

# Cx Corneal de la Presbicia

## Implantes Corneales

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**Catedrático de Oftalmología**

# Relación con Industria

Miguel A. Teus

- Johnson & Johnson (L, S)
- Alcon (L, C, S)
- Allergan (L, C)
- Novartis (L, S)
- Santen (C)

# Cirugía corneal para presbicia

- **Implantes Corneales**
  - Aumentar la curvatura corneal anterior
  - Proporcionar multifocalidad por tener un índice de refracción mayor que el estroma corneal
  - Efecto estenopeico
- **CVL (LASIK, PRK or ReLEX)**
  - Perfil de ablación multifocal
  - Monovisión + Customizar la aberración esférica inducida
  - Monovisión simple

# Implantes corneales

P. S. Binder

Eye & Contact Lens • Volume 43, Number 5, September 2017

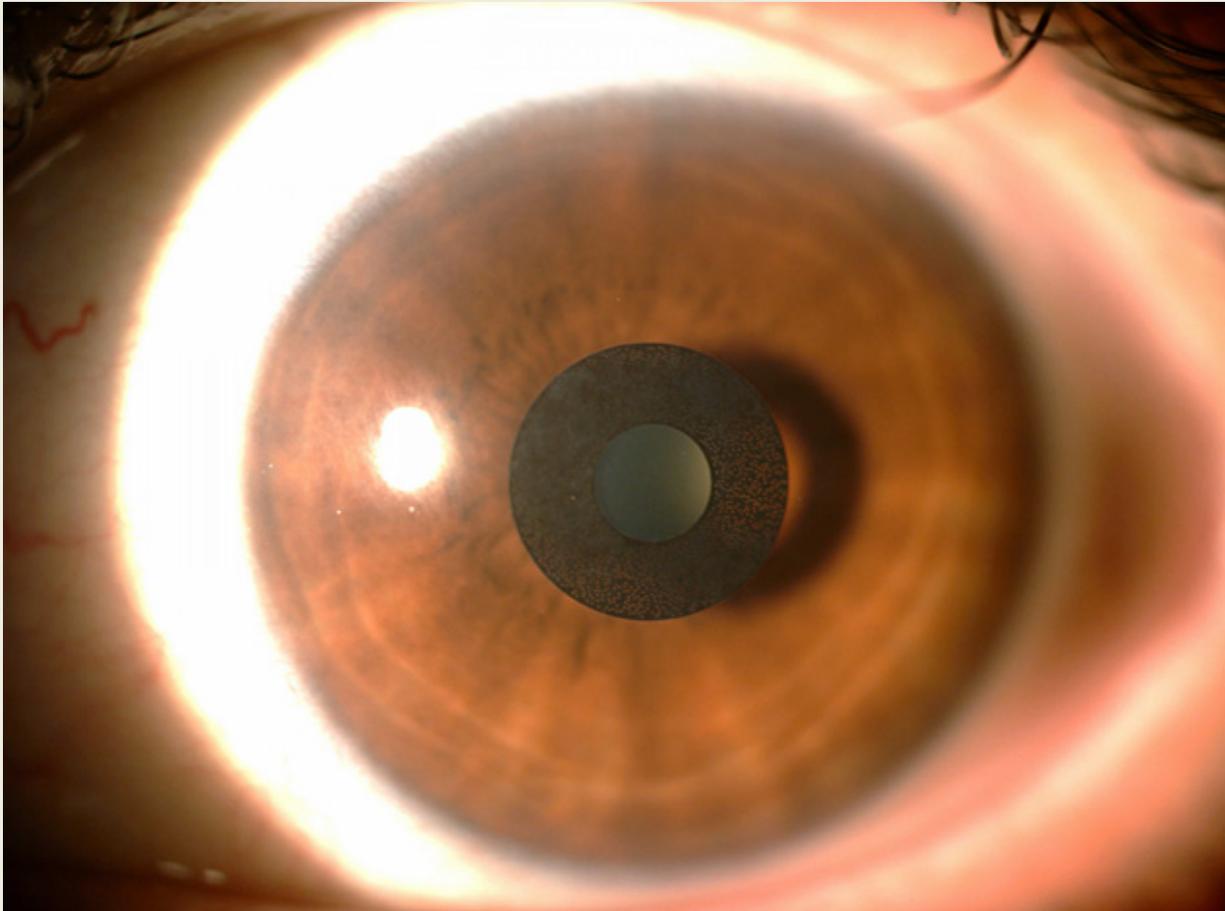
**Table 1.** Current Intracorneal Inlays for Presbyopia Correction

	Raindrop	Flexivue Microlens	KAMRA
Optics	Corneal reshaping	Bifocal	Small Aperture
Refractive inlay	No	Yes	No
Lens power	N/A	Periphery: +1.50 to+3.50 Central: plano	N/A
Material	Medical grade 80% hydrogel	Hydrophilic polymer	Polyvinylidene Fluoride (PVDF)
Diameter, mm	2.0	3.2	3.8
Thickness, $\mu\text{m}$	30	15–20	5
Implantation depth, $\mu\text{m}$	150–180	300	220–240
Nutrient flow process	Proprietary microporous material	Central 0.15 mm hole	8,400 microperforations <sup>a</sup> , 1.6 mm central opening

# Implantes corneales; problemas

- Todos los implantes corneales conocidos son cuerpos extraños que tienen la capacidad de inducir una reacción inflamatoria en el huésped
- Esta respuesta inflamatoria se ve clínicamente como “haze” alrededor del implante
- Los implantes con escasa permeabilidad al agua (polysulfona) inducían un cambio hipermetrópico importante
- Cuanto más profundo mejor (por motivos de nutrición del estroma anterior al implante)
- El centrado es importante
- Se deben implantar bajo flap o en un “Pocket”

