

عنوان مقاله:

Outcomes of the Q value-based nomogram in managing pediatric versus adult keratoconus: a prospective interventional study

محل انتشار:

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خلاصه مقاله:

**Abstract Background:** Keratoconus (KCN) is an ectatic disorder of the cornea characterized by stromal weakness and apical protrusion of the cornea, and is associated with a gradual and painless reduction in visual acuity. KCN in pediatric patients has certain important characteristics, such as a progressive and aggressive nature. We aimed to analyze the visual, refractive, and topographic outcomes of implanting a single ۲۱۰° arc-length Keraring segment according to a novel, objective, Q value-based nomogram (Q-N) for the treatment of pediatric versus adult KCN. **Methods:** This prospective, multicenter, non-randomized, open-label trial included ۴۷ eyes of ۴۷ patients who were allocated to one of two groups. The adult group included ۳۳ eyes of patients greater than or equal to ۱۸ years of age, whereas the pediatric group included ۱۴ eyes of patients aged ۱۴ - ۱۷ years. All patients underwent femtosecond laser-assisted implantation of a single ۲۱۰° arc-length Keraring segment according to the Q-N and were followed up for ۶ months. All eyes underwent visual acuity measurement, cycloplegic refraction, and corneal topography at baseline and ۶ months after surgery. **Results:** The study groups were comparable in terms of sex proportions and KCN grades (both  $P > .05$ ). The adult group exhibited significant postoperative improvements in mean uncorrected distance visual acuity (UDVA), corrected distance visual acuity (CDVA), sphere, cylinder, spherical equivalent (SE), and Kmax (all  $P < .001$ ) with a mean change of  $-0.56$  logarithm of the minimal angle of resolution (logMAR),  $-0.40$  logMAR, ۳.۰۷ diopters (D), ۰.۷۰ D, ۳.۴۲ D, and  $-5.26$  D, respectively. The pediatric group exhibited significant postoperative improvements in mean UDVA, CDVA, sphere, SE, and Kmax (all  $P < .05$ ) with a mean change of  $-0.62$  logMAR,  $-0.34$  logMAR, ۳.۱۸ D, ۳.۶۷ D, and  $-5.37$  D, respectively. There were no significant differences between the groups in terms of the mean change in visual, refractive, and topographic variables (all  $P > .05$ ). No postoperative complications were observed in either group. **Conclusions:** Use of the objective Q-N was efficient in the treatment of pediatric KCN, with postoperative improvements in the mean visual, refractive, and topographic parameters, comparable to outcomes in adult keratoconus. Q-N achieved good corneal remodeling with subsequent improvements in visual, refractive, and topographic outcomes in both adult and pediatric patients with keratoconus. To verify our preliminary findings, we recommend further multicenter ... randomized clinical trials using the Q-N

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