

A BREAKTHROUGH IN SCLERAL LENS FITTING

With specially developed software, the Pentacam with the CSP Report produces a detailed scleral profile for fast, accurate empirical fitting.

BY MARGUERITE B. MCDONALD, MD, FACS



Scleral contact lenses are the key to functional vision, pain relief, and improved quality of life for many patients. Despite their proven clinical value, however, these lenses can be challenging and time-consuming to fit properly, often requiring numerous visits. In addition, the practice must commit to scleral lens fitting by sending an MD or an OD to a scleral lens fitting training center, which can take weeks. This is about to change.

A new software module for the Pentacam and Pentacam HR (Oculus) enables users to design and fit custom scleral lenses easily, quickly, and with a high degree of safety and efficacy (Figure). This is a major breakthrough in contact lens fitting that will benefit clinicians and patients alike.

THERAPEUTIC ADVANTAGES

For years, scleral contact lenses made from gas permeable materials have been used to improve vision for patients with high degrees of irregular astigmatism, whether from trauma, infection, or disease. They are also commonly used for addressing irregular astigmatism after surgery, such as a cornea transplant or corneal warpage after radial keratotomy. We also know that “standard” gas permeable (GP) contact lenses give exquisite vision. In fact, some patients who have no ocular pathology at all choose to wear GP lenses just for the remarkable, high-fidelity visual outcomes.

Recently, we have become aware that scleral lenses can help patients who have severe dry eye and other ocular surface diseases. In fact, severe dry eye is now rapidly becoming one of the main reasons why a doctor would want to prescribe scleral lenses, as they keep the cornea protected while bathing it all day in a therapeutic solution. They also provide the same high-fidelity vision to the dry eye patient.

Despite these advantages, many practices shy away from fitting custom scleral lenses because doing so is time-consuming and requires a high degree of skill. As I mentioned previously, the practice would have to send one of the team members, usually an optometrist, to scleral lens school for several weeks to learn the basics of how to fit them, either empirically or with diagnostic trial lenses or corneal molds. This is quite an intense experience for the

doctor, and most practices can't afford to send a doctor away for such extensive training. As a result, some regions of the country are served by only one clinician within a radius of hundreds of miles who has the skill set to fit scleral lenses.

As Director of our Dry Eye Center of Excellence, I was honored to be among a small group of doctors selected by Oculus USA to evaluate the new software developed specifically to facilitate scleral lens fitting. I can report without hesitation that designing custom scleral lenses using

A MUST-HAVE FOR DRY EYE CENTERS OF EXCELLENCE

Although I am a surgeon, dry eye is “front row center” for me, and except for a handful of key opinion leaders, I think very few clinicians realize that scleral lens technology is a valuable treatment for severe dry eye.

Sadly, I have seen the consequences of untreated severe dry eye. Fairly routinely, I meet a patient who needs an emergency cornea transplant because the eye is so dry that it has developed a perforated corneal ulcer. Yet, we have numerous therapies to help us avoid such dire consequences.

Scleral lenses are known for their excellent visual outcomes and great comfort, particularly for patients with exposure keratitis and dryness. As an example, one of my patients is a surgeon in his early sixties. He had radial keratotomy years ago with severe corneal warpage. He also has dry eyes. If not for his scleral lenses, he would be retired or on disability today. His visual outcomes are extraordinary, and he is able to continue his work as a successful surgeon.

The longer your Dry Eye Center of Excellence is open, the more word will spread about your services, and the more desperate cases you will see from farther away. Most Dry Eye Centers of Excellence, after they're up and running, will need to offer scleral lenses for severe cases of dry eye. I believe the Pentacam and Pentacam HR with the CSP module are incredibly valuable for successful scleral lens fitting, with minimal staff and doctor training and just a few minutes of time invested per patient.

data from the Pentacam Cornea Scleral Profile (CSP) Report is incredibly fast, easy, and accurate.