# Implantes (Kamra)



# Implantes (Kamra)

## Long-term outcomes after monocular corneal inlay implantation for the surgical compensation of presbyopia

Alois K. Dexl, MD, MSc, Gerlinde Jell, MD, Clemens Strohmaier, MD, Orang Seyeddain, MD, Wolfgang Riha, MD, Theresa Rückl, MD, Alexander Bacherneegg, MD, Günther Grabner, MD

J Cat Refract Surg 2015; 41: 566-575

# Implantes (Kamra)

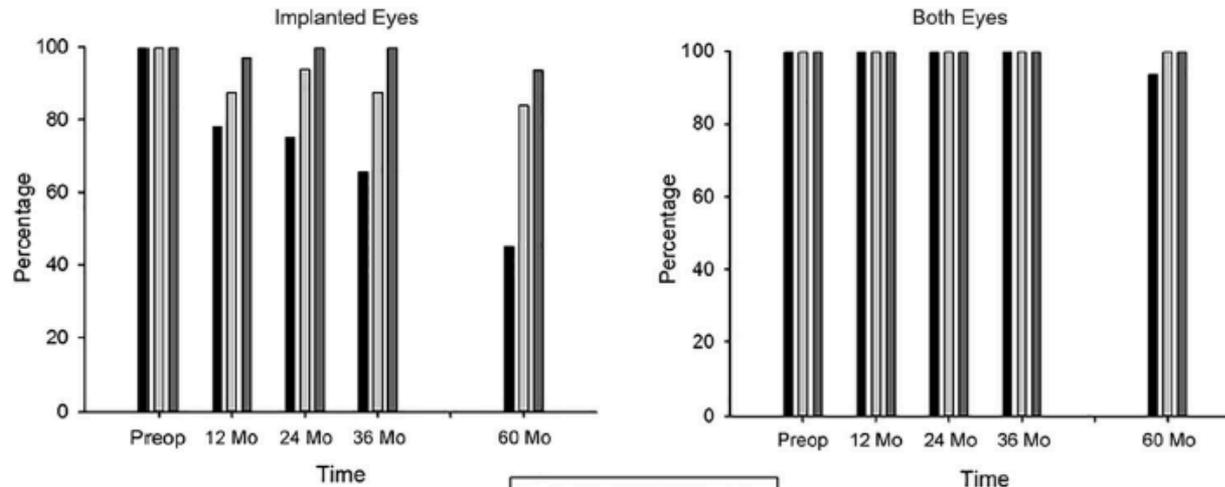


Figure 3. Uncorrected distance visual acuity in surgical eyes and both eyes during the 60-month follow-up.

