



Five Years follow up of Xenia Implants for Management of Advanced Keratoconus

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- **SM has no financial
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DALK & PKP

Although they are the cornerstones for treatment of advanced KC , yet :

Deep *learning Curve*.

Cost and availability of the tissues.

Severe visual loss may occur due to *complications* (graft rejection, infection and suture related complications).

Long *follow up*.

Suture management and astigmatism.

Cost of drugs & *follow up visits*.

**But
There is an alternative**

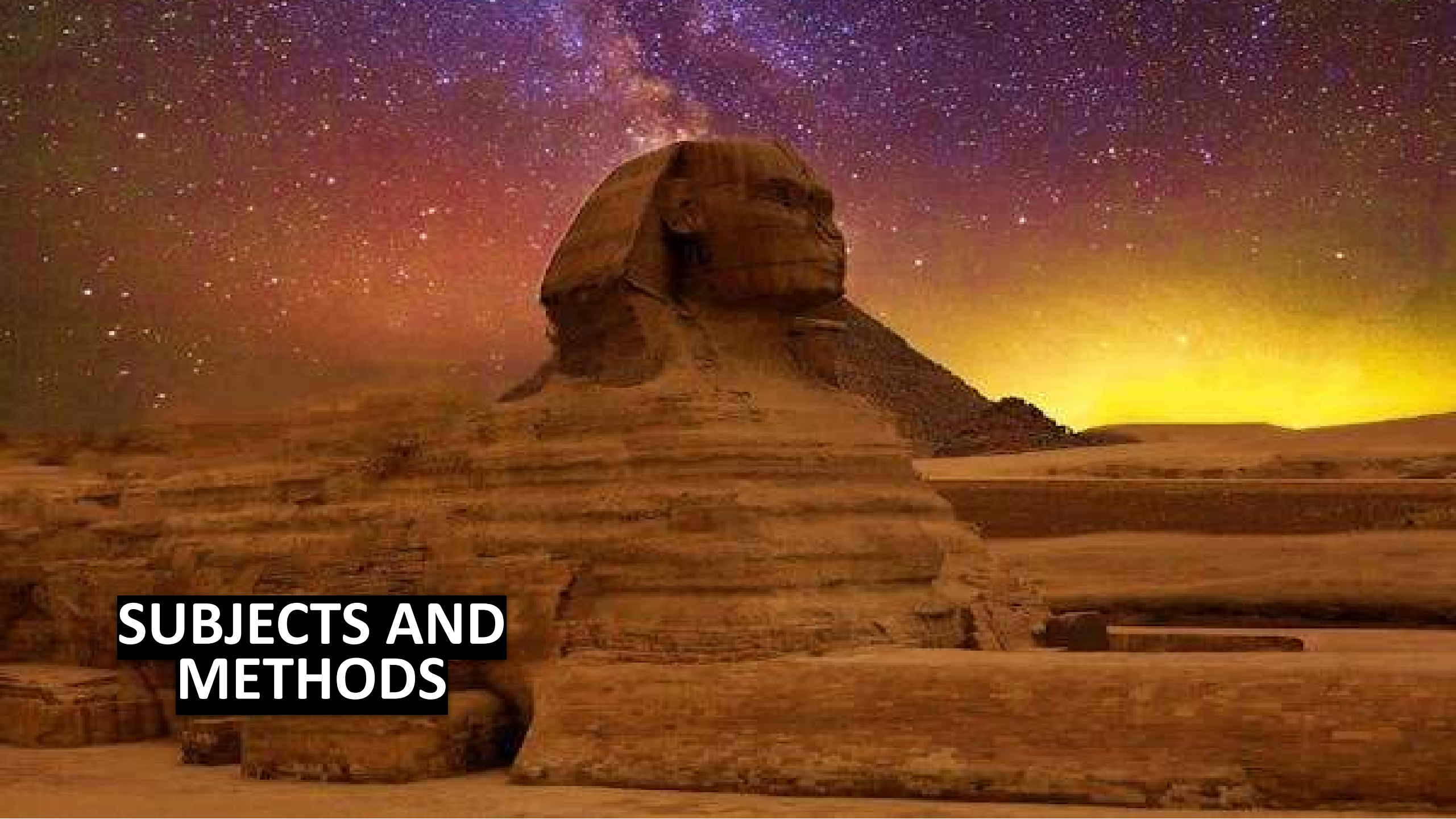
**Intrastromal decellularized Porcine
Corneal Lenticular Implantation**



PURPOSE

To evaluate the efficacy of **implanting decellularized**
Porcine lenticule (***XENIA Implant***) in a
femtosecond laser assisted constructed pocket for
management of advanced Keratoconus with clear
cornea.





SUBJECTS AND METHODS

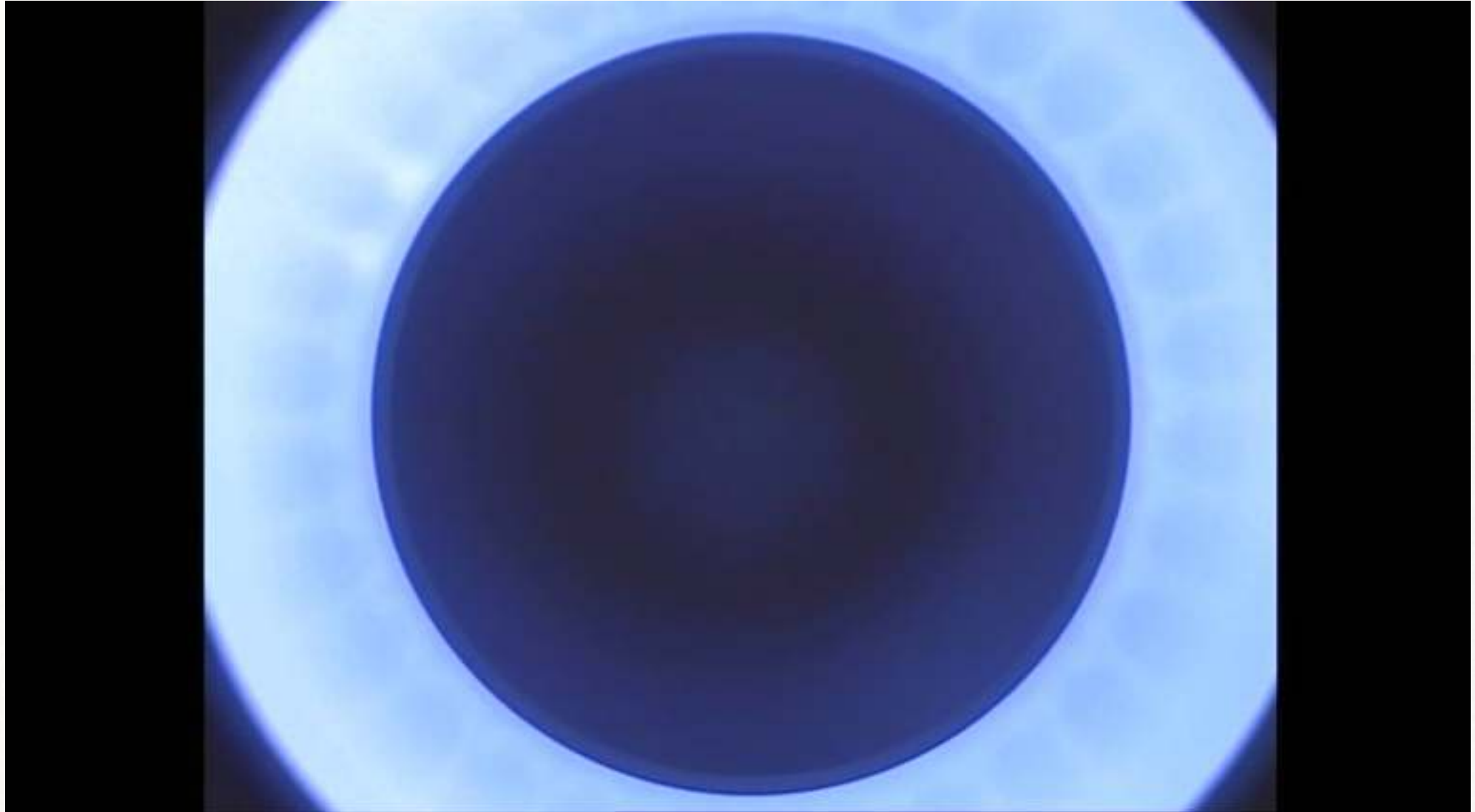
Subjects and methods

- A **prospective** , non-randomized, non-comparative , interventional, case series on seven eyes of six patients (three eyes females and four eyes males) .
- Six eyes with **advanced Keratoconus**, and one eye with **Post-LASIK Ectasia**.
- The study started in **July 2019** and currently has follow up of at 60 months.

