

# Iontophoresis-assisted corneal cross-linking method: potential therapy for keratoconus

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# ISTANBUL

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# ECLSO 2024

## 50th ECLSO Congress

### Delegate Program

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Istanbul, Turkey



EUROPEAN CONTACT LENS SOCIETY  
OF OPHTHALMOLOGISTS (ECLSO)

### 17 - Iontophoresis-assisted corneal cross-linking method - potential therapy for keratoconus

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**Aim:** To present procedure of iontophoresis-assisted corneal cross-linking.

**Patients and methods:** The paper will present 3 male patients (4 eyes in total) with an advanced stage of keratoconus. During the examination and recording of the topography with the Pentacam device, diagnoses of keratoconus, stage 3 (4) Belin ABCD, with corneas thinner than 400  $\mu\text{m}$ , were made. An iontophoresis-assisted cross-linking procedure was performed using hypotonic 0.1% riboflavin, leaving the corneal epithelium intact. After a 5-minute iontophoresis, the Dresden cross-linking protocol was continued with the resulting synergistic effect of ultraviolet A light (370 nm) and vitamin B2 using the CSO Vega 3mW device.

**Results:** Postoperative recovery is faster than with standard CXL. During the three-month follow-up, the uncorrected visual acuity of the treated eye improved postoperatively, while with the help of Rose K2 contact lenses, better visual acuity was achieved than preoperatively, thus rehabilitating the patient into everyday life. At each control, the topography of the cornea and its Kmax values were monitored, whose stabilization is expected after 12-24 months.

**Conclusion:** Corneal cross-linking has become a standard therapy for keratoconus progression due to its biomechanical feature. The method of removing the epithelium proved to be effective due to easier penetration of riboflavin into the corneal stroma. With thin corneas, this option is unfortunately not the method of choice, and iontophoresis with its properties proved to be a possible solution for riboflavin to enter the depth of the cornea, without the need to remove the epithelium. Also, side effects related to pain, photophobia and infections are reduced with this procedure. I-CXL has proven to be a good method of choice when standard methods are not possible.

### 18 - Case report: Herpetic keratitis after cross-linking of corneal collagen with riboflavin and ultraviolet-A for keratoconus in a healthy 20-year-old patient

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**Aim:** In this case report, we present patient who developed clinically diagnosed herpetic keratitis in the early postoperative period after CXL.

**Patient and methods:** A 20-year-old man referred to our Clinic because of bilateral keratoconus, stage III right eye and stage I-II left eye. There was no previous intraocular or corneal surgery, herpetic keratitis, autoimmune disease, or systemic connective tissue disease. Central pachymetry was 422  $\mu\text{m}$  in the right eye (OD) and 468  $\mu\text{m}$  in the left eye (OS). Topography showed inferior bilateral thinning. The recommended treatment was CXL with riboflavin and UV-A to stabilize the cornea. The patient underwent a thorough discussion of the risks and benefits of CXL with the surgeon and signed a written informed consent in accordance with institutional guidelines based on the Declaration of Helsinki.

**Results:** On the first day, the postoperative findings were normal. On the fifth postoperative day, slow re-epithelialization was observed and the patient had a central dendritic epithelial defect. Local therapy included acyclovir in the form of ointment, continued antibiotic therapy, and oral therapy with acyclovir and vitamin B. Several subconjunctival injections Dexamethasone were applied to the patient. Topical corticosteroid drops were continued after healing of the epithelial defect. All medications were gradually decreased over the following weeks. Three months later, a central Vogt's striae was found, the rest of the ophthalmological status was normal. In therapy, maintenance oral therapy 1 tablet per day and corticosteroid 1x and artificial tears without preservatives 5-6x. With regard to the best visual acuity with the correction of glasses, 0,2-0,3 we are planning to prescribe RK2 contact lenses.

**Conclusion:** Herpetic keratitis can be induced by CXL, even in cases with no history of herpetic eye disease.