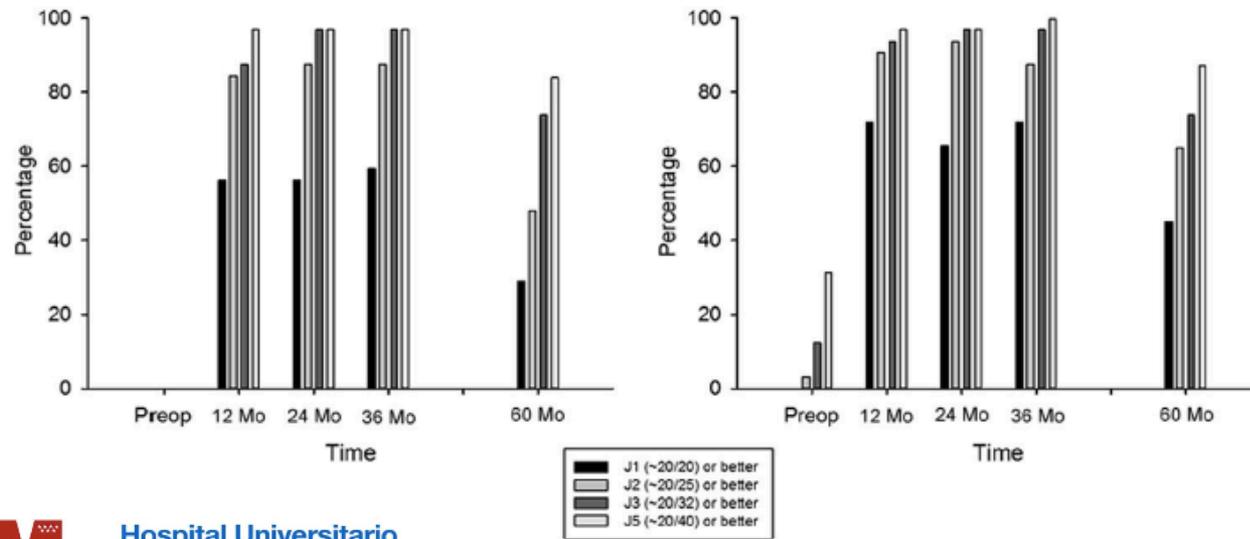
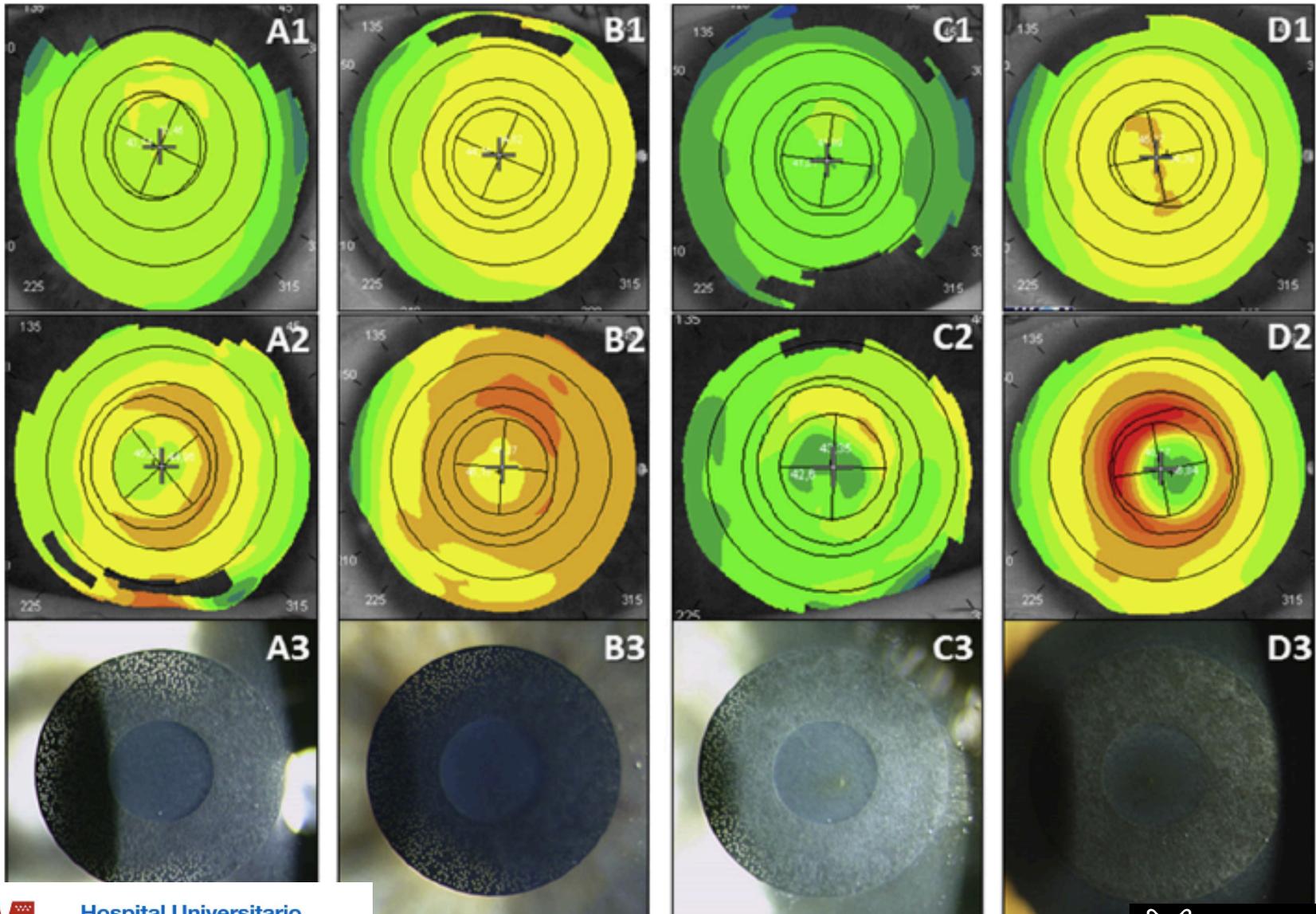
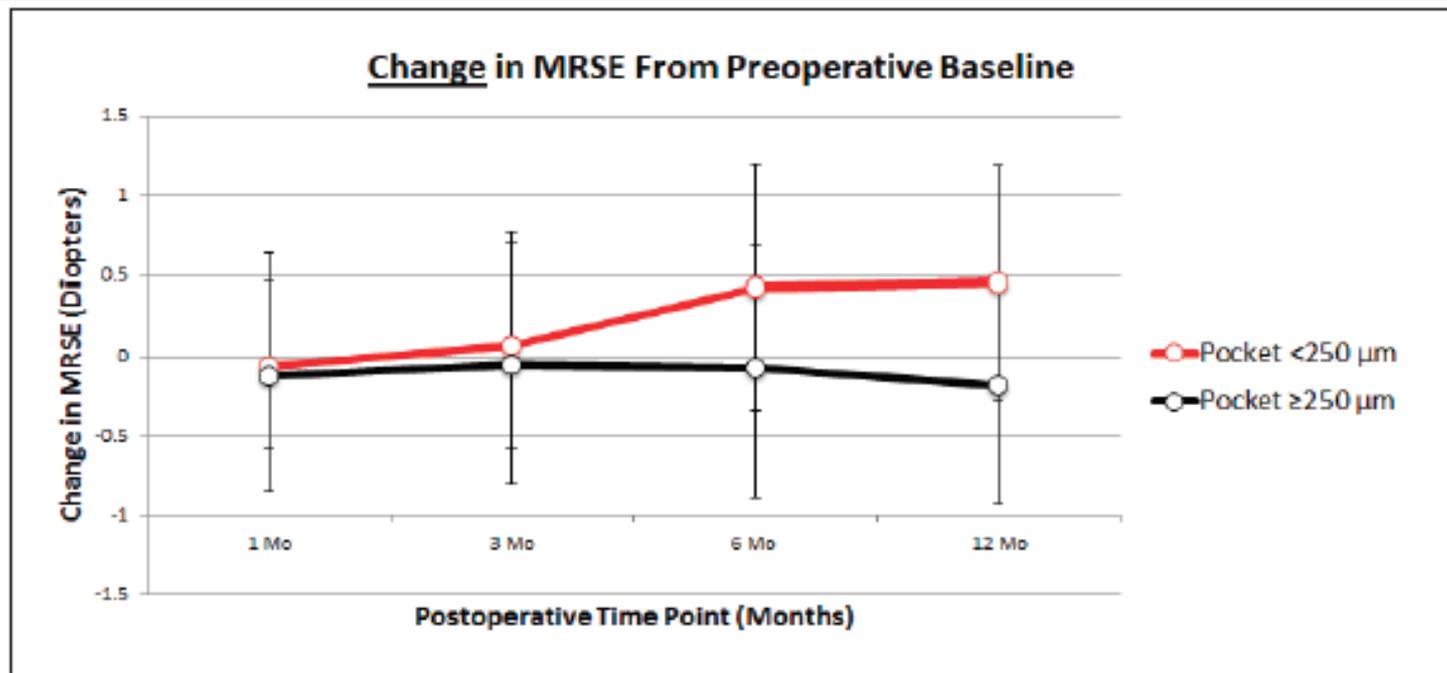


Figure 2. Uncorrected near visual acuities in surgical eyes and both eyes during the 60-month follow-up.

