

# COMPARATIVE RESULTS BETWEEN “EPI-OFF” ACCELERATED AND “EPI-OFF” STANDARD CORNEAL COLLAGEN CROSSLINKING-UVA IN PROGRESSIVE KERATOCONUS- 7 YEARS OF FOLLOW-UP

Cristina Ariadna Nicula<sup>1,2</sup>, Anca Maria Rednik<sup>3</sup>, Ariadna Patricia Nicula<sup>4</sup>, Adriana Elena Bulboacă<sup>5</sup>, Dorin Nicula<sup>2</sup>, Karin Ursula Horvath<sup>6</sup>

<sup>1</sup>*Department of Ophthalmology, Medicine and Pharmacy University „Iuliu Hațieganu”, Cluj Napoca*

<sup>2</sup>*Oculens Clinic, Cluj-Napoca, Romania*

<sup>3</sup>*Eye County Hospital, Department of Ophthalmology, Cluj-Napoca, Romania*

<sup>4</sup>*Eye County Hospital, Department of Ophthalmology, Arad, Romania*

<sup>5</sup>*Department of Pathophysiology, Medicine and Pharmacy University „Iuliu Hațieganu”, Cluj Napoca, Romania*

<sup>6</sup>*Department of Ophthalmology, Medicine and Pharmacy Science and Technology University, “George Emil Palade”, Târgu Mureș, Romania*

**Purpose:** The purpose of the present study was to assess the long-term efficiency and safety of the “epi-off” accelerated CXL (9 mW/cm<sup>2</sup> for 10 minutes) in comparison to the standard “epi-off” CXL (3 mW/cm<sup>2</sup> for 30 minutes) in terms of topographical and keratometric parameters, refractive data and visual outcomes at 7 years of follow-up, in progressive keratoconus.

**Material and method.** A retrospective and comparative study was performed. A total of 183 eyes from 183 patients with documented progressive KCN were included in the study. The patients were divided in two groups: 93 eyes from 93 patients underwent “epi-off” standard cross-linking technique (3 mW/cm<sup>2</sup> for 30 minutes) (S-CXL group) and 90 eyes from 90 patients underwent accelerated “epi-off” corneal CXL technique (9 mW/cm<sup>2</sup> for 10 minutes) (A-CXL group).

**Results:** Improvements in uncorrected distance visual acuity (UDVA) were statistically significant compared to baseline values in both groups at each time-point visit. (p=0.0421 at 1 year, p=0.0411 at 7 years for A-CXL and p=0.0375 at 1 year, p=0.0389 at 7 years for S-CXL). At 7 years there was a statistically significant increase in CDVA (p=0.039 in the A-CXL group and p=0.0343 in the S-CXL group at 7 years). Statistically significant reduction was noticed in Ksteep (p=0.0411 in A-CXL group and p=0.0224 in S-CXL group), Kflat (p=0.0198 in A-CXL group and p=0.008 in S-CXL group), K mean (p=0.0106 in A-CXL group and p=0.0193 in S-CXL group) and Kmax (p=0.0413 in A-CXL group and p=0.054 in S-CXL group) at 7 years, compared to baseline values, in both groups, but without any statistically difference between the two procedures, at all time-point visits (p>0.05).

**Conclusions:** The long-term outcomes of “epi-off” accelerated corneal collagen crosslinking-UVA (9 mW/cm<sup>2</sup> for 10 minutes) are similar to standard “epi-off” corneal collagen crosslinking procedure in the treatment of progressive keratoconus.