

49th

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European Contact Lens and
Ocular Surface Congress

EUROPEAN CONGRESS
ON MYOPIA CONTROL

2 - 3
September
2022

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Scleral Lens Fitting As a Last Step Before Corneal Transplantation in Corneal Deformities

Dr. Sait Egrilmez - TURKEY

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Speaker's name : Sait Eğrilmez

I have the following potential conflicts of interest to report:

I received travel and accommodation support from LCS Company.

The Airkone Scleral (AKS) lens, which will be mentioned in the presentation, is the product of this company.



Purpose

- To investigate the effectiveness of scleral lens fitting instead of corneal transplantation amongst the keratoplasty candidates with a relatively clear optical axis

Hypothesis

- If we can reduce unnecessary keratoplasties;
 - We can protect some patients from the risks of keratoplasty surgery,
 - We can reduce the waiting time of patients who have no choice but to undergo keratoplasty.

Cornea Duo - 2009



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Material and Methods

- Age, gender, visual acuity levels
- Corneal power and thickness analyzed with corneal tomo-topographer (Pentacam AXL, Oculus Optikgerate GmbH, Germany) were analyzed.
- Anterior segment analyzed with Solix Fullrange OCT (Optovue Inc, Fremont CA, USA)



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Material
Thickness t_c
Geometry
Diameter
Power
Cylinder
Axes

Dk 200
0.20 mm
Spheric, Toric, Asymmetric and Microvault
14,50 to 17,50 mm
From - 40.00 to + 40.00 D in 0.25 D steps
From - 0.50 to - 6.00 D in 0.25 D steps
All axes by 1°

Designs

4 areas : SAG and L-C-S peripheral areas
SAG: 21 SAGS from 3600 μm to 5600 μm by 100 μm

Limbus: - 15 to + 15 in steps of 1

Cornea: - 15 to + 15 in steps of 1

Sclera: - 15 to + 15 in steps of 1 Toricity: 0 to + 15 in steps of 1

ATD: 4 independent quadrants from - 15 to + 15 in steps of 1

Pinguecula: 2 independent microvaults grade 1, 2 or 3 in steps of 1



Airkone Scleral (AKS) Lens

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Patients

- The study included patients with corneal deformities who had been recommended keratoplasty by at least one ophthalmologist
 - 89 eyes of 57 patients,
 - 36 men, and 21 women,
 - Mean age: 36.2 ± 11.5 years (range 15 to 65 years).
- Mean follow-up was 24.3 ± 10.0 months (6.1 to 41)

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Diagnoses of
the patients

- Advanced Keratoconus 41
- Pellucid marginal degeneration 6
- Post-keratoplasty eyes 6
- Post keratotomy eyes 1
- Photorefractive keratectomy surgery 1
- Keratitis with peripheral sequela 2