# Implantes (Kamra)



# Implantes (Kamra)



**Figure 1.** Change in manifest spherical equivalent refraction (MRSE) from preoperative baseline.

# Implantes (Raindrop)



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## Treatment of Presbyopia in Emmetropes Using a Shape-Changing Corneal Inlay

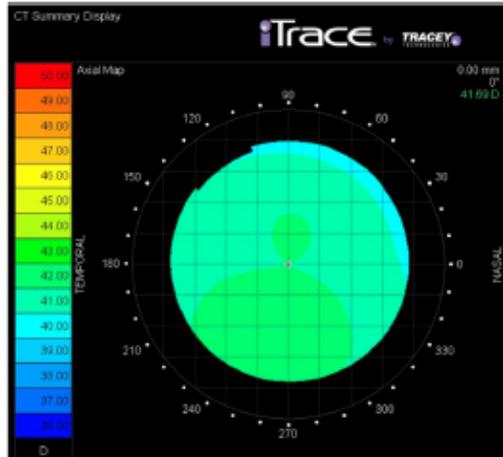
### *One-Year Clinical Outcomes*

Jeffrey Whitman, MD,<sup>1</sup> Paul J. Dougherty, MD,<sup>2</sup> Gregory D. Parkhurst, MD,<sup>3</sup> John Olkowski, MD,<sup>4</sup>  
Stephen G. Slade, MD,<sup>5</sup> John Hovanesian, MD,<sup>6</sup> Ralph Chu, MD,<sup>7</sup> Jon Dishler, MD,<sup>8</sup> Dan B. Tran, MD,<sup>9</sup>  
Robert Lehmann, MD,<sup>10</sup> Harvey Carter, MD,<sup>11</sup> Roger F. Steinert, MD,<sup>12</sup> Douglas D. Koch, MD<sup>13</sup>

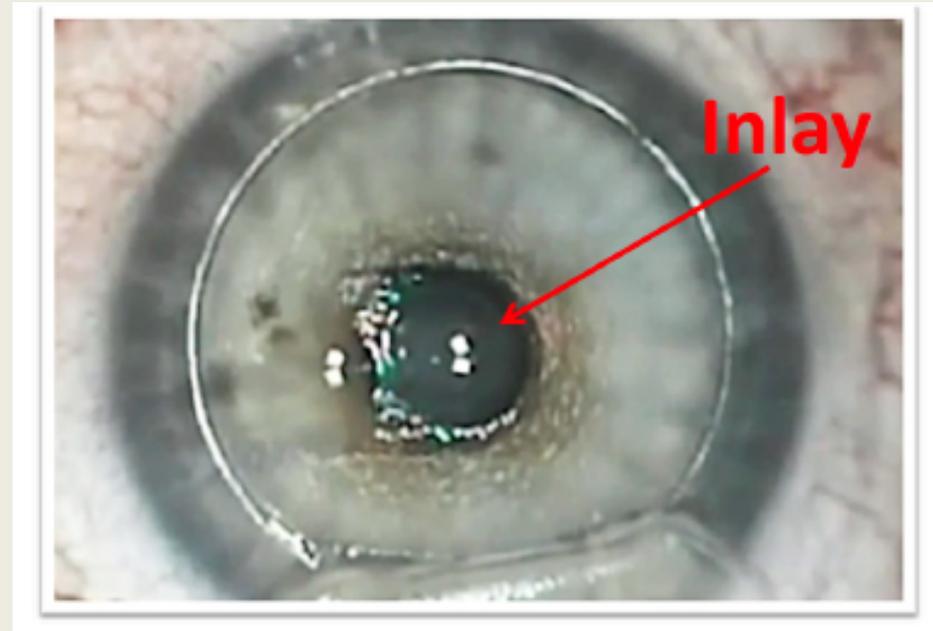
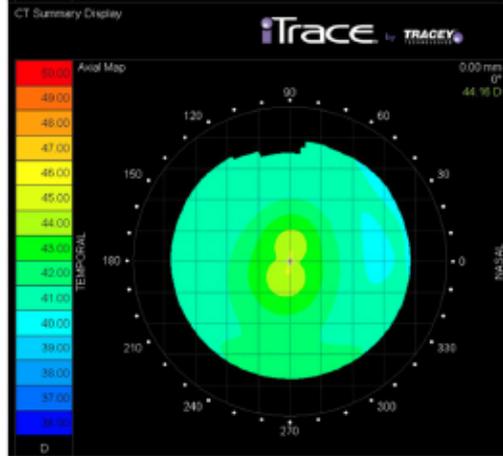
**Conclusions:** The Raindrop Near Vision Inlay provides significant improvement in near and intermediate visual performance, with no significant change in binocular distance vision or CS. Subject satisfaction is improved significantly with minimal ocular or visual symptoms. *Ophthalmology* 2016;■:1–10 © 2016 by the American Academy of Ophthalmology.

