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Editorial OMICS International

Scleral Lenses and Irregular Corneas: Patient versus Practitioner Goals

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Editorial

For more than 25 years, my clinical care for the most part has involved providing vision care for individuals with Keratoconus and other types of irregular cornea. What I have come to appreciate is that what the patient seeks to achieve is often very different from what we as eye care providers are looking to accomplish.

First and foremost, individuals who have learned that they suffer from some sort of corneal irregularity that has begun to interfere with their vision, are simply seeking to address that very issue, their vision. Their other concern is that they are not "going to go blind" from the condition. They don't think about how the selection and application of a vision care correction might adversely affect their future ocular health.

Conversely, we as practitioners should have as our primary goal ensuring that whatever modality and treatment course we lay out, in no way contributes to, or fails to, lessen the potential for future ocular compromise. To me that means counseling every patient diagnosed with Keratoconus with a cornea of sufficient thickness and free of scarring on the potential benefits of corneal cross linking. Secondly it requires that the lens modality I select does not contribute to the likelihood for future corneal scarring, nor does it create excessive corneal edema or allow for the potential for corneal compromise secondary to entrapped cellular debris as would be associated with excessive tear stasis.

Although to date there is no controlled clinical trial that has proven the association between contact lens bearing and corneal scarring, the association is well established. However I have seen countless Keratoconus patients with moderate to severe central scarring in the absence of any prior contact lens wear, reinforcing the notion that lens wear is not a necessary precursor to corneal scarring. I also know that the often elusive goal of obtaining central clearance is unwarranted. I have seen hundreds of patients wearing corneal gas permeable lenses with mild central touch who have not developed central scarring over decades of lens wear. This is supported by research that suggest that lens induced corneal scarring is always preceded by lens induced epithelial compromise as evidenced by fluorescein staining. However with the advent of scleral lenses which clearly avoid the issue of central touch, one might ask why I do not switch exclusively to fitting 15 mm or larger diameter lenses able to provide literally hundreds of microns of central clearance.

Despite their advantages, scleral lenses unquestionably reduce oxygen transmissibility owing to their far greater lens thickness as compared to corneal gas permeable lenses, and the low oxygen permeability of tears. Research has shown that given a lens material with a Dk of 100, and lens center thickness of even 250 microns, that for a 150 micron thick tear layer, the resultant oxygen transmissibility would be below even the established minimum to avoid corneal edema for daily wear. I therefore remain loyal to the utilization of corneal gas permeable lenses except in cases where due to advanced corneal irregularity and/or unavoidable lens de-centration, I find myself unable to achieve adequate vision with a lens that is fit within the limbal border.

Additionally, as we have come to accept the importance of tear exchange with soft lenses, even when fitting very high Dk Silicone Hydrogel materials, the same should apply as we increase our utilization of scleral gas permeable lens designs. Unfortunately, we do not yet fully understand what, if any, long term consequences might exist as a product of utilizing scleral lens designs that all but eliminate the potential for meaningful levels of tear exchange.

Finally I also feel we need to remain mindful of the potential inconveniences presented by scleral gas permeable lens wear. There have been several published studies that indicate the majority of scleral lens wearers will need to remove their lenses at some point during the day to flush out debris that is either adversely impacting comfort or interfering with vision. For some patients such mid-day lens removal is not an option given the nature of their work and or work environment.

In short what I am suggesting is that we have an obligation as eye care professionals to our patients with Keratoconus and other forms of irregular cornea to avoid causing corneal compromise as well as a responsibility to council those patients for whom it is appropriate regarding the potential to retard progression. Secondly while scleral gas permeable lenses are indeed a most welcomed addition to our array of rigid lens options, they are not always the ideal modality for each and every patient. I would like to suggest that the utilization of corneal gas permeable lenses not be entirely abandoned in favour of the "latest" (aka scleral) lens modality.