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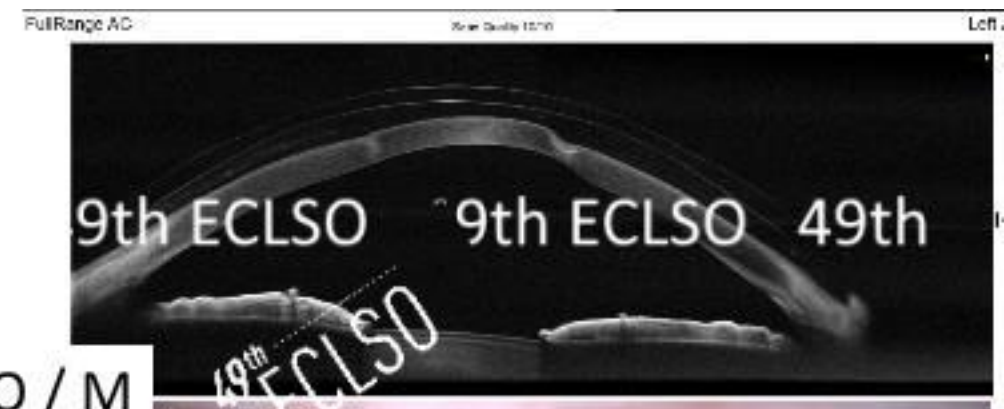
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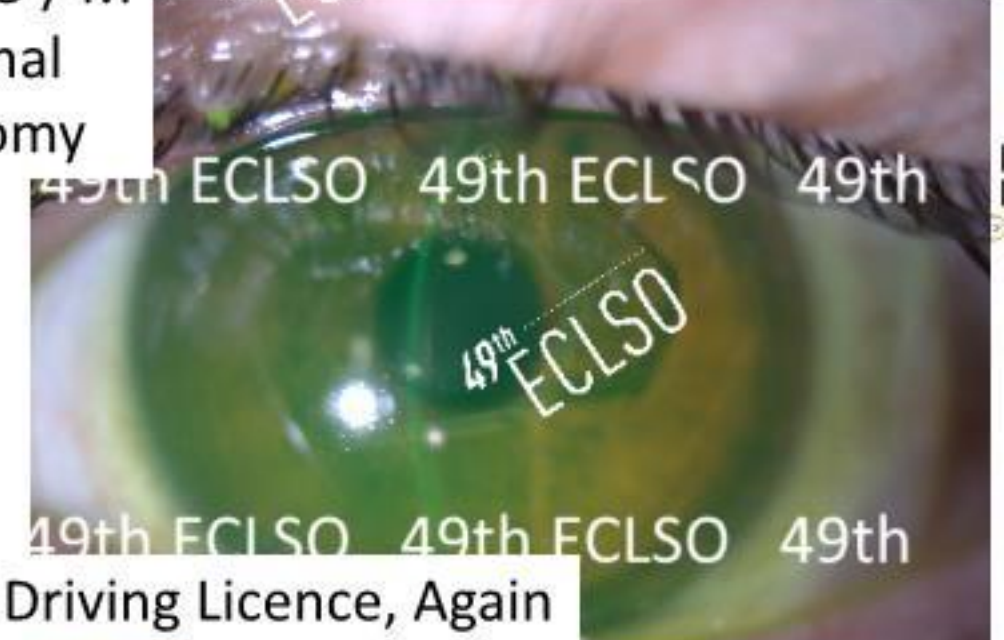
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Results

- Thickness of the thinnest point of the corneas
 - Right eyes: 412.5 ± 80.7 (198 to 596 micrometers)
 - Left eyes: 450.3 ± 76.9 (239 to 588 micrometers)
- Steep keratometric power values
 - Right eyes: 58.47 ± 10.18 diopters
 - Left eyes: 56.66 ± 9.83 diopters