# Implantes (Raindrop)

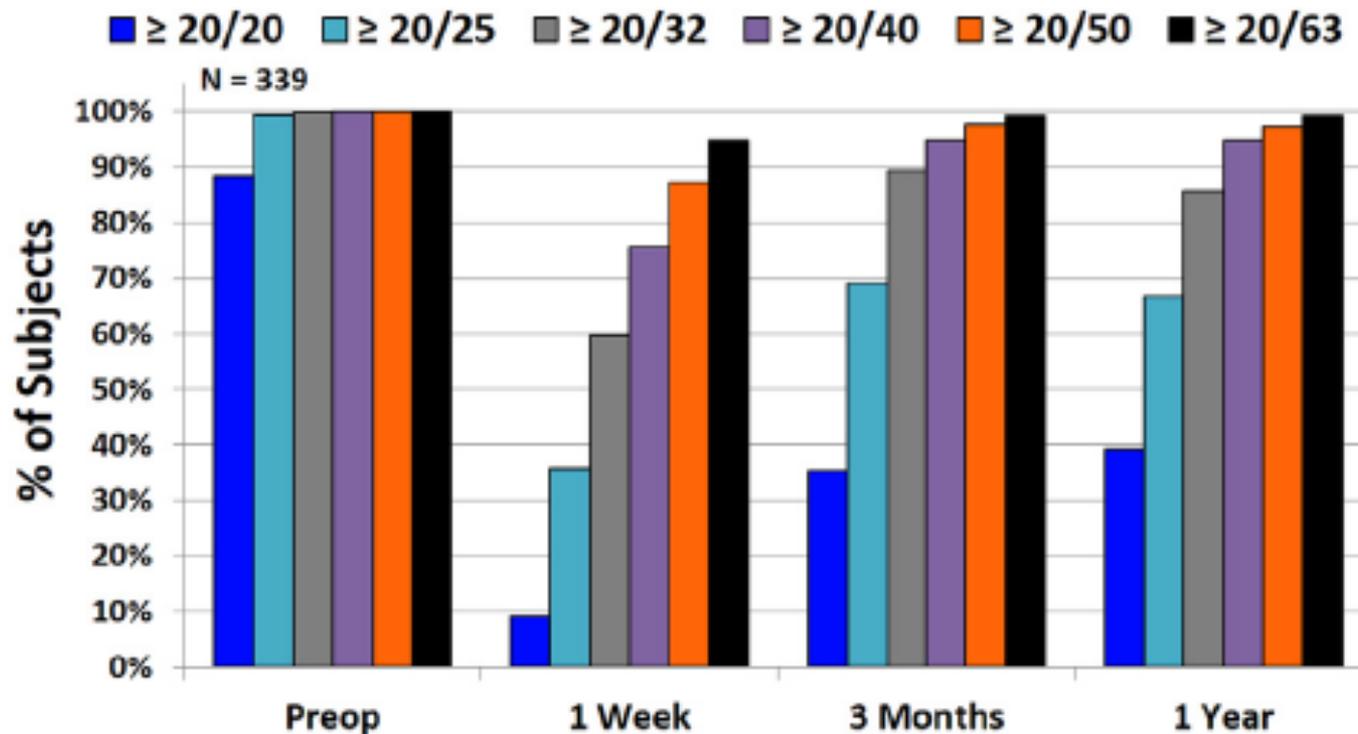
Preoperative Exam



12-Month Exam

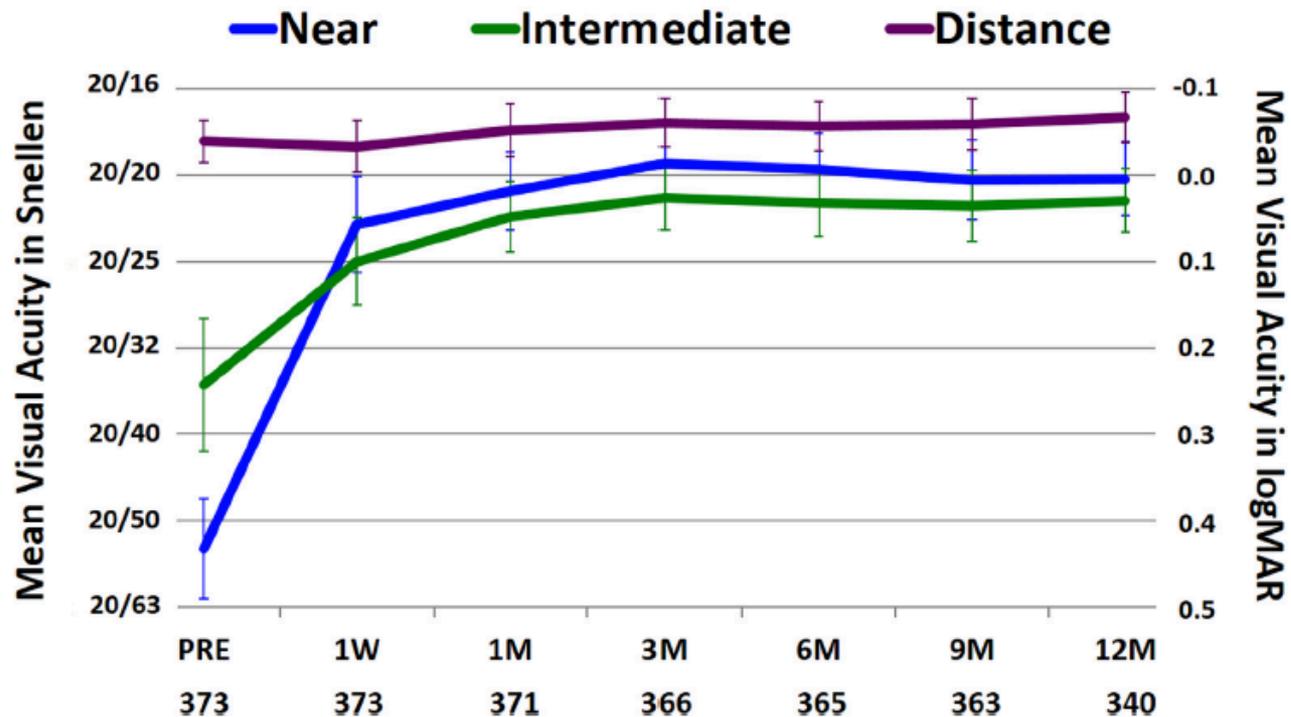


# Implantes (Raindrop)



**Figure 5.** Bar graph showing the percentage of subjects with uncorrected distance visual acuity (6 m) in the inlay eye at different acuity levels (Snellen), for the preoperative through (Preop) through 1-year visits.

# Implantes (Raindrop)



**Figure 7.** Graph showing the mean binocular near, intermediate, and distance visual acuity as a function of time. Vertical axis to the left is in Snellen visual acuity with the right in logarithm of the minimum angle of resolution (logMAR) units. M = month; PRE = preoperative examination; W = week.

