Implantation of the CT LUCIA 611P in pseudoexfoliation syndrome and phacodonesis.

How to achieve best refractive outcomes.
To select the right IOL when expecting decentration and tilt.
### CT LUCIA 611P Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>CT LUCIA 611P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>13 mm</td>
</tr>
<tr>
<td>Optic</td>
<td>6 mm</td>
</tr>
<tr>
<td>Material</td>
<td>Hydrophobic</td>
</tr>
<tr>
<td>Coating</td>
<td>Heparin</td>
</tr>
<tr>
<td>Diopter range</td>
<td>+4 to +34 D (in 0.5 increments)</td>
</tr>
<tr>
<td>Haptic</td>
<td>Step Vaulted</td>
</tr>
<tr>
<td>Aspheric design</td>
<td>YES</td>
</tr>
<tr>
<td>Pre-loaded</td>
<td>YES</td>
</tr>
<tr>
<td>Injector</td>
<td>Blueject 2.0 – 2.4</td>
</tr>
<tr>
<td>Incision size</td>
<td>2.2mm – 2.6mm</td>
</tr>
<tr>
<td>Blue Light filter</td>
<td>NO</td>
</tr>
</tbody>
</table>

- made with ultra-high purity (Soxhlet extracted) hydrophobic acrylic and a proprietary cryo-lathing process.
- water content: 0.3%
- available both clear UV-blocking and with blue-light filtering (Yellow tinted 611PY)
- no Glistenings

SA: -0.12µ
Refractive index: 1.49
Abbe number: 51

low refractive index + high Abbe number = low chromatic aberration and less dispersion

= IMPROVED QUALITY OF VISION
Spherical IOLs create positive spherical aberrations in addition to the positive SA induced by the cornea. If the optic position is not well aligned, other Higher Order Aberrations, such as coma could occur, which would effect quality of vision.

Neutral Aspheric IOLs do not create any spherical aberrations; they are suitable for all patients regardless of their cornea shape. They are not sensitive to decentration and tilt. But they do not correct positive SA from the cornea, so there is still a loss of contrast.

Aspheric Aberrated IOLs are designed to offset the positive SA of an average cornea. They improve contrast sensitivity particularly when the pupil diameter is large. If the optic position is not well aligned, other Higher Order Aberrations, such as coma could occur, which would effect quality of vision.

Aspheric ZO optic IOLs (patented aspheric ZEISS Optics) are designed to compensate for a range of aberrations arising from different corneal shapes and lens misalignments. The optic design makes the lens more insensitive to decentration and tilt. As a result, it provides better imaging quality for real-life conditions.
**Changes for imaging quality**

- **ZO (blue line)** correct first some +SA of the cornea and then tend to be **aberration neutral**.
- Combining the advantages from **negative SA and aberration-neutral** lenses.
- This asphericity concept warrants a **significantly reduced sensitivity against decenteration and tilt**.
- Enhances **contrast sensitivity** in mesopic conditions compared to spherical IOL.
- increased **depth of focus** compared to conventional aspheric IOLs.
CT LUCIA 611P
FULLY PRELOADED INJECTOR
Patient and surgeon satisfaction levels after using an acrylic, hydophobic, monofocal IOL and the Malyugin ring in pseudoeoxfoliation syndrome patients.


→ 42 eyes were enrolled, main focus: satisfaction levels and OR workflow.

Long-term clinical results and scanning electron microscopic analysis of the aspheric, hydrophobic, acrylic intraocular lens CT LUCIA 611P.


→ 96 eyes were enrolled, target refraction, BCDVA and SEM analysis of the new design.

Implantation of the CT LUCIA 611P in pseudoeoxfoliation syndrome and phacodonesis. A case series: Selecting the best IOL when expecting decentration and tilt.
PSEUDOEXFOLIATION SYNDROME AND GLAUCOMA

Involvement of:

lens, ciliary body and zonules
  Phacodonesis
  Subluxation of the lens
  Thinner PC, zonular rupture-vitreous loss
  IOL decentration and tilt
  Angle-closure glaucoma

iris
  Pigment dispersion
  Poor / No mydriasis
  Capillary hemorrhages
  Increased aqueous flare
  Synechiae

trabecular meshwork
  Open-angle/pxf glaucoma or hypertension
  Retinal vein occlusion

cornea
  Endothelial decompensation and edema
CASE SERIES

15 eyes with PXF and phacodonesis were enrolled.