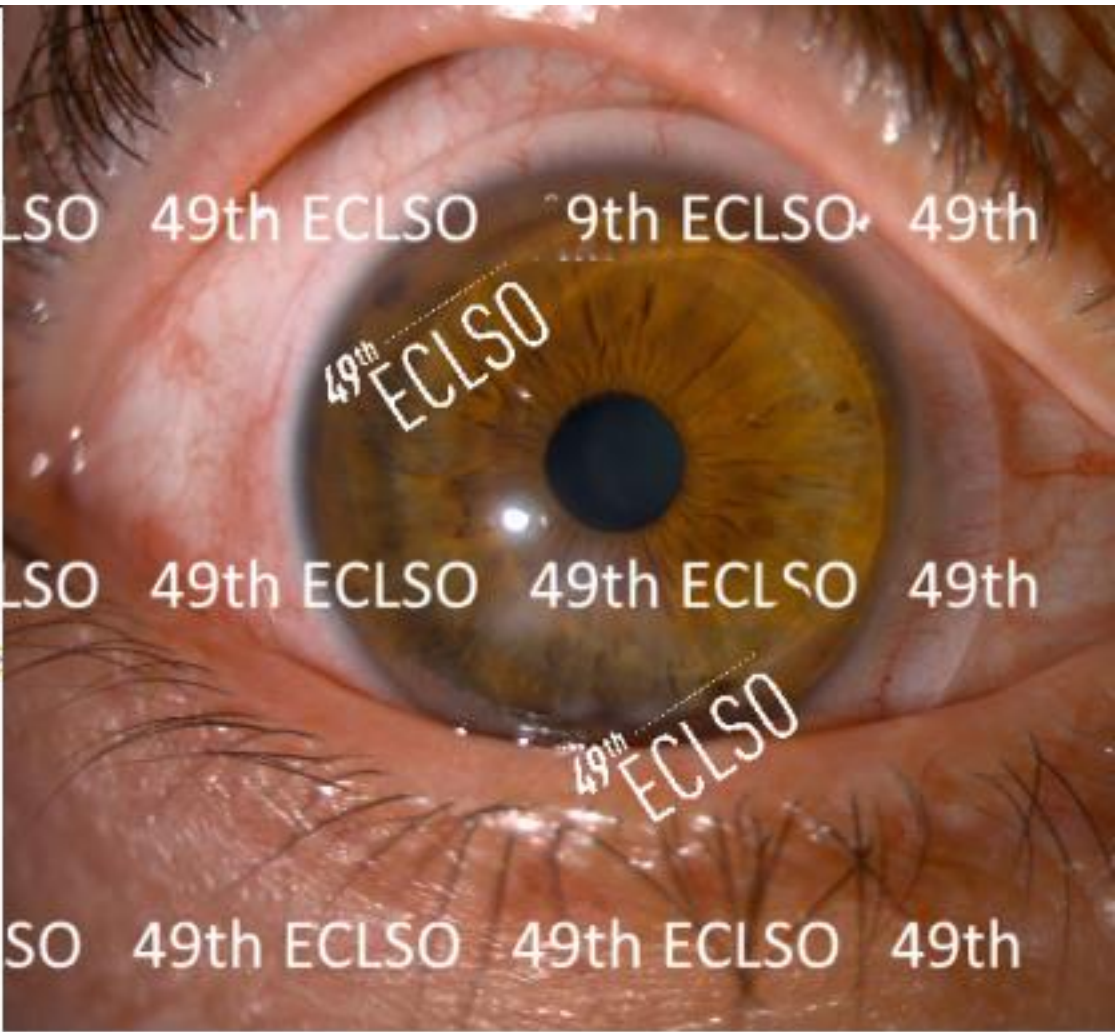
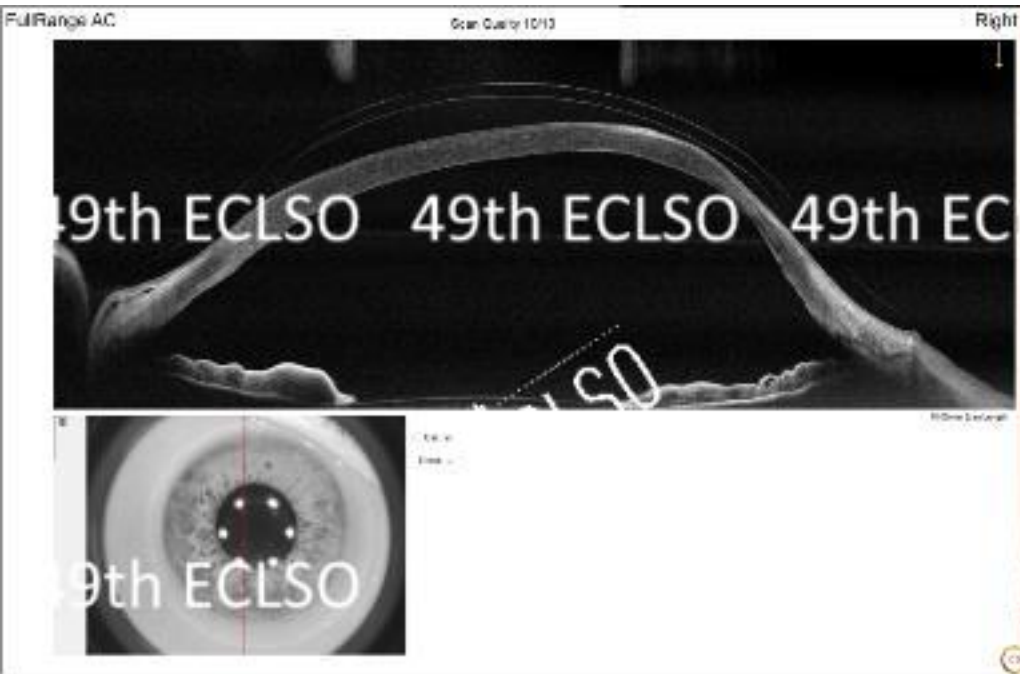
F.K. / 41 YO / M
Hexagonal
Keratotomy