# Trasplante de lentículo estromal

Jin et al. *BMC Ophthalmology* (2017) 17:202  
DOI 10.1186/s12886-017-0595-z

BMC Ophthalmology

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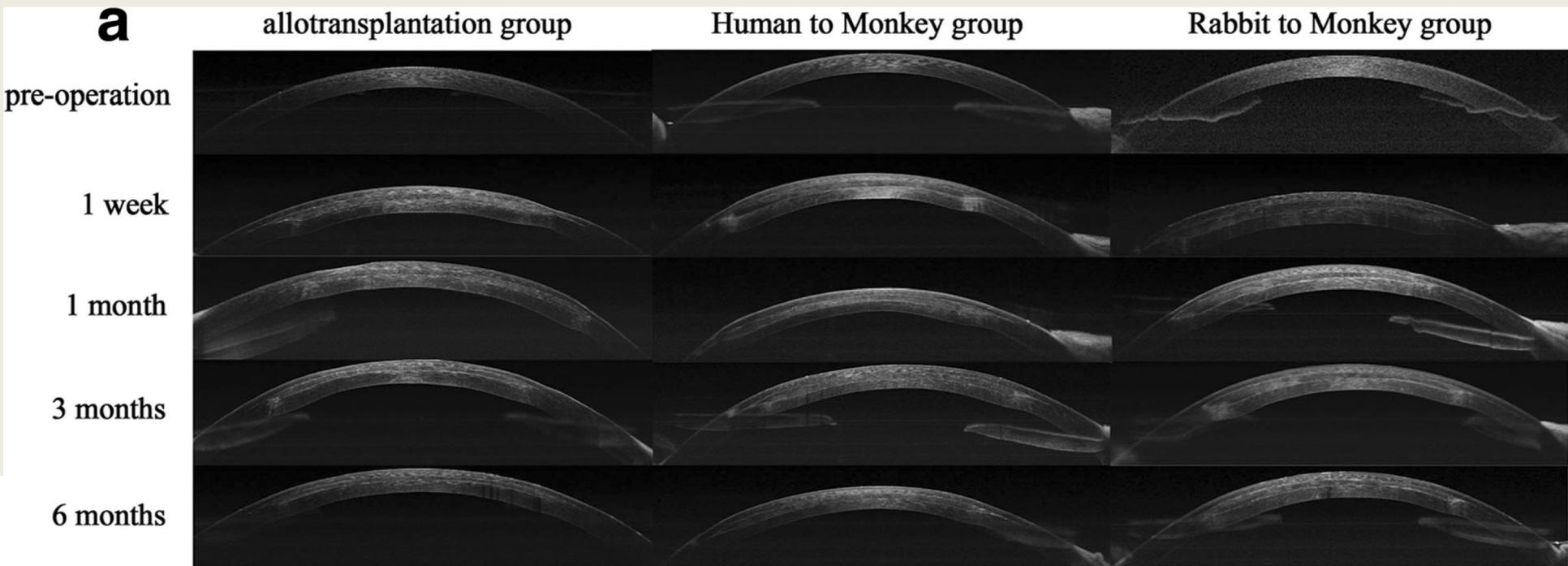
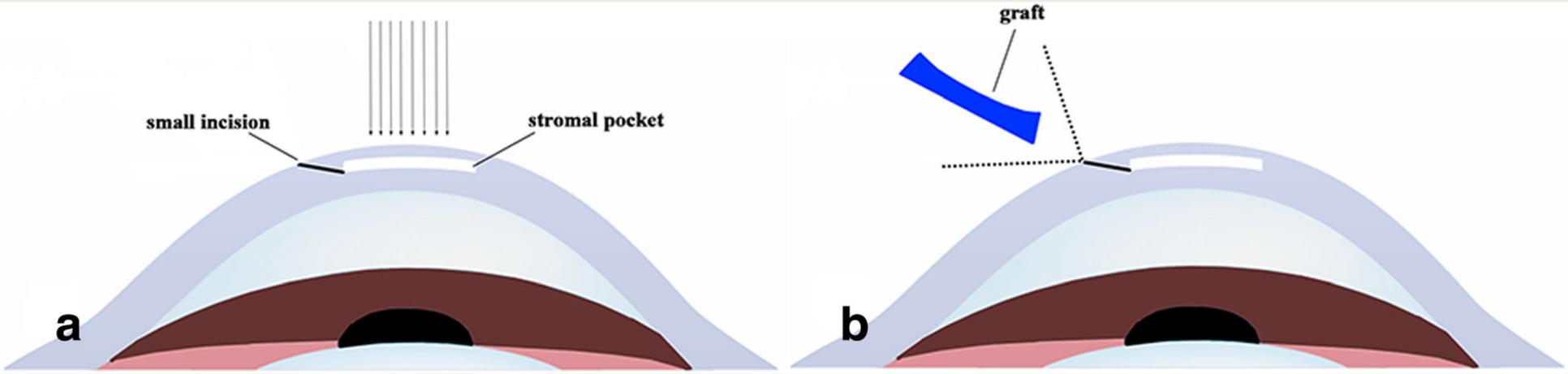
## Comparison of femtosecond laser-assisted corneal intrastromal xenotransplantation and the allotransplantation in rhesus monkeys



He Jin<sup>1†</sup>, Liangping Liu<sup>1†</sup>, Hui Ding<sup>2</sup>, Miao He<sup>1</sup>, Chi Zhang<sup>1</sup> and Xingwu Zhong<sup>1,2\*</sup> 

**Conclusion:** Small-incision femtosecond laser-assisted intrastromal transplantation minimized invasiveness and improved surgical efficiency. In addition, the host cornea maintained a high level of biocompatibility. Glycerol-dehydrated corneal lamellae might be potentially useful as an alternative inlay xenogeneic material. In this study, we also describe a new treatment that can be used in keratoconus, corneal ectasia, presbyopia, hyperpresbyopia and other diseases.

