Orthokeratology and Riboflavin-UVA Corneal Collagen Cross-Linking in Keratoconus

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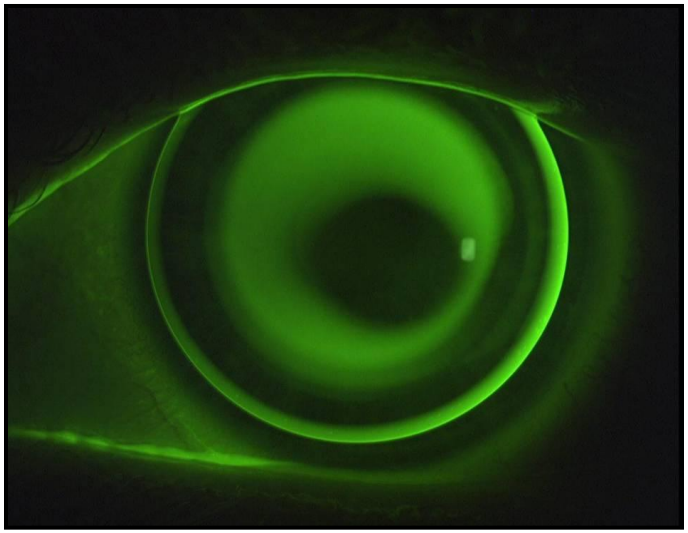
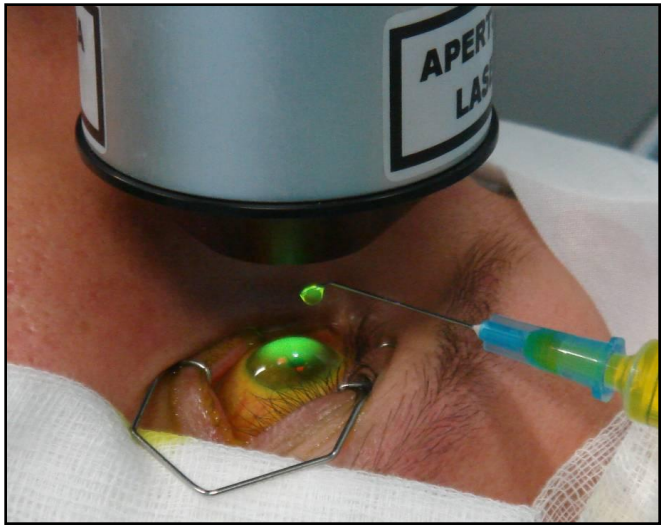
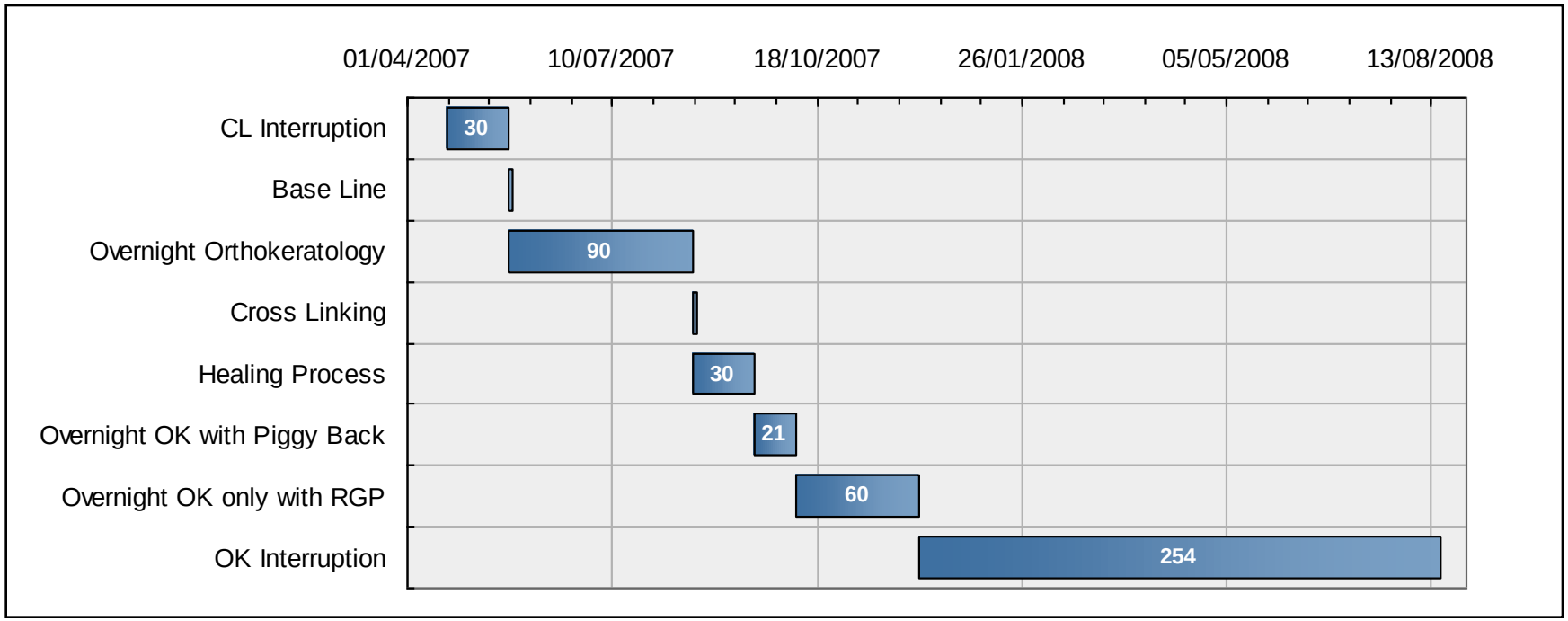
PURPOSE AND METHODS