Subjects and methods

- Femtosecond assisted laser **pocket creation** using **Visumax Zeiss** Meditec Machine.
- The **Porcine lenticules** are produced by Gebauer Medical .
- They are **decellularized** and intensely **cross linked**.
- The lenticule is a clear 7 mm tissue with a thickness between **100 & 120 microns . (Version 1)**

XENIA Implantation



Stock | #245782894

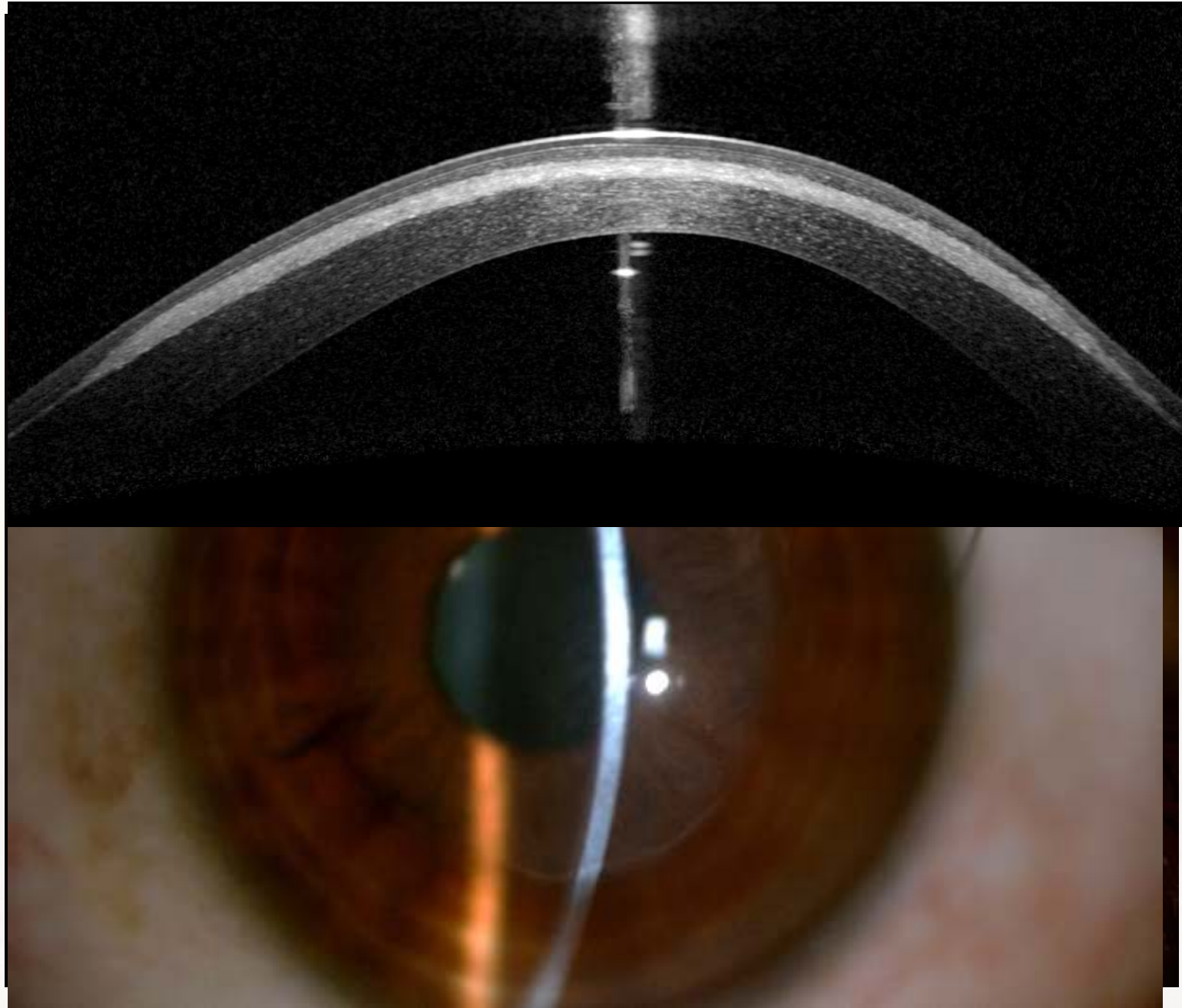


First Implantation of XENIA implant. July 2019, Roayah Center ,Alexandria, Egypt.