# Trasplante de lentículo estromal



# Trasplante de lentículo estromal

## Biological corneal inlay for presbyopia derived from small incision lenticule extraction (SMILE)

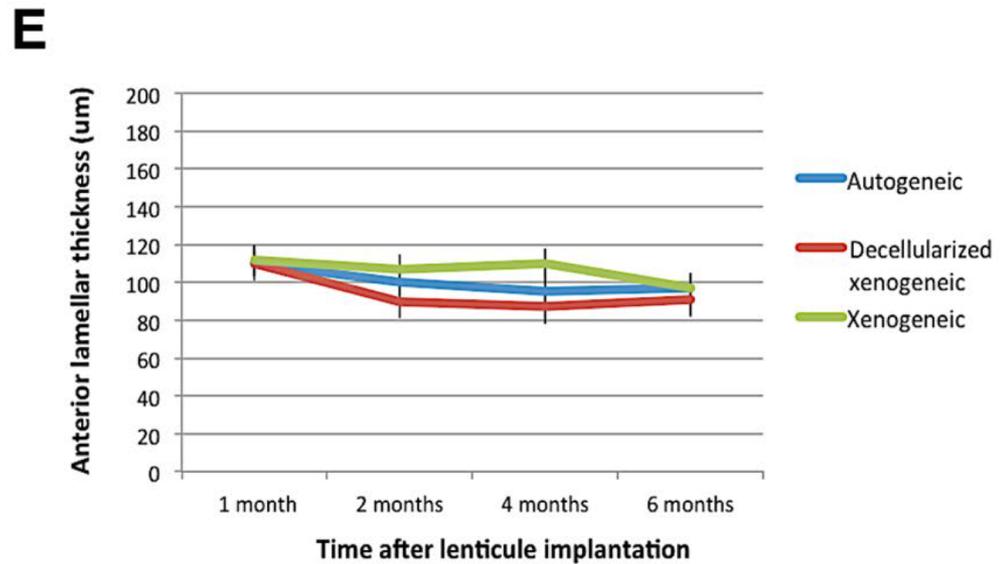
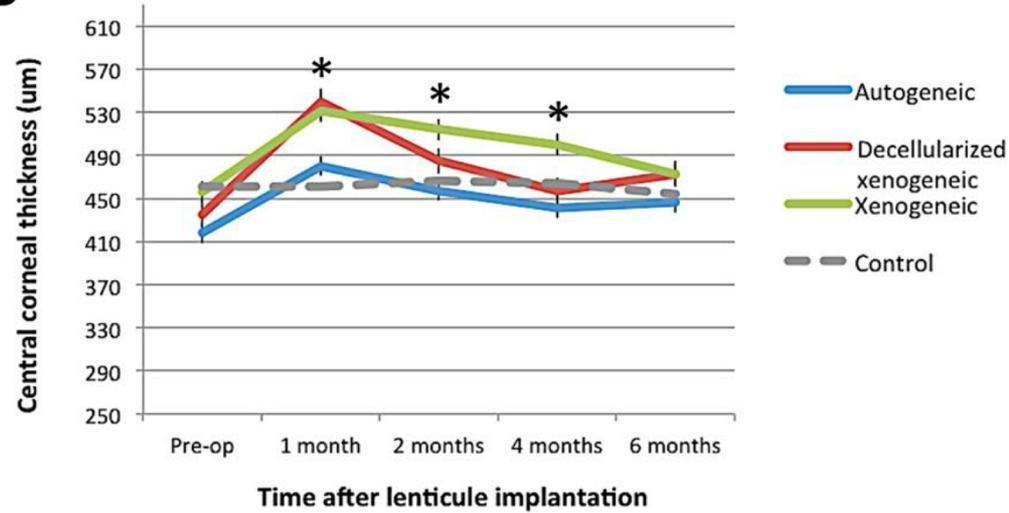
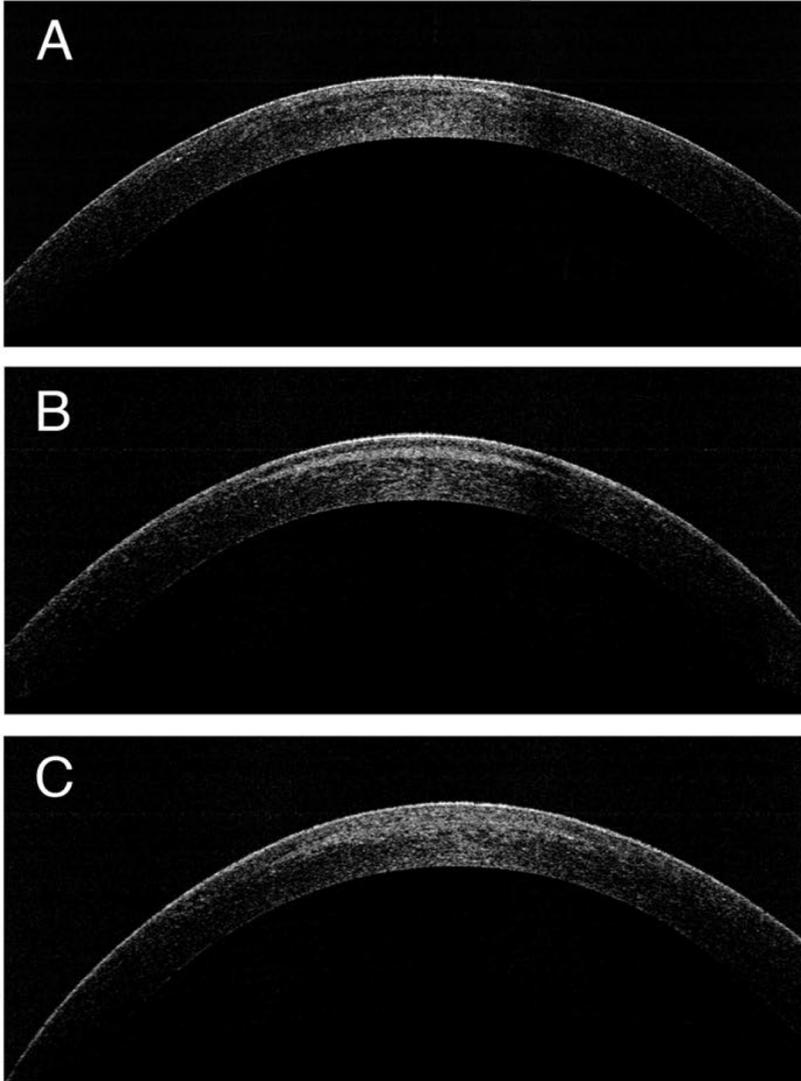
Yu-Chi Liu<sup>1,2,3</sup>, Ercia Pei Wen Teo<sup>1</sup>, Heng Pei Ang<sup>1</sup>, Xin Yi Seah<sup>1</sup>, Nyein Chan Lwin<sup>1</sup>, Gary Hin Fai Yam<sup>1</sup> & Jodhbir S. Mehta<sup>1,2,3,4</sup>