Became Eligible for Turkish Driving Licence, Again

0.52 LogMAR to 0.26 LogMAR
2.6 Standard Lines Gain

1.00 LogMAR to 0.19 LogMAR
8.1 Standard Lines Gain

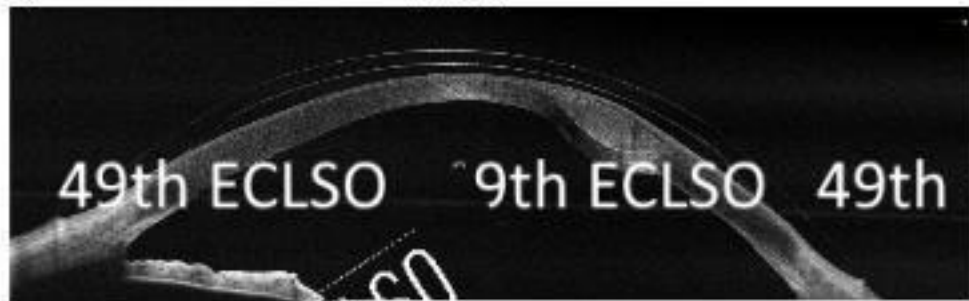


A.E / 60 YO / M

RE Pellusid

0.70 LogMAR to 0.22 LogMAR

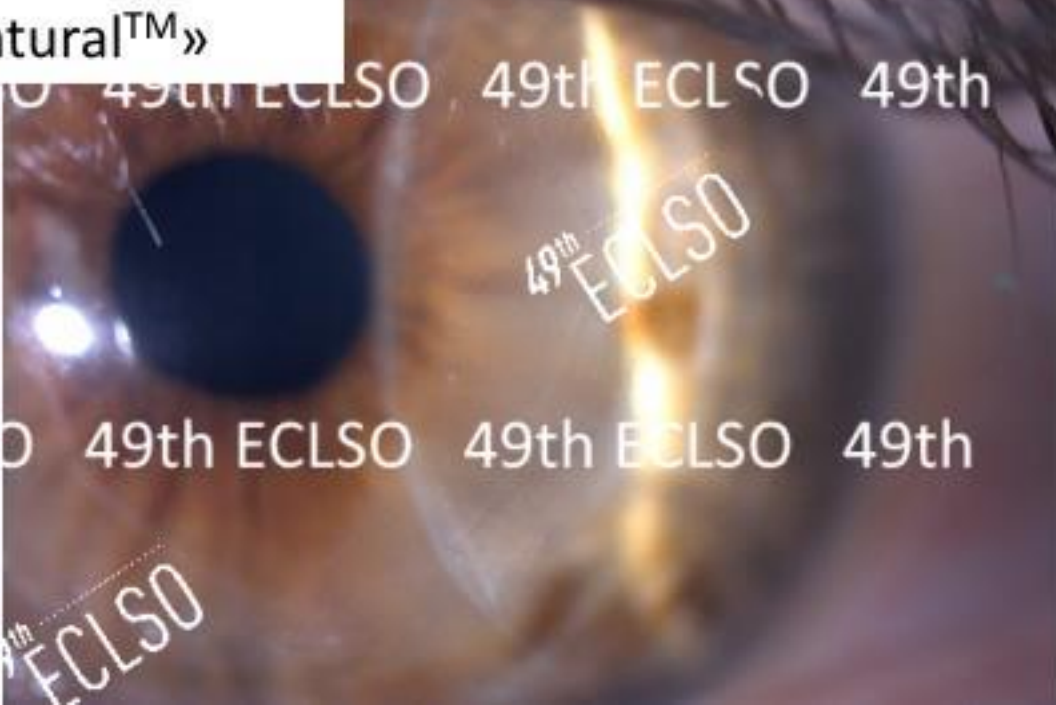
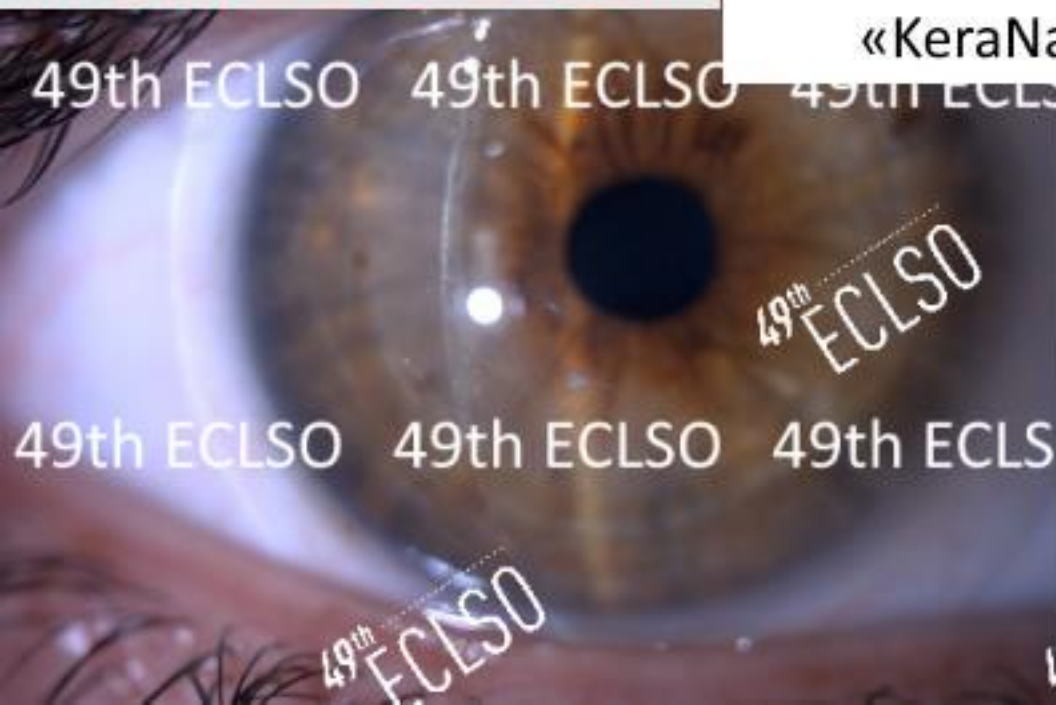
4.8 Standard Lines Gain