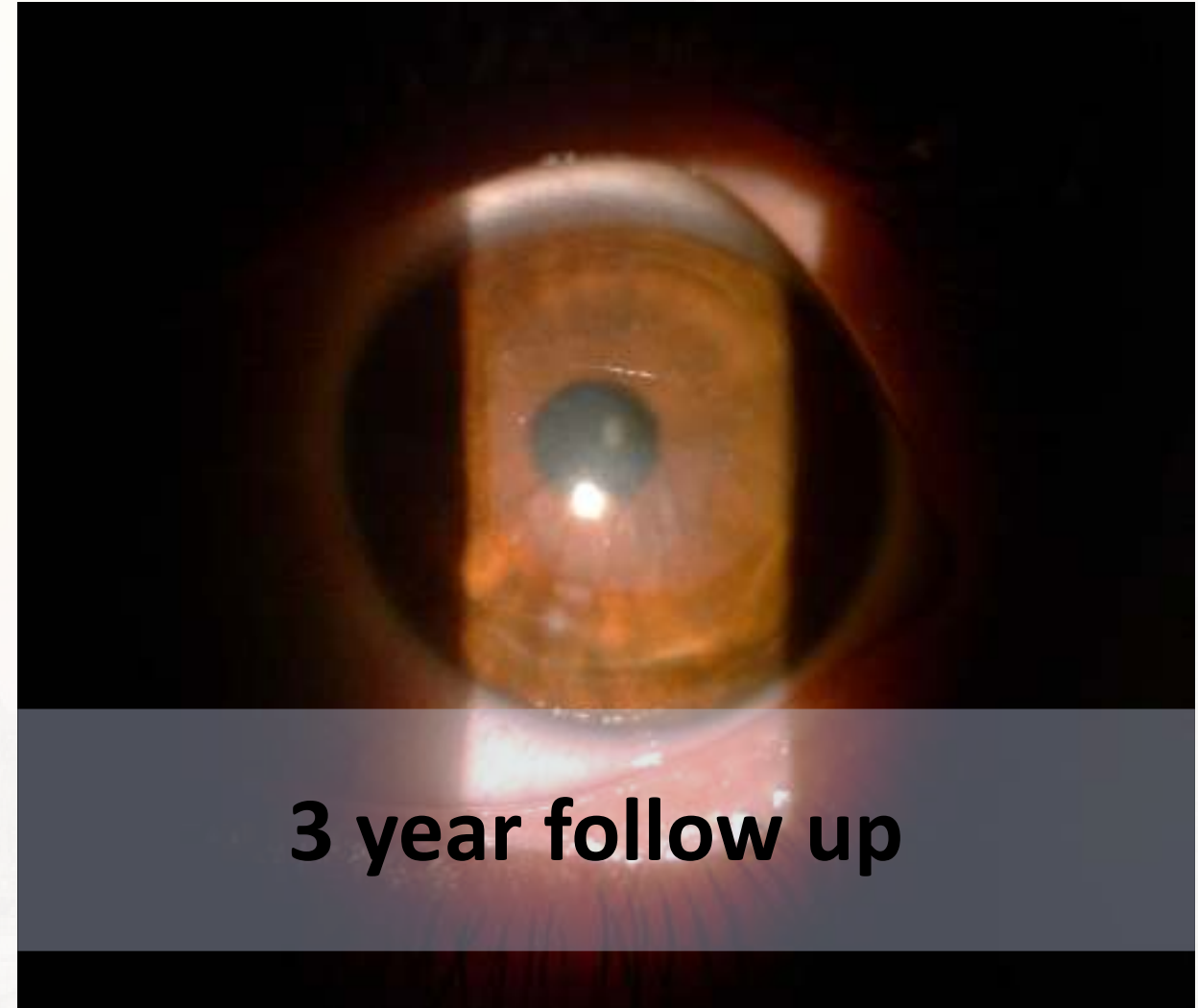


Elmassry

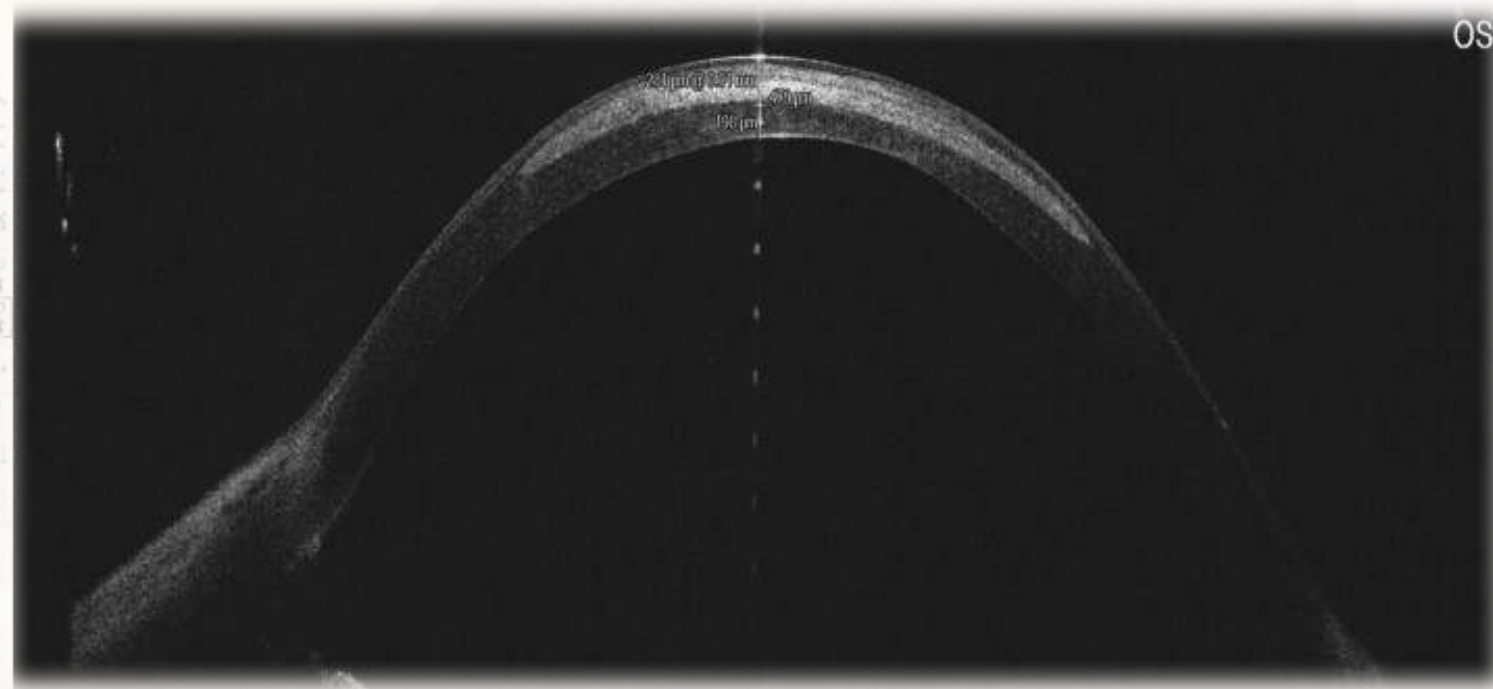
- Lenticule is showing thin layers of tissues covering it.
- **Twelve months follow up**
- ❖ Slit lamp
- ❖ Anterior segment OCT



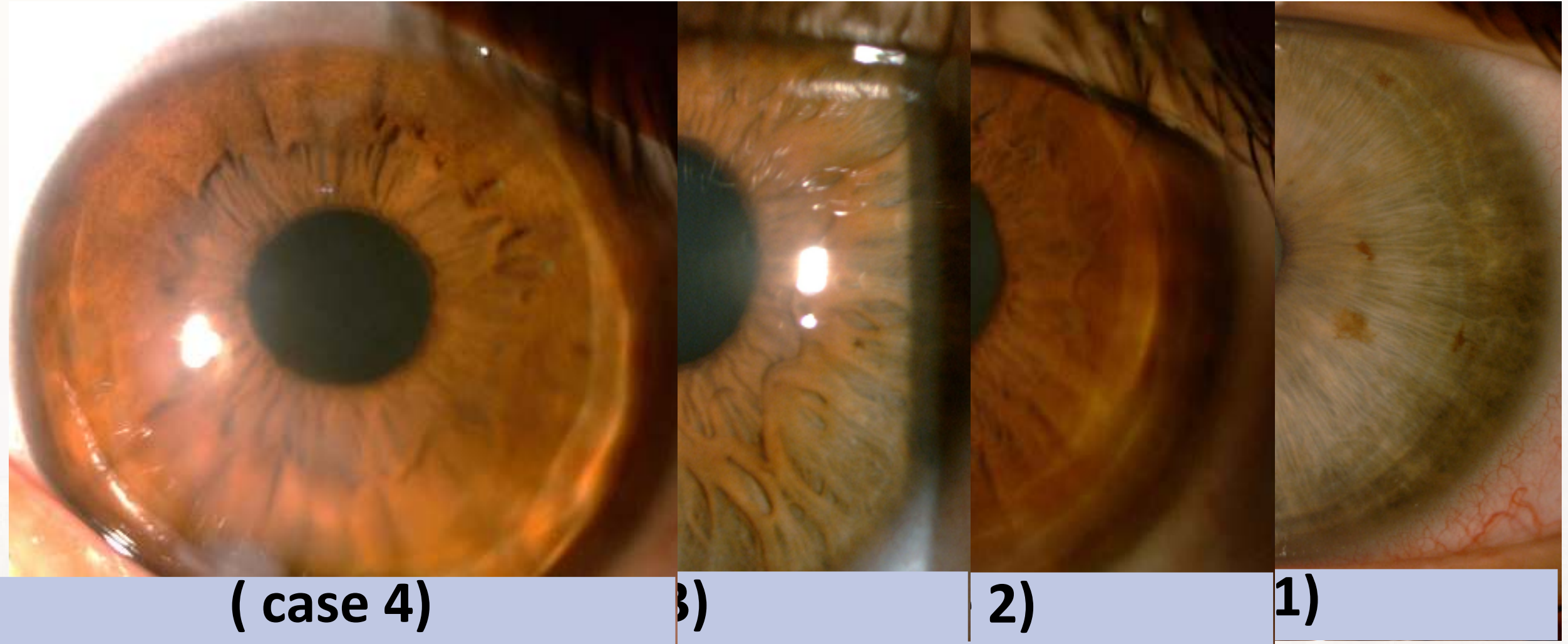
- **Three year follow up**
 - **Slit lamp**