STREAMLINED PROCESS FOR OUTSTANDING OUTCOMES

With the optional CSP software, the Pentacam captures 250 Scheimpflug images over 5 scans, covering a diameter of up to 18 mm. An initial central scan is taken, which captures all the classic Pentacam data. The device then decenters to capture nasal, temporal, superior, and inferior scleral data, all while the patient looks straight ahead, maintaining primary gaze. In this way, the Pentacam combines all 5 scans to create a complete model of corneal, limbal, and scleral architecture, including sagittal height. This constitutes the CSP Report. This data can then be used by any standard scleral fitting set, or with lens design software, such as the Wave Contact Lens System, to create a custom contact lens which is then transmitted to a laboratory for lens fabrication. This entire process—from taking the Pentacam images to sending the CSP Report to the laboratory—takes less than 10 minutes.

Fitting scleral lenses empirically with the CSP software eliminates the tedious and somewhat unpleasant experience of diagnostic lens trials for patients and clinicians. Chair time is vastly reduced, far fewer visits are required, and fewer lens remakes are needed. What's more, hygiene issues disappear, as no lenses or lens cases must be sterilized.

I ordered a pair of scleral lenses for myself, using just a few minutes of my technician's time. Using the CSP Report and the Wave Contact Lens software, I sent a lens design based on Pentacam data and my refraction to the laboratory and received the lenses in a matter of days. The master scleral lens fitter in our practice, Jerry D'Aversa Jr., OD, examined me wearing Wave lenses that I had prescribed for myself using only the CSP software with no input from an MD or

EXPAND PATIENTS' ACCESS TO SCLERAL LENSES

The Pentacam CSP technology makes it possible for far more practices to offer scleral lenses to their patients, and much more economically. It saves time in every way, from fewer visits and lens remakes to simpler office hygiene protocols. Some practices charge upwards of \$8,000 a pair for scleral lenses, which are not covered by insurance. That's an impossibly high cost for many patients. With the Pentacam CSP technology, our costs are greatly reduced. We can perhaps pass along some of those savings to our patients, making scleral lenses affordable for more people.

an OD. Dr. D'Aversa said the fit was absolutely perfect. He was stunned that a machine did accurately what took him so many years to master, and in just a few minutes. This accuracy ensures that a patient's first lens experience is a positive one. Other than checking the patient's visual acuity and perhaps making a minor change in refraction, it is a simple, quick, and easy process.

ADDING VALUE TO PRACTICE

As a surgeon, I know that our Pentacam is an absolute workhorse. In our practice, we would not consider performing cataract surgery on anyone before reviewing a comprehensive anterior segment analysis provided by the Pentacam. It will pick up subtle, previously undiagnosed keratoconus, which very much impacts which intraocular lens we select for a patient. We use it to diagnose keratoconus in teenagers and young adults and to monitor the effects of cross-linking. We also use it to diagnose and treat corneal ectasia after laser vision correction. Over the years, it's been key to our management of patients. The CSP scleral lens fitting module is yet one more reason why the Pentacam is so valuable. ■

MARGUERITE B. MCDONALD, MD, FACS

- Ophthalmic Consultants of Long Island, Westbury, New York; Director of the Dry Eye Center of Excellence
- Clinical Professor of Ophthalmology, NYU Langone Medical Center, New York
- Clinical Professor of Ophthalmology, Tulane University Health Sciences Center, New Orleans
- Member, CRST Editorial Advisory Board
- margueritemcdmd@aol.com
- Financial disclosure: Consultant (Oculus USA)

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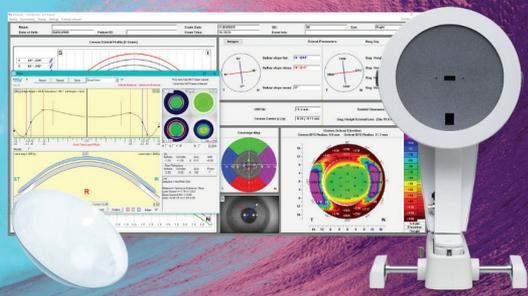


Figure. A new software module for the Pentacam and Pentacam HR (Oculus) enables users to design and fit custom scleral lenses safely and easily.