Keratoconus patients wearing flat fitting RGP contact lenses at higher risk of corneal scarring

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in Washington DC

KERATOCONUS patients who wear rigid gas permeable lenses may be at less risk of corneal scarring if they use apical clearance rather than flat fitting lenses, according to Karla Zadnik OD PhD, College of Optometry, Ohio State University.

Dr Zadnik presented findings from the Collaborative Longitudinal Evaluation of Keratoconus (CLEK) Study at World Cornea Congress VI. The study’s findings indicated that corneal scarring is significantly associated with both disease severity and flat-fitting rigid contact lenses, she said.

The CLEK Study is a multicentre eight-year observational study of keratoconus involving 1200 patients enrolled in US clinics during 1995-1996. All of the patients had keratoconus defined by strict criteria, not limited to topographic findings only, and were free of ocular co-morbidities, Dr Zadnik explained, adding: "We wanted to chart the natural history of keratoconus as what we’ve tried to do is come up with a study that looked at a large cohort of patients in a rigorous way.”

Increased prevalence of scarring

She noted that about three-fourths of patients used conventional rigid gas permeable lenses, while two-thirds also used glasses. Some four percent of participants used no visual correction, eight percent wore one rigid contact lens, and the remainder used a range of either soft contact lenses or piggy backs.

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Moreover, while steeper corneal curvature increased the risk of corneal scarring by 29% per dioptre of increased curvature, the association of flat-fitting rigid contact lenses and corneal scarring at baseline persisted even when that was taken into account.

"We found that there was a 4.5-fold increased risk of scarring associated with apical fitting contact lenses and that relationship persisted even if we controlled for how steep their corneas were.”

Despite the different risks of scarring, there was no difference in self-reported contact lens comfort between patients fitted with apical touch vs. apical clearance. About three-fourths of patients said their lenses were pretty comfortable, while 11% said they were uncomfortable and 16% said they were comfortable in one eye and not the other.

Quality of life worse than in AMD patients

Another finding of the CLEK Study was that vision-related quality of life changed over time to a greater degree than the measurable visual function would indicate.

Dr Zadnik and her associates administered the National Eye Institute Visual Function Questionnaire (NEI-VFQ) to 1166 CLEK study patients for seven consecutive years to examine the relationship between changes in clinical and demographic variables and changes in their NEI-VFQ scores.

The study showed that keratoconus patients with a visual acuity 20/40 or better at baseline reported a vision-related quality of life that was comparable to those with more clinically severe age-related macular degeneration (AMD). Not surprisingly, the ocular pain scores of the CLEK patients were worse than those of patients with category 3 and 4 AMD.

There was a statistically significant association between lower NEI-VFQ scores and worsening in best-corrected visual acuity and increasing corneal curvature.

Patients with a decrease in their visual acuity tended to have a concomitant and statistically significant decrease in their NEI-VFQ scores for dependency, driving, mental health, and near activities. Those with an increase in corneal curvature had a significant decline in their scores for dependency, mental health, ocular pain and role difficulties.

However, the study also indicated that patients with more advanced keratoconus learned to live with it over time, while those with less advanced disease seemed more acutely sensitive to the changes in the visual quality they experienced. That is, patients reporting lower VFQ scores at baseline reported, on average, an improvement in quality of life over time, while those reporting higher scores at baseline reported a decrease.

"There is preliminary evidence that people with keratoconus who have impaired vision-related quality of life accommodate their disease. However, it is clear that progression of disease as measured by changes in visual acuity and corneal curvature results in continued decline in vision-related quality of life.”

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