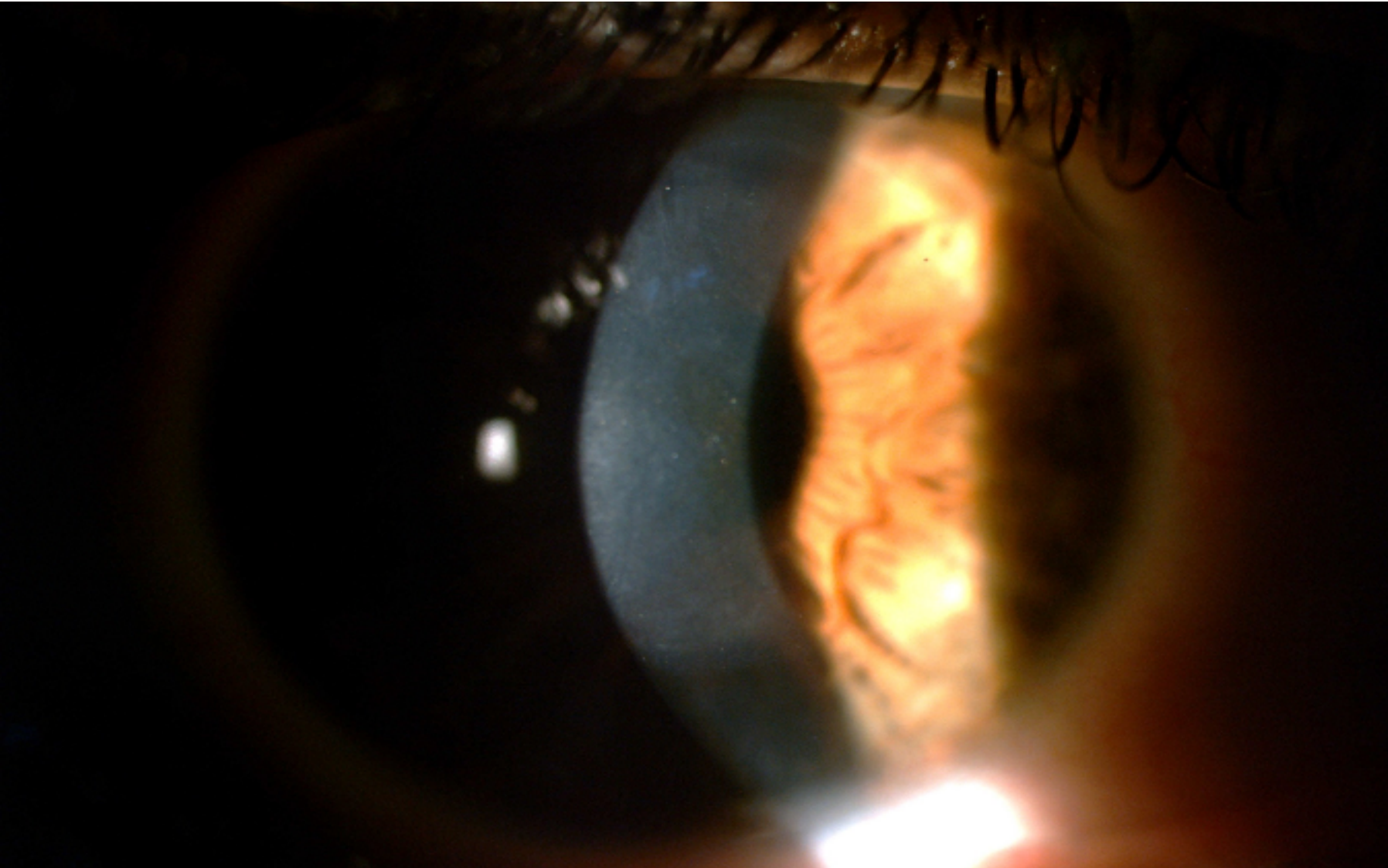
- **Three year follow up**
- **Anterior segment OCT**



Five years follow up (Slit lamp)



Five years follow up (Slit lamp)

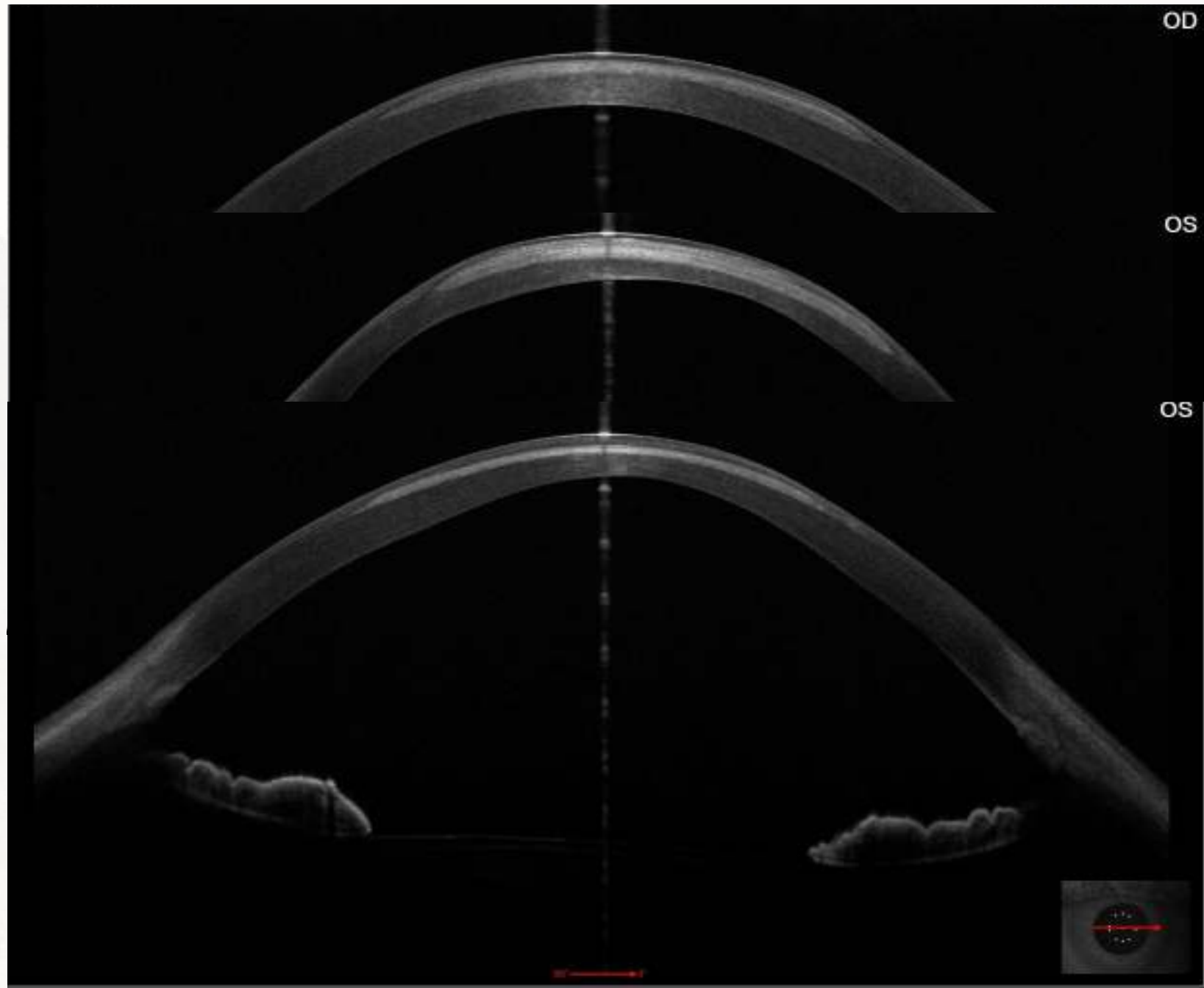


(case 6)



(case 5)

➤ **Five years
follow up**
Anterior segment
OCT





RESULTS

Results

The mean age of the patients was **27.67 ± 9 years.**

All the surgical procedures were **uneventful.**

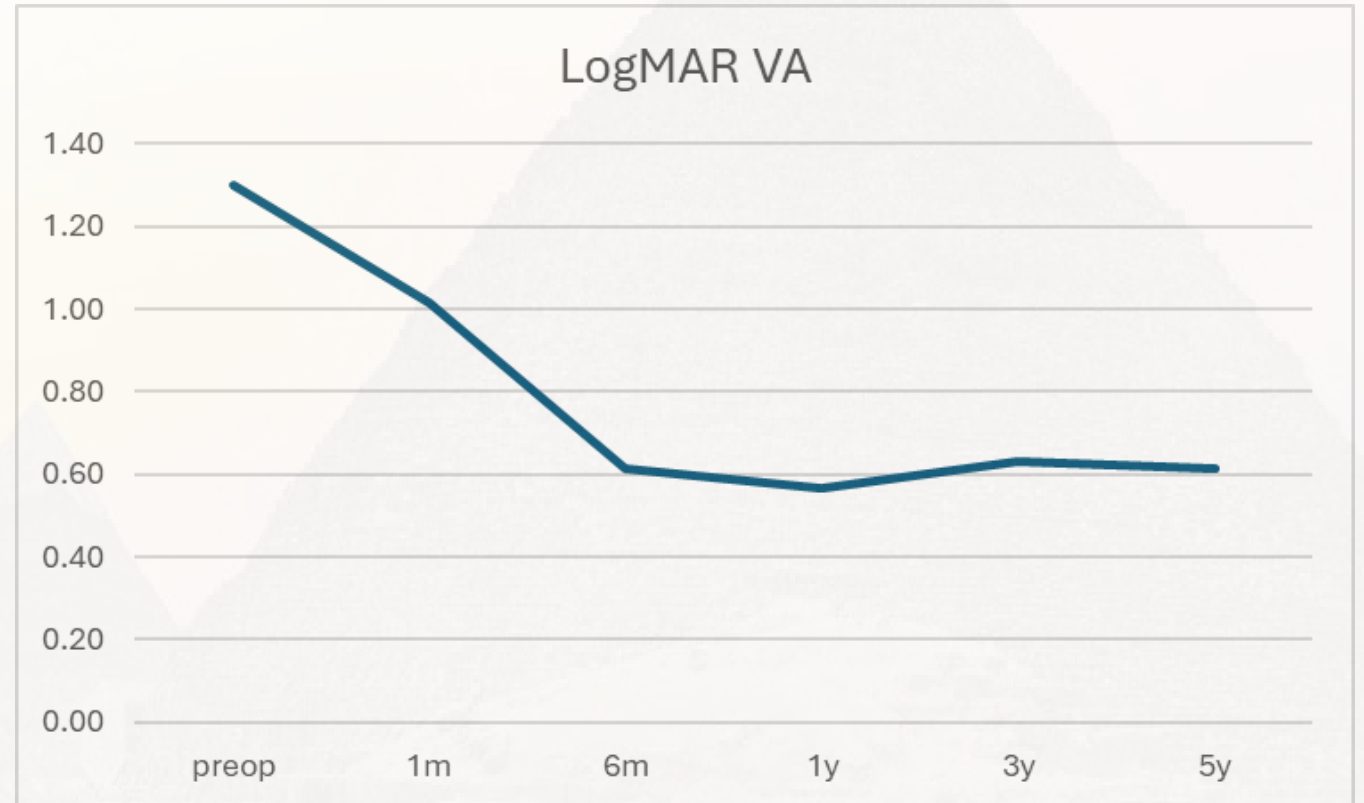
One eye had wrinkles and opacified graft, and it was **exchanged 3 months** postoperatively.