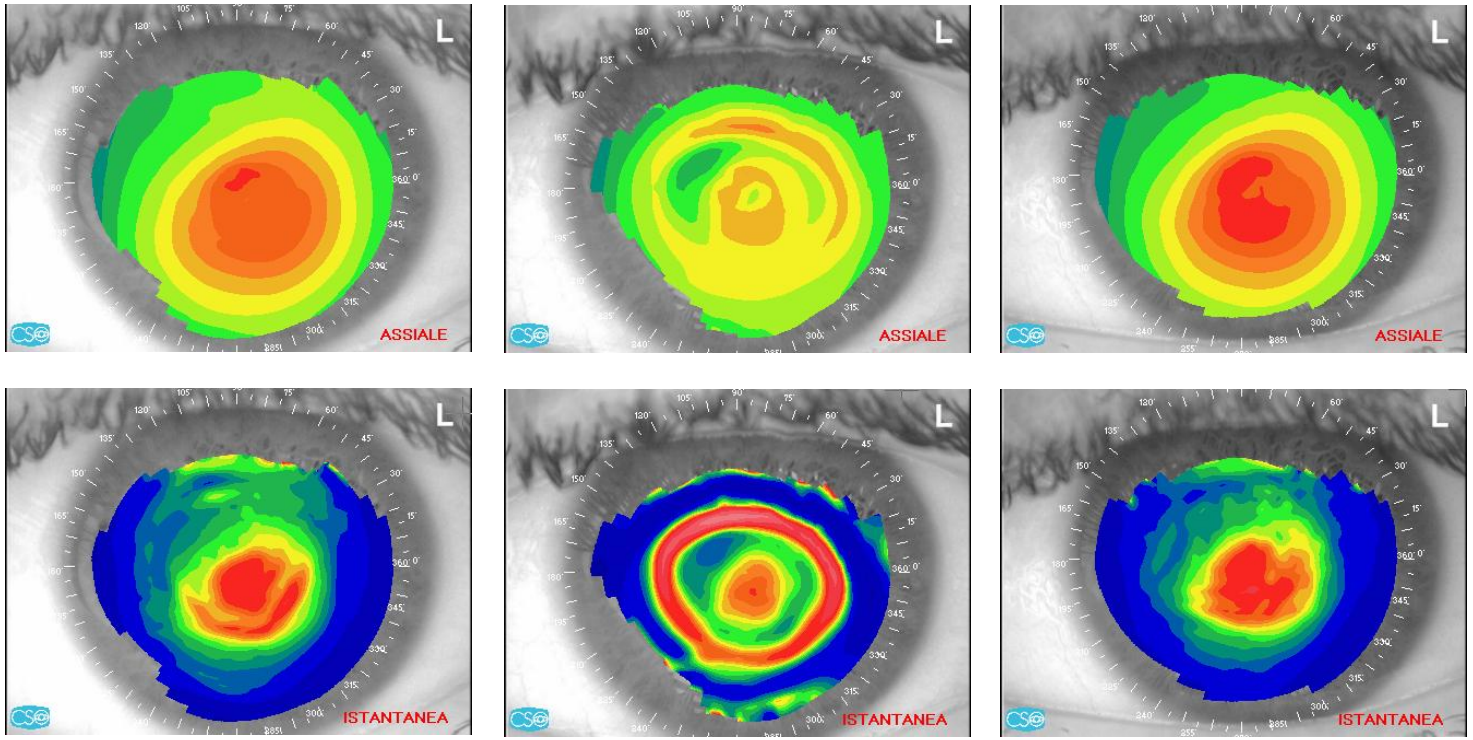
- A prospective study was designed to answer two questions: Is it possible to improve the quality of vision of keratoconus patients with overnight orthokeratology? Is it possible to stabilize the effect of corneal reshaping through collagen cross-linking?
- We developed a molding reverse geometry contact lens, specifically designed to be fitted in keratoconus. The lens was in siloxy-fluoro-methacrylate Dk 100 gas-permeable material (Boston XO, hexafocon-A).
- We selected a pilot group of 5 eyes from 4 patients (3 females, 1 male); aged from 22 to 43 years; with diagnosis of keratoconus based on corneal topography and clinical signs; suffering from visual symptoms; intolerant to conventional CL; pachimetry > 400 μm.