Breaking the synechiae with OVD and spatula in 8 cases.

Malyugin ring 6.25 and capsular tension ring was used in all cases.

Phacoemulsification + implantation of the CT LUCIA 611P.

Preoperative phacodonesis and weak zonules were examined in all cases (more or less distinctive).

Main Question:
Does the ZO optic and the new optic-haptic junction have any advantages in eyes with presumably IOL decentration and tilt?
Preliminary results: 5 months postoperatively (n=15)

Pentacam: Myopic shifts evaluated
(0/15 = 0.0%)

Wavefront: Tilt and decentration measured
(6/15 = 40.0%)

Slit lamp: Phimosis and capsular shrinkage
(3/15 = 20.0%)
Primary posterior capsule fibrosis
(2/15 = 13.3%)
Glistenings
(0/15 = 0.0%)
IOL luxation
(0/15 = 0.0%)
Pseudoexfoliation Eyes:
Preliminary results: 5 months postoperatively (n=15)

<table>
<thead>
<tr>
<th>Subjective discomfort</th>
<th>(0/15 = 0.0%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halos or Glare</td>
<td>(1/15 = 6.7%)</td>
</tr>
<tr>
<td>Objective measured BCDVA &gt;0.8 (decimal)</td>
<td>(15/15 = 100%)</td>
</tr>
</tbody>
</table>

Complicated cases – Pseudoexfoliation and Phacodonesis

The intraoperative and postoperative performance of the IOL is crucial:

- implantation and unfolding process
- manipulation in the AC and impact on capsule/zonules
- visual performance and refractive stability
- IOL centration (decentration and tilt)
- PCO prevention

Therefore most important for choosing the best monofocal IOL:

1) optic → “decentration and tilt forgiving”
2) design of the haptic → optic-haptic junction, stability
Based on our experience the new designed optic-haptic junction has shown improvements in:

1. centering in the capsular bag
2. rotational stability
3. refractive predictability
4. refractive stability
5. PCO prevention

Enhanced square edge technology including the optic-haptic transition (= Achilles Heel of the IOL) with more thickness/stiffness to reduce growth of cells (PCO-prevention) and enhance stability.

*see published: Apple DJ, Borkenstein A et al, presented ASCRS 2010, Boston, USA.*
Video
CASE  Implantation and Unfolding LUCIA 611P
Male, 78y, Diabetes
Hyperopic, Pseudoexfoliation Syndrome.

Axis 22.43, AC 2.75,
Malyugin ring 6.25
Therefore we can recommend the use of the fully preloaded Zeiss CT LUCIA 611P in complicated cases – PXF eyes:

- fast preparation of injector with enhanced OR workflow and easy to use. **scrub nurse friendly**
- small corneal incision – wound assisted implantation. **cornea friendly**
- gentle and smooth IOL insertion in the bag - no zonular stress. **capsule and zonular friendly**
- less surgical manipulation in small pupils and use of Malyugin ring. – iris contactless. **iris friendly**
- postoperative stability and “decentration/tilt-forgiving” (ZO optic). **doc friendly**
- hydrophobic acrylic with excellent BCDVA and without any glistenings. **patient friendly**
“Monofocal and Premium” – no discrepancy!

I’m choosing LUCIA in PXF eyes

because:

- Easy to use - fully preloaded
- Good OR workflow
- **Safe implantation in difficult eyes (small pupils, phacodonesis, Malyugin)**
- Smooth unfolding process without sticking
- Good IOL centration
- 360° square edge technology
- Material with ultra high purity
- No Glistenings
- Optical quality
- Combining advantages from negative SA and aberration-neutral lenses
- **Less sensitive to decentration/tilt**
- As blue blocker available (611PY)
- Excellent clinical results (visual acuity)
- Refractive predictability
- PCO: encouraging preliminary results