All patients (7 eyes) completed Five years of follow-up.

No episodes of rejections were encountered **up till 5 years.**

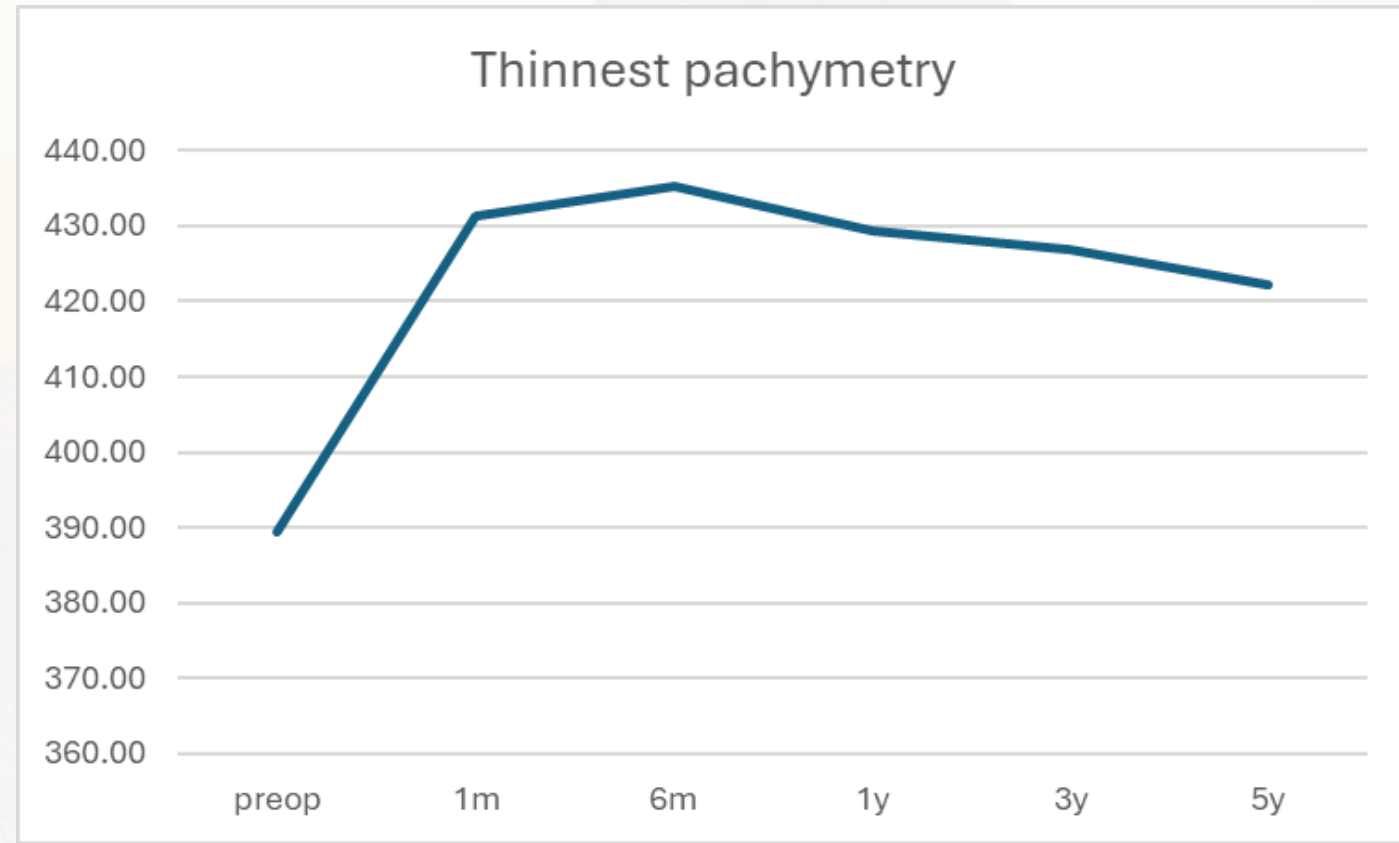
Visual results

- Visual acuity improved in all patients at 6 , 12 months ,3 years and Five years
- (Stable from 6 months till 5 years)