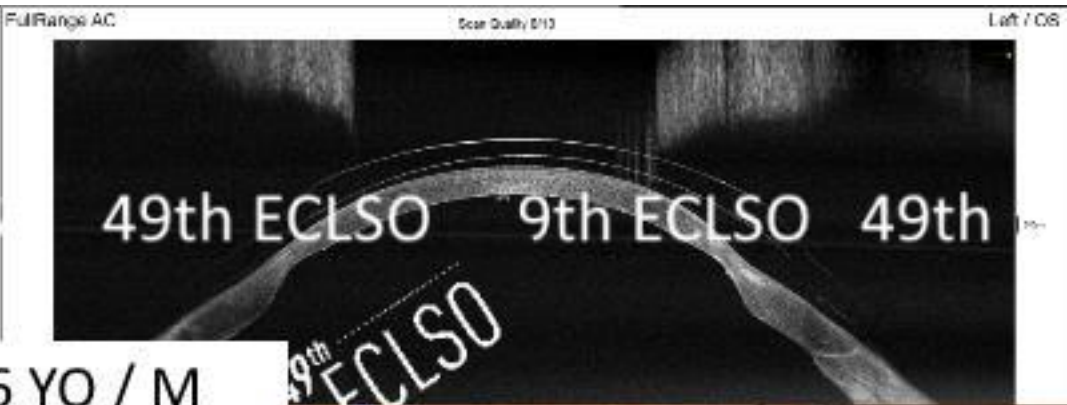
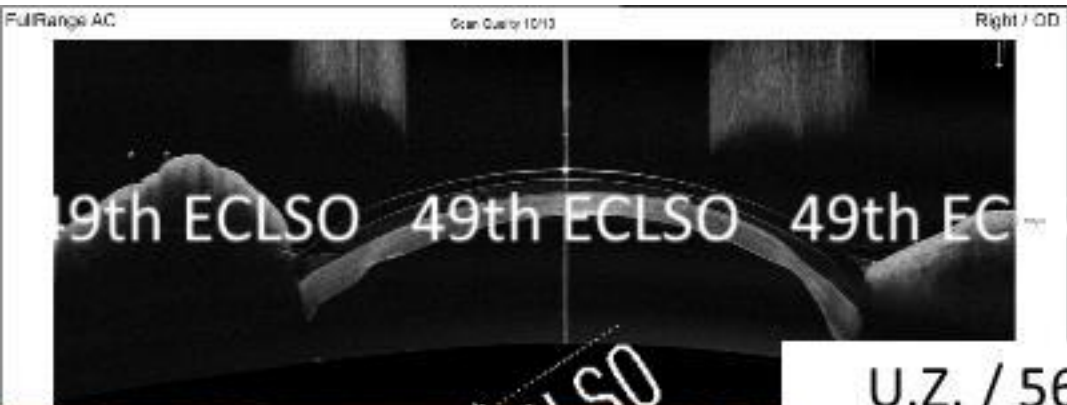


