

# CASE REPORT: Treating Presbyopia and Depositing in Regular Corneas With Tangible Hydra-PEG Coated Multifocal Scleral Lenses

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## CASE HISTORY:

A 53 year-old female established patient presented for her annual exam. She was a long-time contact lens wearer who had transitioned to soft multifocal contacts three years prior when she had become annoyed with her over-the-counter reading glasses that she used over the top of her toric daily disposable soft lenses. She was fit in a daily disposable multifocal using a spherical equivalent power to make up for her uncorrected cylinder and had functioned well, but she was beginning to grow tired of her difficulty with night driving and her inability to read road signs at a distance. She was motivated to stay in contacts but was hoping for an improved solution without having to resort to monovision. She was also noticing reduced wear time due to lens dehydration and lens depositing at the end of the day. She was currently being treated with warm compresses, Xiidra twice daily in both eyes, and punctal occlusion therapy.

## EXAMINATION:

ccCL at presentation (Dailies Total 1 Multifocal):			
OD: 20/30, J2			
OS: 20/30, J2			
OU: 20/25, J1			
OR: plano OD and OS			
MR:			
-1.75	-1.50 x 080	+2.00	20/20
-2.00	-1.75 x 100	+2.00	20/20
K:			
43.50/44.75			
43.25/44.75			
Ocular Health:			
Unremarkable with DES well controlled			
Scleral Trials:			
Scleral lens prescribed			
BC: 7.67 Diam: 15.0 Power: -1.50 (+2.00 add, 4.0mm Zone)			
std limbal and scleral zones			
20/20, J1	250 micron clearance central		
BC: 7.67 Diam: 15.0 Power: -1.75 (+2.00 add, 4.0mm Zone)			
std limbal and scleral zones			
20/20, J1+	250 micron clearance central		
OU:			
20/15, J1+			
20/20, J1+	250 micron clearance central		

## FOLLOW-UP:

The patient returned with great all-day comfort in the new scleral lens but noticed some variable vision from time to time. Her entering acuity was 20/20 OD and 20/25 OS with J1+ OU at near. Examination of the lenses revealed surface deposits and variable wettability, with an otherwise great fit. Over-refraction was Plano in both eyes.

The lenses were re-ordered in the same parameters but with the Tangible Hydra-PEG coating added. The patient was instructed to pick up the new lenses and return after one week of wear.

At her second follow-up, the patient again reported superb all-day comfort but with much better and much more consistent vision at all distances. The surface showed a healthy and uniform tear layer with proper corneal and limbal vault and an even landing. Her vision returned to 20/20 in both eyes and 20/15 binocularly with J1+ achieved at near.

This patient was a perfect multifocal scleral candidate due to her motivation to remain in contact lenses, her moderate astigmatism that was nearly all corneal, and her dehydration issues in soft lenses. The scleral lens uses a unique bi-aspheric center-distance design to give great vision at intermediate and near distances without sacrificing distance acuity. Comfort was immediately improved in the scleral lens as compared to her soft lenses, but the vision didn't reach its maximum potential until we aided the tear film consistency and distribution with the Tangible Hydra-PEG coating.

## DISCUSSION:

Multifocal optics placed on a gas permeable platform have long been known to be superior to their soft multifocal counterparts. Their rigid surface allows for a more precise and crisp refracting platform that is especially important for the exacting optics of a multifocal lens. In addition to the improved optical qualities of GP materials, a rigid lens' ability to neutralize corneal cylinder without the need for any rotational stabilization system allows them even more visual superiority and opens the door to a larger segment of the presbyopic population, as compared to soft multifocals.

While this information is nothing new to the optometric world, until the advent of modern scleral lenses, few patients (or their practitioners, for that matter) had the patience or motivation to "adapt" to the feel of corneal GP lenses, especially after enjoying the comfort and convenience of soft disposables. Stability could also be an issue in corneal GPs, and this was very problematic for the optics of a multifocal lens. Scleral lenses represent a game-changing advancement in our contact lens arsenal by allowing a practitioner to give their presbyopic patient the superior visual advantages of a GP multifocal without the compromise. Scleral lenses have been found to be as comfortable as a soft lens and offer excellent stability with little or no movement with the blink, and with the scleral lens available in a 15mm diameter, insertion and removal is no more difficult than with a soft lens.

Presbyopic patients are more likely than their younger counterparts to experience dryness that can lead to reduced wear time and eventually contact lens drop-out. Soft contacts can exacerbate dry eye symptoms by robbing the ocular surface of the precious aqueous layer and by releasing preservatives from the solutions in which they're stored. Scleral lenses, on the other hand, have a therapeutic effect on dry eye. The gas permeable material has no water-content, and therefore no ability to absorb tears, and the preservative-free saline that fills the gap between the lens and the eye serves to bathe the cornea with hydration throughout the day.

Even still, patients with dry eye disease can often still have trouble establishing a continuous tear film on top of a scleral lenses. Tangible Hydra-PEG is a new polymer coating available for custom contact lens materials that creates a mucin-like surface on the lens, making the scleral lens super hydrophilic and deposit-resistant. This coating, which can last for a full year, is great for multifocal scleral lens patients because the precise optics of these lenses are heavily dependent on a healthy and consistent tear film.



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