

CASE REPORT: *Utilization of Tangible® Hydra-PEG® to Aid in Scleral Lens Comfort in a Keratoconic Patient with Chronic Dry Eye Disease, Status Post Intacs*

By Jerry L. Robben, O.D. Chief Optometrist, Bowden Eye & Associates, Founding Member of Dry Eye University, Clinical Director of DryEyeAccess.com

CASE HISTORY:

An upbeat but frustrated 26 year old, African American female presented to me for a consultation about a possible scleral lens fit. She has a known history of keratoconus and has recently had a successful INTACS procedure with collagen cross linking in her OS, which is her worse effected eye from the corneal ectasia. There currently is no plan for INTACS in her OD but she may consider crosslinking in the future.

Her main concern on presentation is that she wishes to have improved vision and better ocular comfort. Prior to the INTACS and cross linking, she had been relying on spectacles and sometimes soft contact lenses. Neither of those options was performing well for her. Her habitual distance VA best corrected at 20/40 OD and 20/100 OS with spectacles and with her soft lenses. She also presents with a history of trying corneal GP lenses without success due to her moderate to severe dry eye complaints. Her dry eye was also becoming intolerant to her soft lenses as well. She also reports that her vision with SCLs was never very good to begin with.

Prior to her INTACS and cross linking, she was placed on an aggressive but appropriate dry eye regimen that included supportive treatment with preservative free lubricants (Oasis Tears), eye lid scrubs (Ocusoft Platinum Foam), GLA vitamins (Hydroeye), warm compresses (DERM Mask), along with medical treatment with Restasis (Allergan). She was offered and recommended to proceed with such interventions as Blephex with a Lipiflow prior to her treatment, but she deferred due to the already expected cost of her collagen cross linking and INTACS. She did not wish to proceed with further out of pocket procedures at that time. She was educated that it was likely that her dry eye symptoms would worsen after the treatments, but she still deferred the added dry eye treatments.

After her INTACS and cross linking she did, in fact, worsen. Her dry eye symptoms became severe and she could not tolerate her soft contact lenses at all in the OS and her vision remained poor with spectacle correction. Following the procedure her best corrected distance VA with glasses was 20/40 OD and remained around 20/80 OS. She was concerned because she was now experiencing greater photophobia due to her severe dry eye, which also made her driving vision hard to accommodate for. She had since stopped driving most of the time.

After discussion with her, we both decided that a scleral lens fit would likely serve her the best to address both of her main concerns. We felt that it would give us the best chance to improve her VA and improve her dry eye disease and symptoms. She wishes to proceed with the fit as soon as possible.

EXAMINATION:

Her anterior segment exam was significant for corneal ectasia OU, greatest in the OS with some mild apical scarring to the cornea OS. She has two well covered and well placed INTAC ring segments in the OS. She had significant punctate staining to the cornea with fluorescein, graded at 2-3+ between the eyes. Her conjunctiva was quiet OU but did show level 2 staining both nasal and temporally with lissamine green OU. Her meibomian glands were moderately obstructed OD with a MGE score of 12 and worse OS with an MGE score of 10. She has nearly an instant TBUT in both eyes and all other anterior segment findings were WNL for her age OU.

Point of service testing was done. Tear Osmolality (TearLab) was done showing 323 OD and 334 OS. MMP-9 testing (Inflammadry) was performed and was positive OU. Her Lipid Layer Thickness and Meibography had been done since the surgery recently, so we did not perform that again. The most recent values for her LLT were 72 OD and 66 OS. Her Meiboscale grade was grade 1 damage OU. She as advised to re-consider the recommendation for proceeding with Blephex and Lipiflow and she said that she would consider it when she could. A pulse dose of Lotemax Gel was added to her regimen to address the positive MMP-9 and her persistent symptoms.

FOLLOW-UP:

I approached this case with the desire to give her the best options from the start in order to best help her complicated situation. I knew that comfort of the lenses was going to be paramount to the success of her fit. I decided to use a scleral lens made of lens material that could be coated with Tangible® Hydra-PEG®. I knew that the coating would provide her with the best comfort possible with any lens and also aid in better vision, reduce fogging and increase lubricity.

The fitting of her OD was very straightforward. After two lenses we had an acceptable fit and over refraction to be ready to order the lens needed. Her OS required four lenses attempted to come to an acceptable fit but her over refraction took some time to work. I attributed this to the fact that her OS has more ectasia and a steeper cornea, even with the INTACS in place. Once we achieved an acceptable fit and over refraction OU, we placed the order for her lens parameters and made sure to have the lab coat them with Tangible® Hydra-PEG®. About 10 days later the patient returned for the dispensing of her new scleral lenses. She had a good looking fit OU with 20/20 distance vision OD and 20/30 OS with no improvement in the vision, again likely due to her ectasia and mild apical scarring OS. She noted that she was surprised with how comfortable the lenses seemed from the first time they were placed, especially compared to how uncomfortable her previous corneal GP and SCLs were. We released the lenses to her to trial and see how she adapted to their use and how the wear would help her day to day vision and her dry eye symptoms. I was confident that she would respond well, so I asked her to come back in 2 weeks to follow up.

At the two-week follow up she presented in a very excited mood as she felt that the lenses were working very well for her. She was tolerating their wear and she was very happy to have much improved vision and fewer dry eye symptoms. She stated that she felt her eyes looked healthier and whiter and that she could now drive again without difficulty. I examined her fit and it remained well aligned. With removal of the lenses, her cornea had minimal punctate erosions OU. I educated her that we could finalize the scleral CL fit and continue to address her dry eye disease moving forward. I advised her that the dry eye disease is not cured, but only better stabilized and controlled with her continued supportive treatments and the use of the scleral contacts with the Tangible® Hydra-PEG® coating. I reminded her of the fact that she will likely need continued dry eye treatments and that core therapy with Blephex and Lipiflow are her next step in bettering her dry eye situation. I also have prescribed her the new TrueTear neurostimulation device (Allergan) to help with her overall dry eye. At this time she is waiting on both of these options until she can financially take them on.

DISCUSSION:

Dry Eye Disease is, by definition, a multifactorial, chronic and progressive inflammatory disease. Each patient with Dry Eye Disease needs to have a customized approach to their treatment in order to gain best control. Contact lens wearers are known to have upregulated inflammatory mediators, reduced meibomian gland function and other dry eye findings.¹ We also know that patients who have had previous corneal surgery are also more prone to dry eye disease.^{2,3} This patient was having very symptomatic dry eye exacerbation with her contact lens wear following a corneal surgery. Without proper control, it is likely that she will continue to worsen due to the chronic nature of dry eye disease. She also has unsatisfactory vision following her INTACS due to residual corneal irregular astigmatism and also due to her significant dry eye.

Scleral contact lenses with Tangible® Hydra-PEG® coating offers a solution to aid her in a majority of her problems. We know that a properly fit scleral contact lens can help in treating the corneal irregularities and improve her vision while likely aiding in her dry eye with the scleral lenses' tear reservoir.⁴ Adding a new and effective tool, like Tangible® Hydra-PEG®, to a very well established treatment option, such as a scleral lens, is a merger of old and new technology to maximize patient experience in all aspects by improving her vision, improving her ocular comfort, and improving her contact lens wear time. Tangible® Hydra-PEG® is a wonderful addition to enhance patient and doctor experience in scleral lens fitting beyond what was previously possible without this advanced coating.

REFERENCES

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Tangible® Science, LLC
740 Broadway
Redwood City, CA 94063
1-650-241-1045
info@tangiblescience.com
www.tangiblescience.com