0.40 LogMAR to 0.00 LogMAR
4.0 Standard Lines Gain

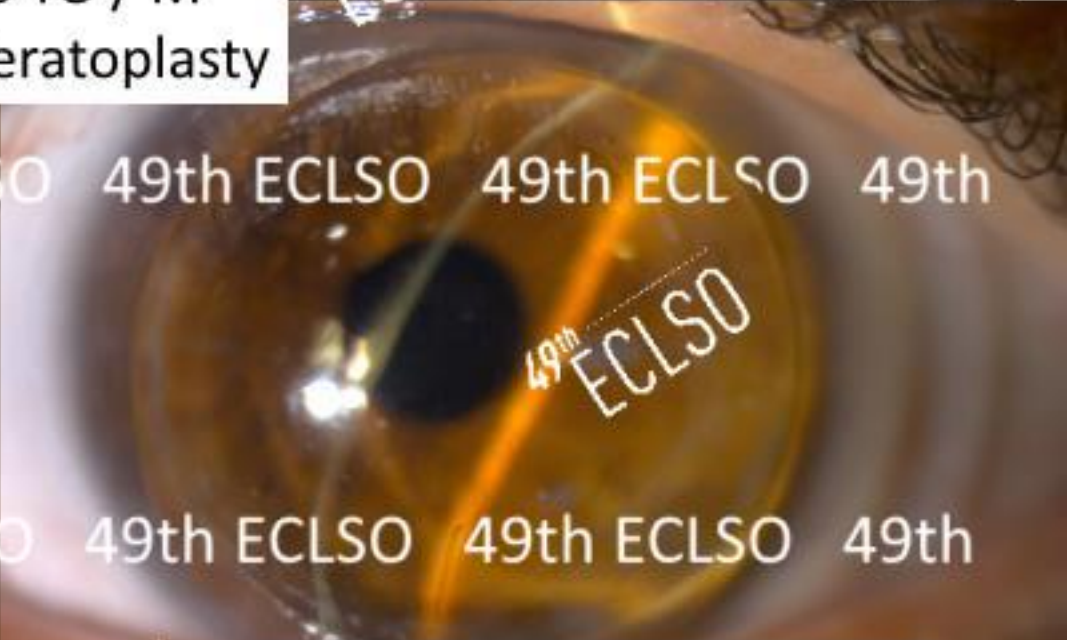
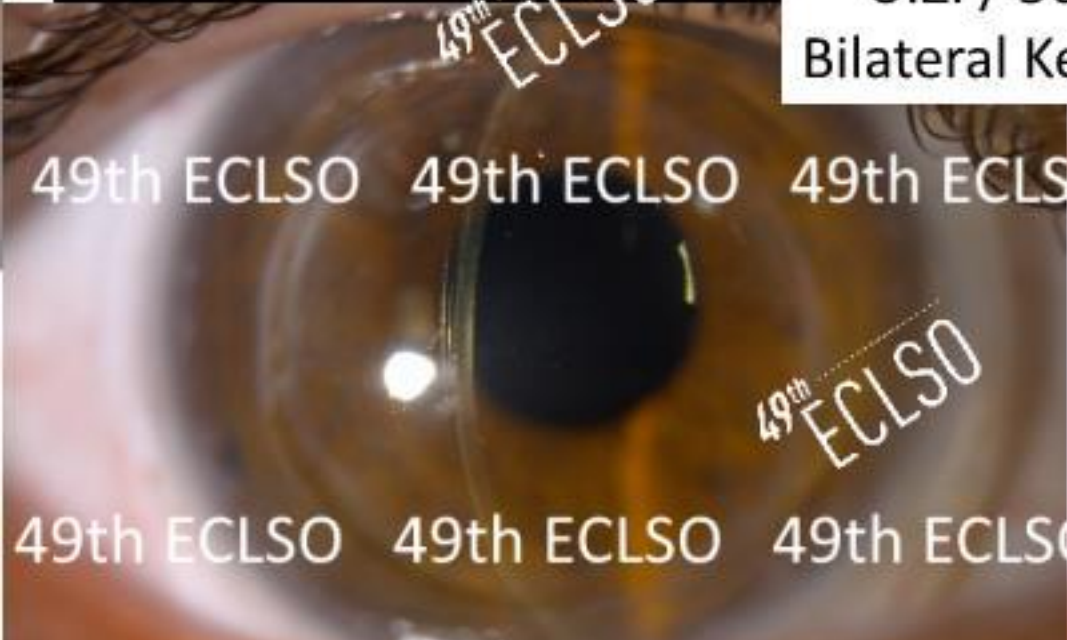
S.S. / 33 YO / M
Instromal corneal implant
«KeraNatural™»

