

49th

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European Contact Lens and
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ON MYOPIA CONTROL

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September
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Bruno Barbosa Ribeiro

I do not have any potential conflict of interest*

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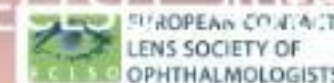
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KERATOCONUS AND VISUAL PERFORMANCE WITH DIFFERENT CONTACT LENSES

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Introduction

Keratoconus

Non-inflammatory ectatic thinning disorder of the cornea

1:2000 individuals, typically beginning in puberty

Early stages -> lens spectacles

Late stages -> contact lenses, corneal transplantation

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Purpose

To analyse the visual performance in Keratoconus patients already fitted with different contact lenses materials and designs



Materials and Methods

Retrospective cohort study (June 2019 – March 2021)

Inclusion criteria

- Adult patients with a diagnosis of Keratoconus
- Well-fitted contact lens wearers

We excluded patients who missed the complete clinical evaluation



Materials and Methods

Demographic data – age, gender, CL specifications and duration of wearing

Functional parameters

Best-corrected visual acuity (BCVA) with contact lens (BCVA-CL) and with spectacles (BCVA-S)

Contrast sensitivity under photopic (PCS) and mesopic (MCS) settings

Analysis of light scatter and impact of the tear film on dynamic optical quality (by HD Analyser[®])

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Materials and Methods

Structural parameters

Corneal tomography by OCULUS Pentacam® HR

Retinal tomographic parameters measured by Heidelberg Spectralis® Spectral-Domain

Optical Coherence Tomography

Evaluations were performed at 2 different timings: previously and after CL fitting

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Results

96 eyes of 59 patients

n=38 male (64.4%)

aged 19 to 70 years (mean±SD of 42.9 ± 12.8 years)

Contact lenses

- Rigid gas permeable CL (RGPCL) – 67 eyes
- Hybrid CL (HCL) – 17 eyes
- Silicone hydrogel/hydrogel CL (HGCL) -- 12 eyes



Results – Visual Acuity

Mean BCVA-CL was better than BCVA-S ($p < 0.001$) but similar between CL groups ($p = 0.618$)



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Rigid Gas Permeable (RGPCL) = Hybrid (HCL) = Hydrogelsilicone/Hydrogel (HGCL)

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Results – Contrast Sensitivity

Photopic CS

- Better with RGPCL ($p = 0.020$) and HCL ($p = 0.004$) versus HGCL
- No significant differences between RGPCL and HCL ($p = 0.071$)

Mesopic CS

- All groups were associated with decreased contrast sensitivity
- No significant differences between groups ($p = 0.121$)

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Results – Corneal tomography

RGPCl

Higher mean K ($p = 0.020$)

Thinner corneal thickness point ($p = 0.011$)

Higher Belin-Ambrósio Enhanced Ectasia display (BAD-D) ($p = 0.013$)

RGPCl were fitted in patients with more advanced KC

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Results - Light scattering analysis

Dynamic objective scatter index (OSI)

Significantly better with RGPCL and worse with HGCL ($p = 0.049$)

More years of CL wear, worse OSI ($r = 0.429$, $p < 0.001$)

Higher spherical equivalent, worse OSI ($r = 0.249$, $p = 0.017$)

Modulation Transfer Function (MTF)

Significantly better with RGPCL and worse with HGCL ($p = 0.005$)

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Conclusions

- BCVA is significantly better with Contact Lenses vs. Spectacles
- Photopic CS is significantly better with RGPCL and HCL
- OSI is significantly better with RGPCL

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Conclusions

- Contact Lens prescription in Keratoconus can be a big challenge
- Despite significant variation in quality of vision with different types of CL
- Advanced Keratoconus is compatible with good quality of vision

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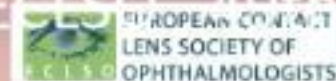
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Thank you for your attention!