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Visual, refractive and topographic outcomes of progressive thickness intrastromal corneal ring segments for keratoconic eyes

By Coskunseven, E (Coskunseven, Efehan) [1]; Ambrósio, R (Ambrosio, Renato, Jr.) [2]; Smorádková, A (Smoradkova, Adriana) [3]; León, FS (Sanchez Leon, Francisco) [4]; Sahin, O (Sahin, Onurcan) [1]; Kavadarli, I (Kavadarli, Isilay) [1]; Jankov, MR (Jankov, Mirko R., II) [5]

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Source INTERNATIONAL OPHTHALMOLOGY

View Journal Impact

Volume: 40 Issue: 11 Page: 2835-2844
DOI: 10.1007/s10792-020-01467-5

Published NOV 2020

Early Access JUN 2020

Indexed 2020-06-25

Document Type Article

Abstract
Purpose To evaluate one-year visual, refractive, and topographic outcomes of 58 eyes of 53 keratoconus patients who underwent surgery with a progressive thickness intrastromal corneal ring segment (ICRS). Methods This multi-center, retrospective, observational study evaluates the one-year effects of progressive thickness ICRS implanted in keratoconus patients meeting the inclusion criteria. One or two progressive ICRS were implanted in the selected eyes after creating an intrastromal tunnel with a femtosecond laser. Pre- and postoperative uncorrected distance visual acuity, best-corrected distance visual acuity, manifest refraction (both spherical equivalent and cylindrical refractions), corneal astigmatism, maximum keratometry, corneal thickness, and corneal topography measurements and indices were evaluated. Results In this retrospective case series, 58 eyes of 53 keratoconus patients were included with a follow-up of 12 months. The mean age was 30.89 +/- 11.90 years. There were improvements postoperatively in mean values of visual acuities, both uncorrected from 0.71 (preoperatively) to 0.28 (log MAR), and best-corrected from 0.28 to 0.10 (log MAR), mean cylindrical refraction from - 2.35 +/- 1.51 to - 4.15 +/- 2.23 D, and mean spherical equivalent from - 2.10 +/- 2.25 to - 4.64 +/- 3.2 D. There was also a reduction in maximal keratometry from 54.21 D preoperatively to 50.93 D postoperatively. Conclusion The implantation of the progressive thickness ICRS is an effective and safe method to improve the vision of keratoconic eyes. Corneal stability was maintained at the 12-month mark.

Keywords
Author Keywords: Intrastromal corneal ring segments; Keratoconus; Progressive thickness intrastromal corneal ring segments; ICRS
Keywords Plus: IMPLANTATION; INTACS; PERFORMANCE

Author Information
Corresponding Address: Coskunseven, Efehan (corresponding author)

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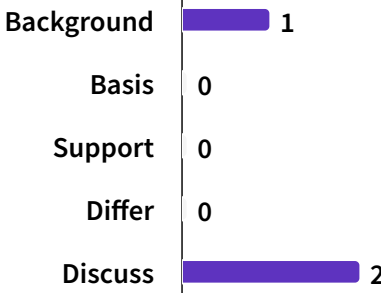
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Categories/
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Research Areas: Ophthalmology

Citation 1 Clinical & Life , 1.36 , 1.36.141 Corneal and Lens
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Journal information

INTERNATIONAL OPHTHALMOLOGY

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ISSN 0165-5701

eISSN 1573-2630

Current Publisher SPRINGER, VAN GODEWIJCKSTRAAT 30, 3311 GZ DORDRECHT, NETHERLANDS

Research Areas Ophthalmology

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1.4

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