TIMELINE OF THE STUDY



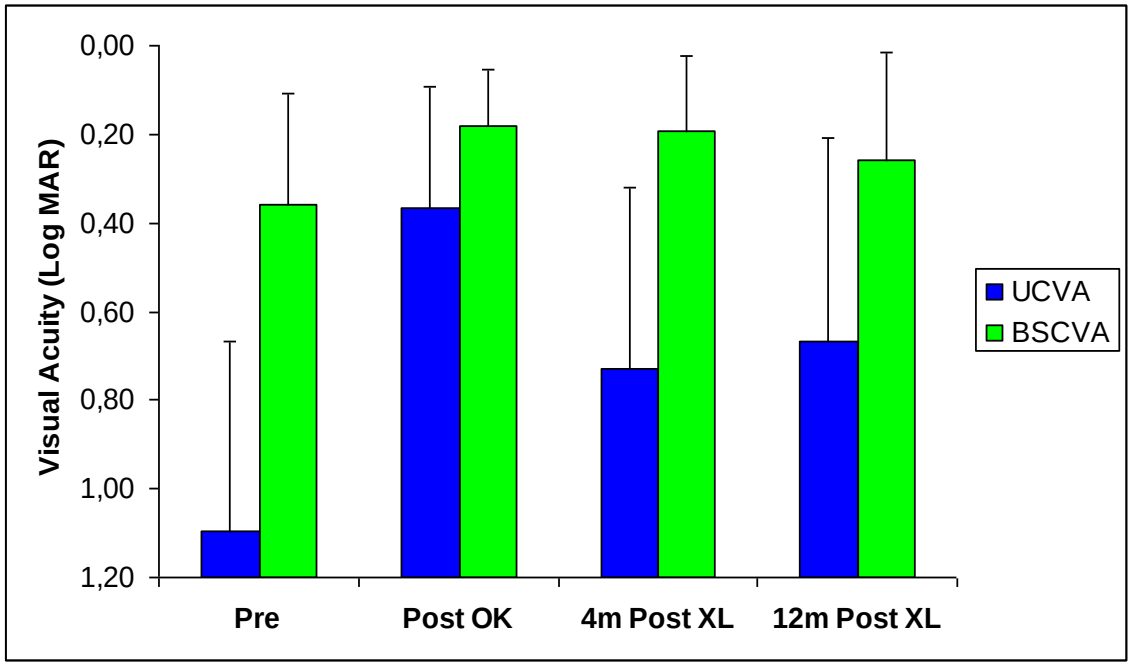
- Patients underwent to overnight orthokeratology (OK) for three months; then collagen cross-linking was performed with riboflavin + UVA following the Siena group protocol.
- After one month for healing process, overnight orthokeratology was resumed with piggy-back (RGP + silicon-hydrogel CL) for three weeks, and only with RGP lenses for two further months; then the use of any kind of contact lenses was interrupted.
- Data were collected at base line, 3 months after OK, four months after cross-linking (one month after OK interruption), and one year after cross-linking.