Central corneal thickness

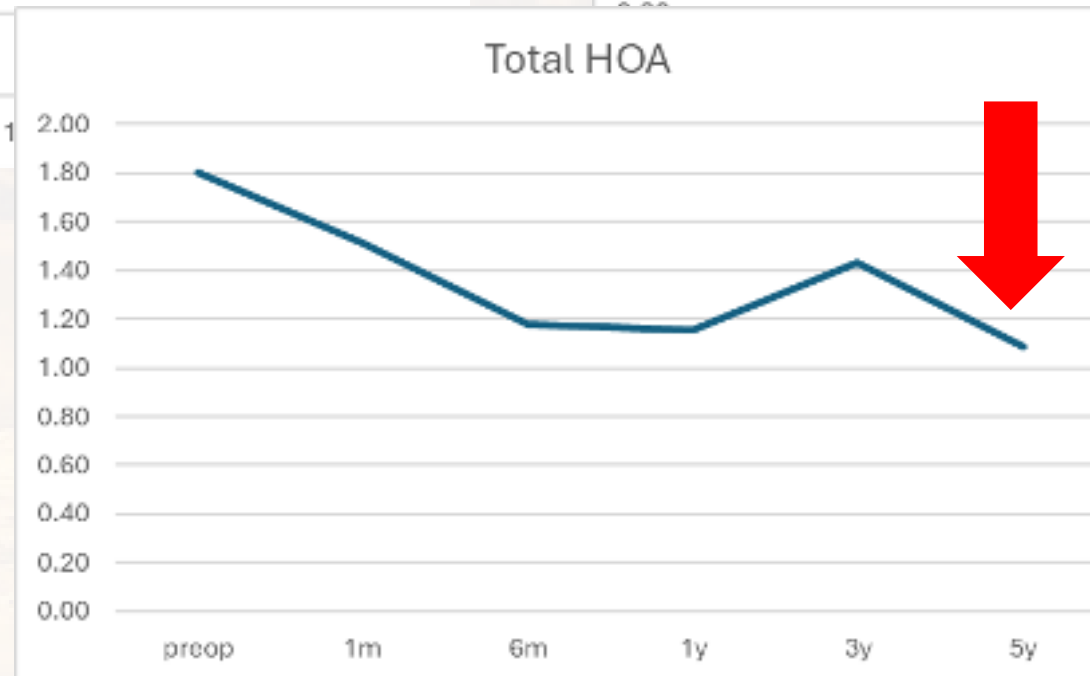
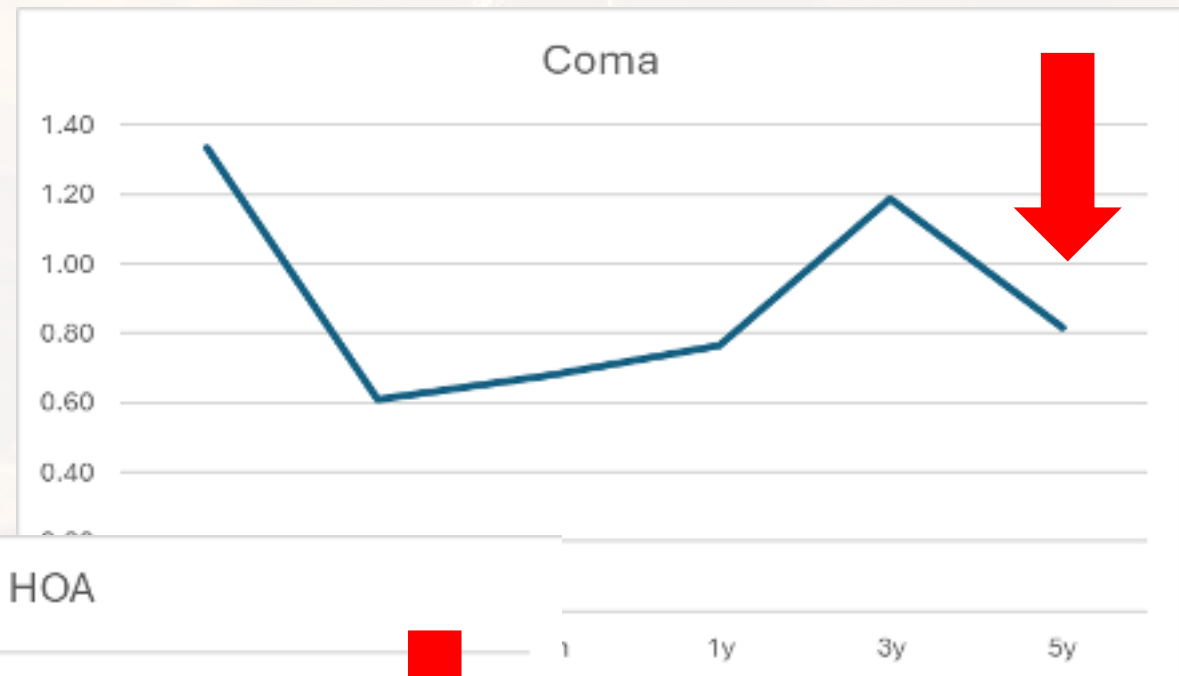
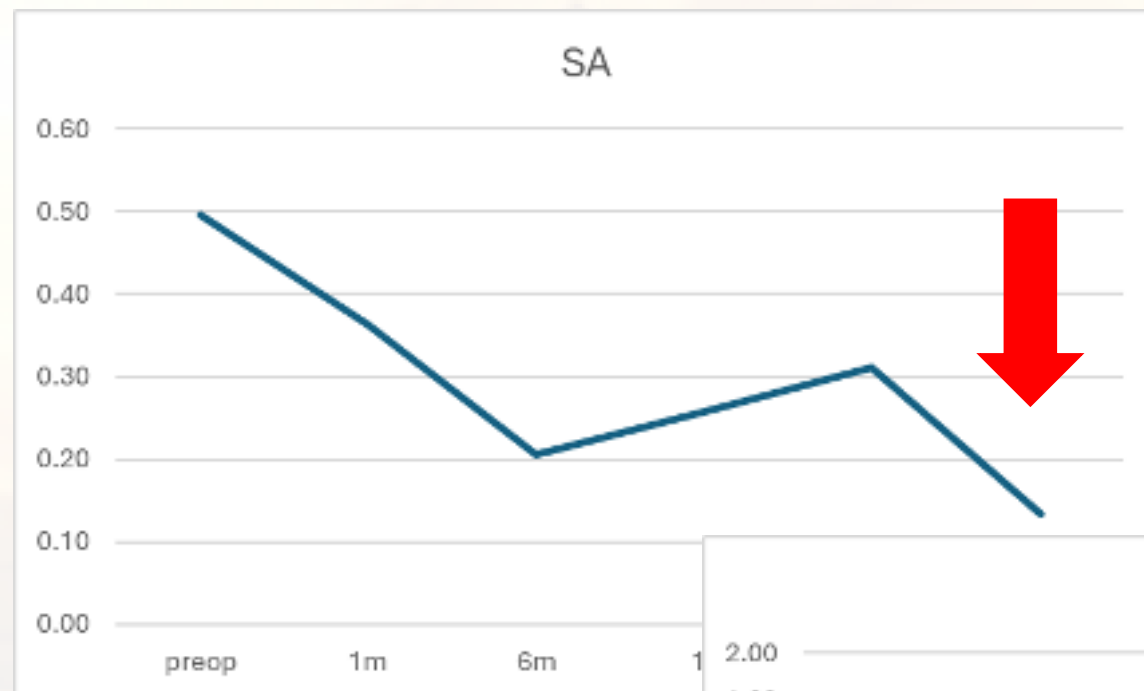
- The mean CCT measured with Pentacam increased at 1, 3 and 5 years.
- ?? Accuracy of Pentacam measurements.



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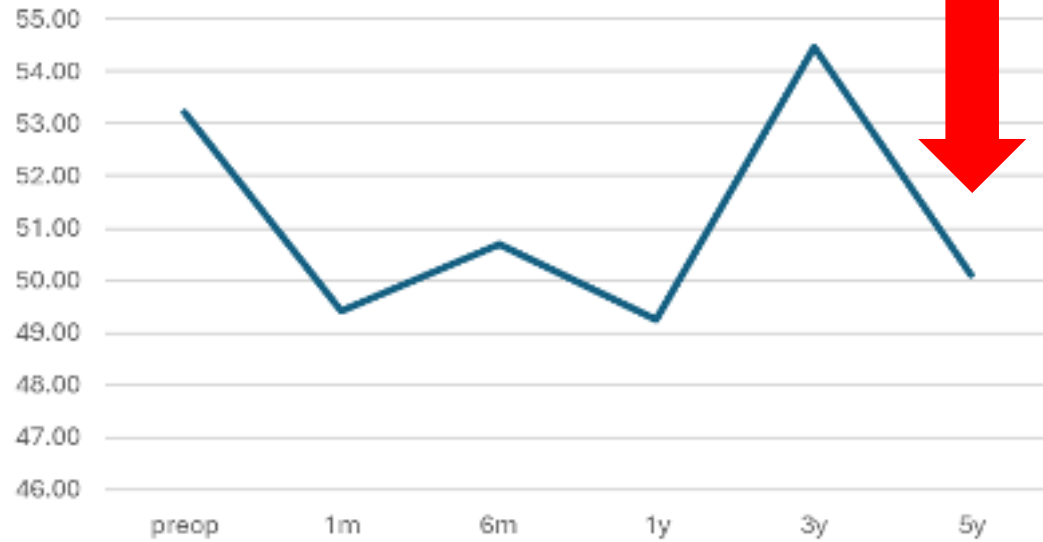


Corneal aberrations:

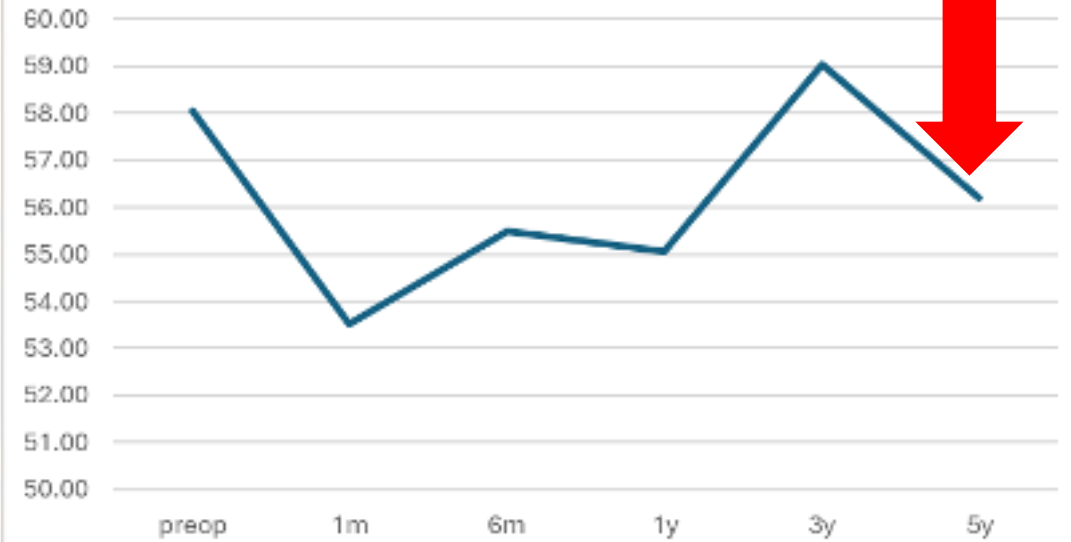


Keratometry

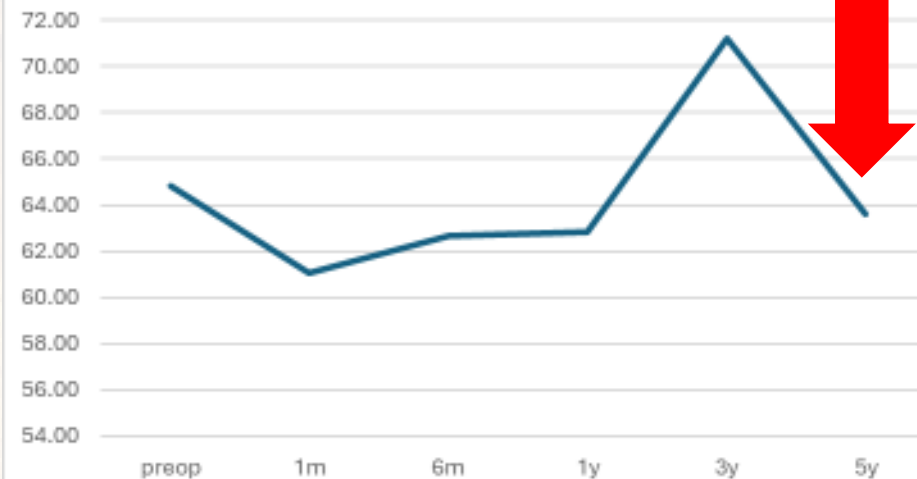
KF



KS



Kmax

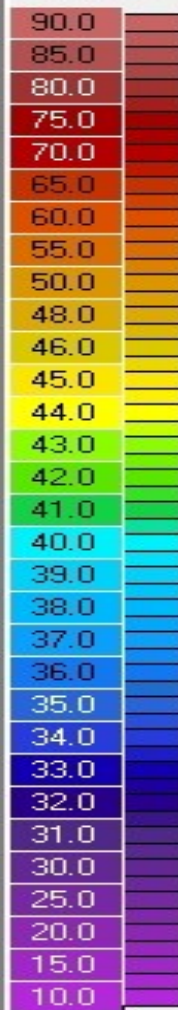


OCULUS - PENTACAM Compare 4 Exams

Name: [Zaki Mohamed, Ahmed]

ID: [20794]

Exam



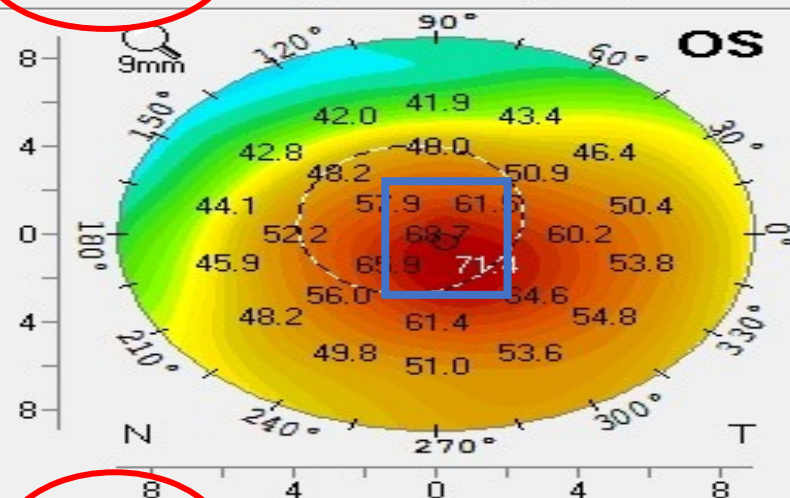
D

Curvature

Abs

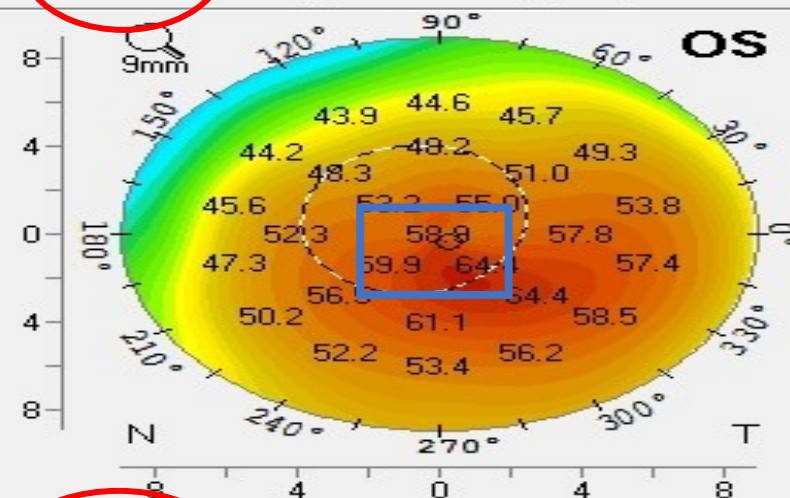
A: [07/10/2019 20:46:35 Left (25) 3D-Scan HR]

Axial / Sagittal Curvature (Front)



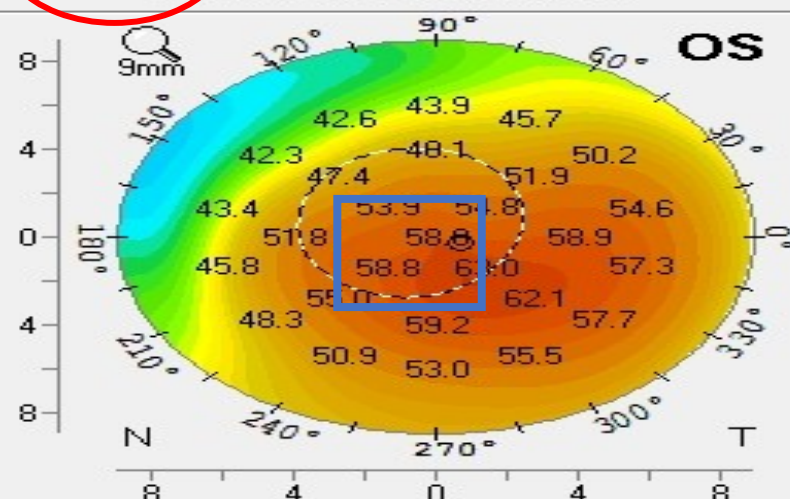
B: [01/01/2020 14:45:48 Left (25) 3D-Scan HR]

Axial / Sagittal Curvature (Front)



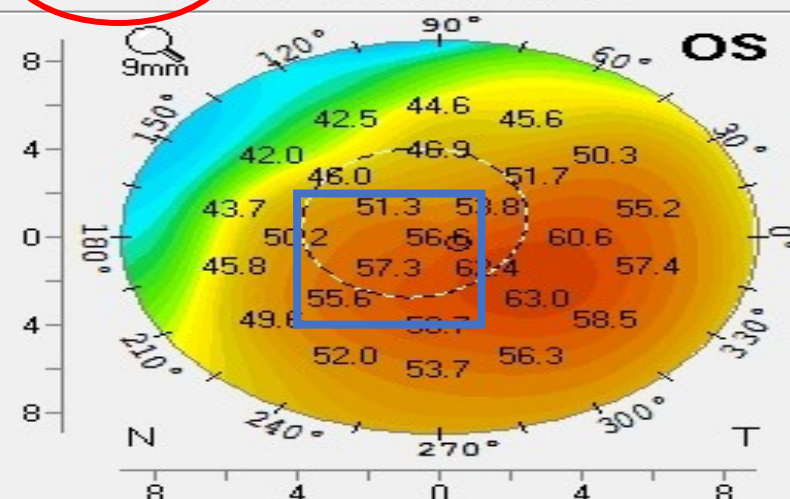
C: [07/30/2022 14:29:16 Left (25) 3D-Scan HR]

Axial / Sagittal Curvature (Front)



D: [09/15/2024 16:36:40 Left (25) 3D-Scan HR]

Axial / Sagittal Curvature (Front)



