can be selected to conform to your surgical plan, allowing you to achieve the intended surgical outcome with confidence.

Tapered and Crescent Widths: Laser precision tapering enables variable widths along the arc, particularly beneficial for patients with decentered or irregular cones. This asymmetry delivers differential flattening across the cornea, improving topographic irregularity and visual acuity.

Extended Outer Arc Diameter: Laser precision allows the creation of long arc segments, up to 12mm in length (180°). This extended design provides surgeons with greater flexibility to customize CAIRS segments intraoperatively.

OptiGraft CAIRS Precise Specifications

- Concentric CAIRS – 0.50mm, 0.75mm, 1.0mm, 1.5mm, 2.0mm width
- Tapered CAIRS – 1.0mm, 1.5mm, 2.0mm at one end to 0.5mm at the other.
- Crescent CAIRS – 1.5mm and 2.0mm center width to 0.5mm at both ends
- All CAIRS are cut 550µm thick



Concentric *Crescent* *Tapered*

OptiGraft® CAIRS Portfolio

Segment Type	Depth/Thickness	Width	Length/Arc
Concentric CAIRS	550µm	0.50mm	12 mm / 180°
Concentric CAIRS	550µm	0.75mm	12 mm / 180°
Concentric CAIRS	550µm	1.0mm	12 mm / 180°
Concentric CAIRS	550µm	1.5mm	12 mm / 180°
Concentric CAIRS	550µm	2.0mm	12 mm / 180°
Tapered CAIRS	550µm	1.0mm at one end to 0.5mm at the other	12 mm / 180°
Tapered CAIRS	550µm	1.5mm at one end to 0.5mm at the other	12 mm / 180°
Tapered CAIRS	550µm	2.0mm at one end to 0.5 mm at the other	12 mm / 180°
Crescent CAIRS	550µm	1.5mm center width to 0.5mm at both ends	12 mm / 180°
Crescent CAIRS	550µm	2.0mm center width to 0.5mm at both ends	12 mm / 180°

OptiGraft® CAIRS tissue codes #V0101001OD/#V0099001OS are interchangeable with all widths and geometries. List both codes when ordering and specify Segment Type.

LIONS WORLD VISION INSTITUTE™

So the world can see.

Scan QR code for more information or visit us at LWVI.org

1410 N 21st Street, Tampa, FL 33605-5313 | 813.289.1200 | LWVI.org

v.11.10.2026