[www.nature.com/scientificreports](http://www.nature.com/scientificreports)

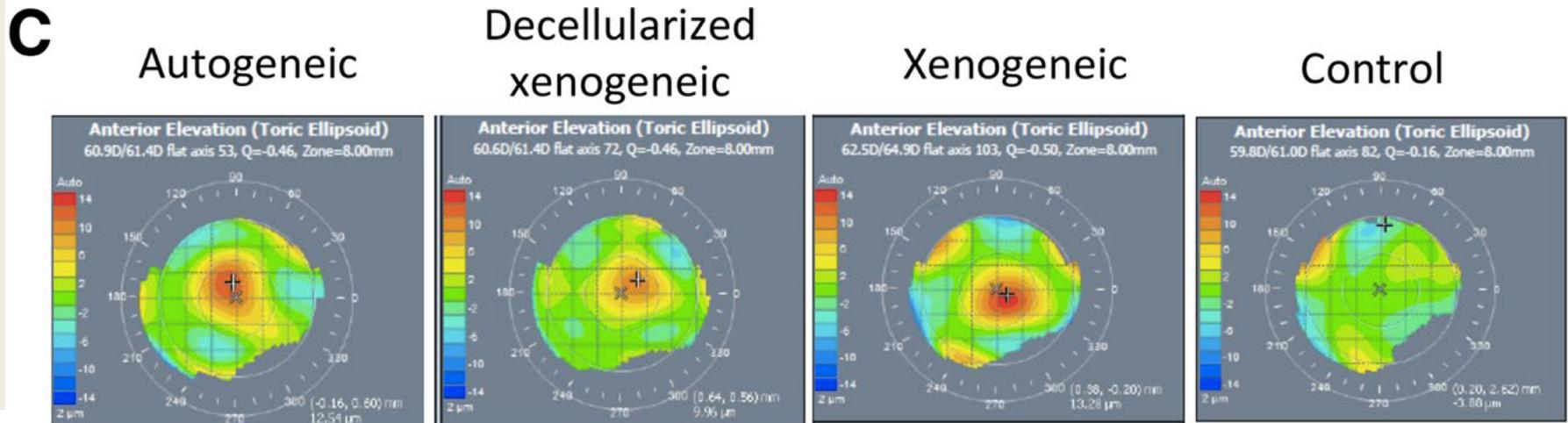
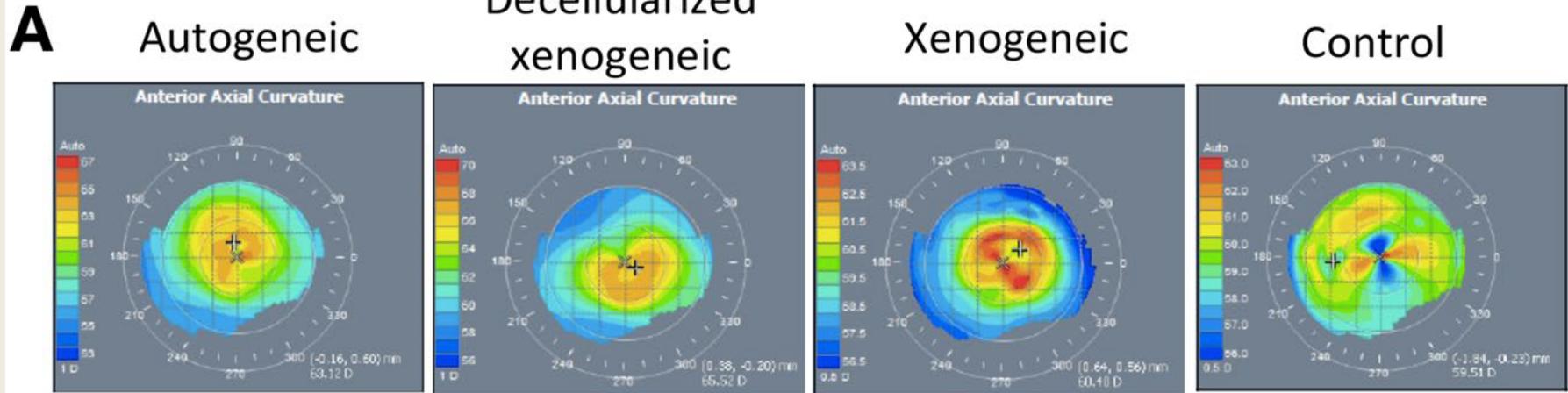
SCIENTIFIC REPORTS

SCIENTIFIC REPORTS | (2018) 8:1831 | DOI:10.1038/s41598-018-20267-7

# Trasplante de lentículo estromal



# Trasplante de lentículo estromal





# Muchas Gracias!