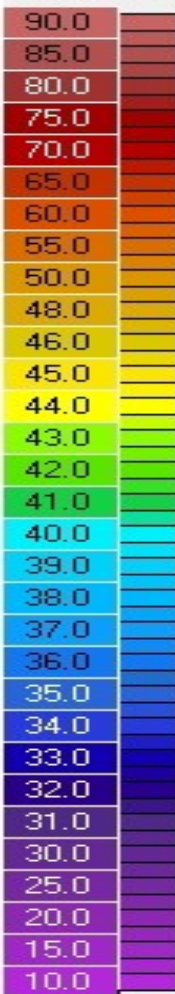
OCULUS - PENTACAM

Compare 4 Exams

Name:

ID:

Exam



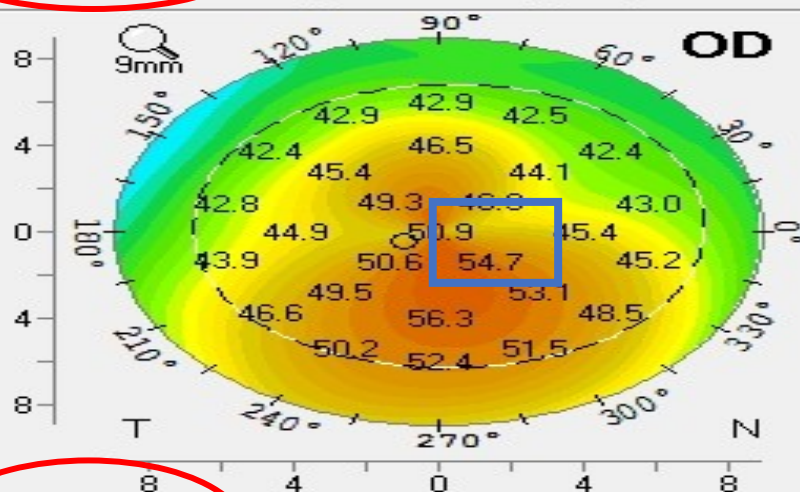
D

Curvature

Abs

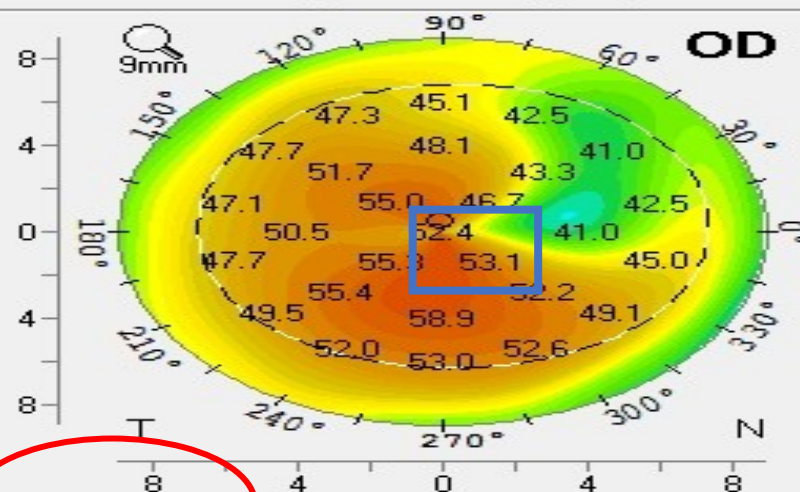
A:

Axial / Sagittal Curvature (Front)



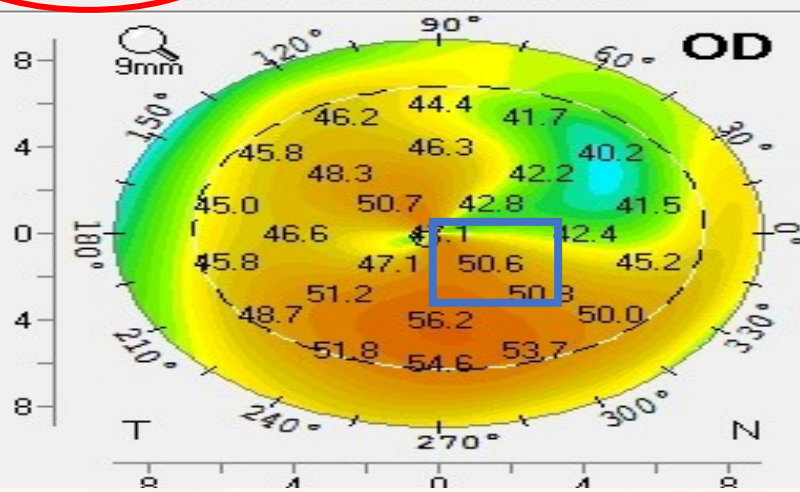
B:

Axial / Sagittal Curvature (Front)



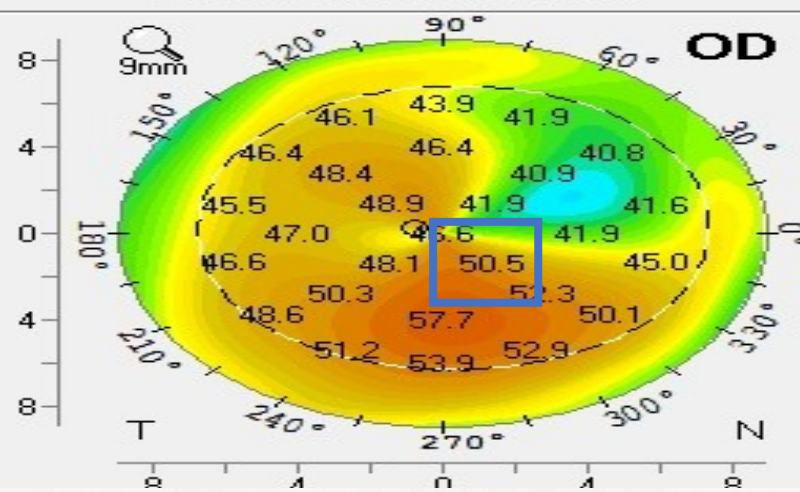
C:

Axial / Sagittal Curvature (Front)



D:

Axial / Sagittal Curvature (Front)



- All cases were **Cross linked** three months Post corneal implant except the post lasik Ectasia.
- Epi-Off CXL.



Stock | #245782894



Results (cont)

- The eye of the Post-LASIK Ectasia patient reached BCVA 0.5 with **-9.0 D/-2.5 x 160 glasses**

5 years follow up showed stability and clear lenticules all over the follow up period.

Advantages of XENIA IMPLANTS

- Short learning curve.
- Ease of Implantation of grafts / availability during the pandemic.
- Immunologically safe after Five years follow up.
- Still reversible.
- Good visual and aberrometric outcomes.
- *Could save the other eye more rapidly by early implantation (No need to wait for three months for the other eye)*



October 2024

- **Phase 2**
- **Modified lenticule**
- **Diameter 6.75-7.2 mm**
- **On 220 microns depth**
- **10 eyes of Advanced keratoconus**



A dramatic scene of an ancient Egyptian temple at sunset. The foreground is dominated by massive, weathered columns covered in hieroglyphs and carvings. The sun is low on the horizon, casting a warm, golden glow across the sky and the desert landscape. In the background, the Great Pyramids of Giza are visible under the twilight sky. The overall atmosphere is one of historical grandeur and mystery.

CONCLUSIONS

Conclusions

Tissue augmentation with decellularized Porcine lenticules (XENIA Implants) and Corneal cross-linking results in *improvement in*

- **Visual acuity.**
- **Corneal Curvature.**
- **Corneal hysteresis.**
- **Decreased Corneal higher order aberrations.***

* Safety and Indicative Effectiveness of Porcine Corneal Lenticular Implants in Patients with Advanced Keratoconus and Post Lasik Ectasia: A Retrospective Clinical Study. Clinical Ophthalmology. 26 July 2021.
Ahmed El-Massry, Moones Abdalla, Ihab Osman, Shahira Mahmoud.
<https://www.dovepress.com/getfile.php?fileID=72045>



Conclusions

- Five years follow up , confirmed the transparency, and ***Immunologically Stable Implants***, improvement of Pentacam readings, increased thickness by U/S pachymetry.*
- Further studies with a ***larger number and longer follow-ups*** , ***new version of the Implants*** are needed to confirm its effectiveness and stability over time.

* Lenticular Intrastromal Keratoplasty for Keratoconus.
Keratoconus. Chapter First Online: 28 October 2022
Mirko R. JankovII & Ahmed Elmassry
https://link.springer.com/chapter/10.1007/978-3-030-85361-7_86



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THANK YOU



YouTube channel: @Dr.AhmedElmassry