RESULTS



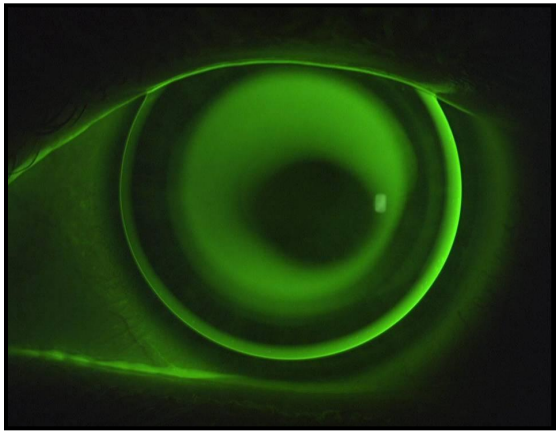
- In all the cases, corneal topography showed an improvement in corneal shape after overnight orthokeratology, with a significant reduction of corneal aberration.
- One month after ortho-k interruption, corneal topography and corneal wave-front error returned at baseline level and remain the same one year after cross-linking.

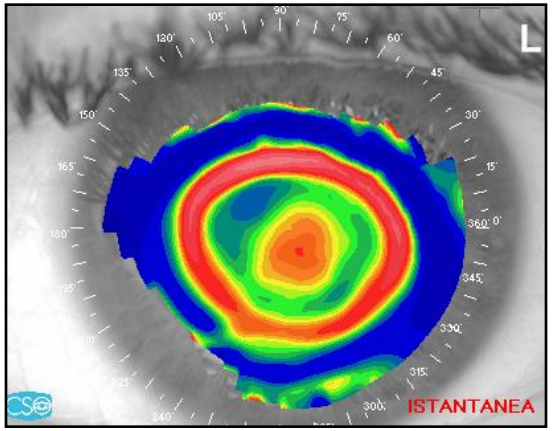
RESULTS

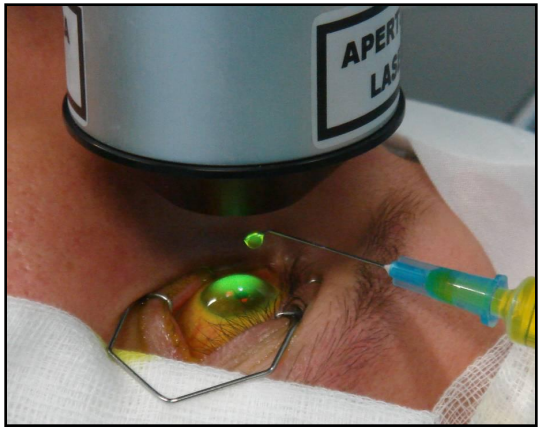


- UCVA and BSCVA improved after orthokeratology; this improvement was reduced one month after ortho-k CL interruption, but did not return to baseline level.
- No adverse reactions were observed during the three months of ortho-k.
- After cross-linking, one eye showed an epithelial defect with asymptomatic iritis reaction. This complication resolved after one month following corticosteroid therapy, and the treatment continued
- No relevant signs were observed 4 months after cross-linking and after one year.

CONCLUSIONS







- Overnight orthokeratology may reshape the keratoconic cornea without significant adverse reactions.
- Riboflavin-UVA corneal collagen cross-linking is quite safe, but it is not able to stabilize the ortho-k molding effect.
- Nevertheless, uncorrected visual acuity and best spectacle corrected visual acuity did not go back to the base line level.
- At the present time, we are not able to explain this discrepancy.