1.30 LogMAR to 0.00 LogMAR
13 Standard Lines Gain





U.Z. / 56 YO / M
Bilateral Keratoplasty



0.60 LogMAR to 0.05 LogMAR
5.5 Standard Lines Gain

1.30 LogMAR to 0.15 LogMAR
11.5 Standard Lines Gain

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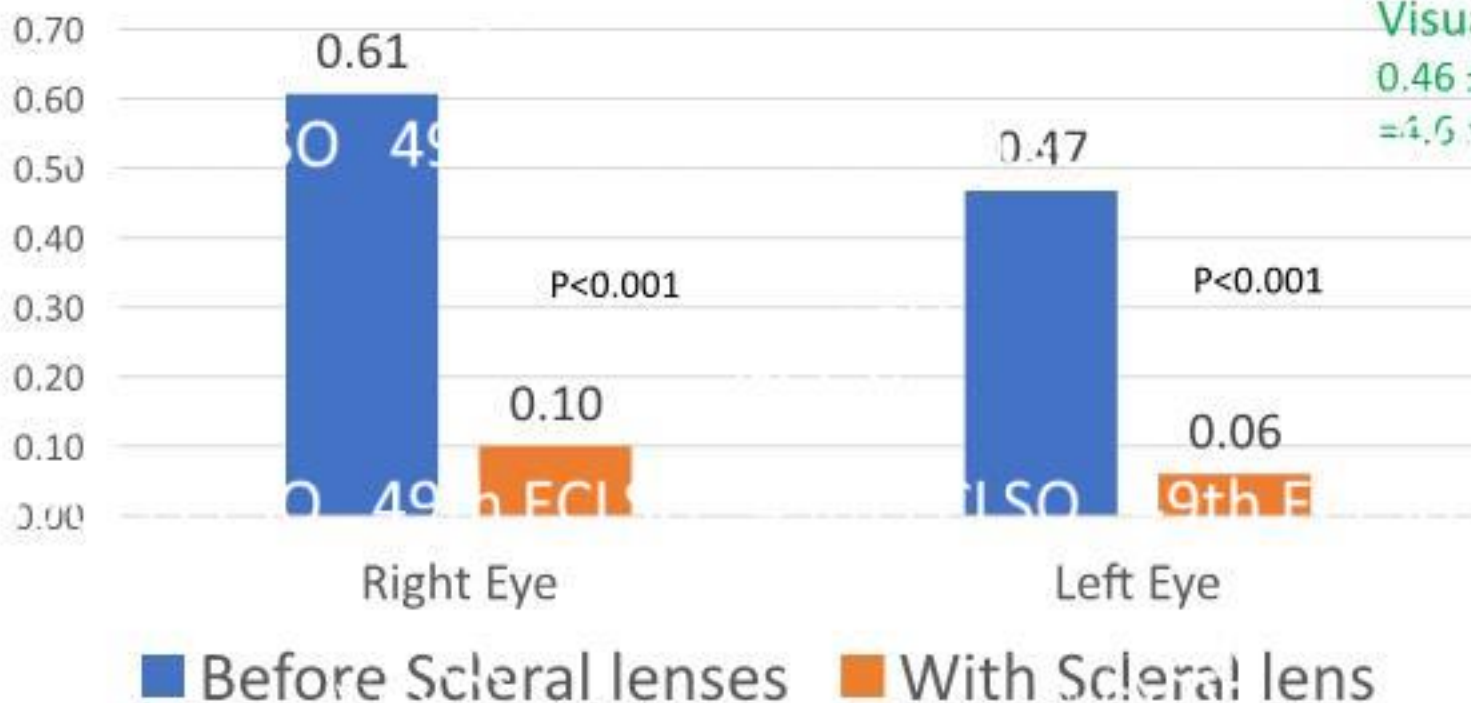
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LogMAR Visual Acuities

Visual acuity gain with Scleral Lens:
 0.46 ± 0.34 LogMAR
 ≈ 4.6 standard lines



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Results

- Successful scleral lens users: 49 of 57 (86%) scleral lens prescribed patients
- Failures (8 of 57 patients)
 - Did not fit the scleral lens by themselves 3 patients
 - Unsatisfactory visual improvement 2 patients
 - Reported economical issues 3 patients

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Study Limitations

- Only one brand of scleral lens (Airkone Scleral) was used
 - Using multiple lens brands could increase success
- Only scleral lens prescribed patients were included
 - Lens fitting attempts that have not reached the stage of writing lens prescriptions were not included

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Conclusion

- Scleral lens fitting could take the position of corneal transplantation option temporarily or permanently for ectatic cases.
- We should devote much more time to scleral lens application and spend the necessary effort before keratoplasty suggestion.