The Other Side of the Lens

Practitioners should keep tabs on new contact lens innovation such as drug delivery.

It’s a time-honored tradition between parent and child: a scrape or a cut that leads to the drying of tears, cleaning of the injury and application of healing medicine. A Band-Aid is the final touch—after all the hard work that has been done to sterilize and treat the injury, the Band-Aid has traditionally been used to hold all of these initial steps together and to protect and allow the tissues to heal. Just as Band-Aids have evolved to incorporate modern medicinal advances such as the addition of antibiotics, so have bandage contact lenses.

Bandage lenses are used to protect the healing eye, and the drug/device conversation has included these lenses in hopes of improving the efficacy of certain drugs. Bandage lens use has become more widespread as a result of the increasing popularity of refractive surgery, as well as the technological innovations in contact lens materials. Knowledge of the importance, as well as the appropriate usage and care, is of the utmost importance for an eye care practitioner.

What Are They?

Bandage lenses are a group of soft, thin, highly oxygen permeable lenses of varying levels of water content that are typically fit loosely over the cornea for various therapeutic purposes. They are mainly used post-surgically. Bandage lenses are part of a larger group known as therapeutic contact lenses, which encompasses an array of lenses with purposes varying from maintaining ocular surface hydration to providing a vehicle for drug delivery.

In the past, certain lenses were specifically indicated for therapeutic use; however, disposable soft contact lenses are frequently used today. There are four types of FDA-approved soft lenses for therapeutic use: Acuvue Oasys (Vistakon), PureVision (Bausch + Lomb), Air Optix Night & Day Aqua (Alcon) and Sof-Form 55 EW (Unilens Vision).

Bandage lenses can accelerate healing and reduce discomfort for patients with corneal injuries. These lenses not only protect the eye from the mechanical forces of blinking while the eye is healing below the lid, but they also protect delicate eye tissues from external sources of irritation, such as suture knots. The main disadvantage of their use comes with the risk of infection, especially with extended-wear lenses, as bandage contact lenses have been reported to be associated with a higher prevalence of polymicrobial keratitis.¹

Fitting the Lens

The AOA recommends therapeutic contact lenses as ophthalmic bandages following corneal trauma or refractive corneal surgery.² With proper patient selection, observation and management, therapeutic contact lenses provide an extremely effective therapeutic tool. However, we must caution lens care providers that proper fit is of the utmost importance, as a “one size fits all” approach or improper sizing may cause further trauma to a recovering eye.

In addition, the lens fit should be frequently assessed; ideally after approximately 20 minutes and again after an hour, due to the possibility of lens dehydration effects. Checking on patients is crucial: a 24-hour follow-up, followed by a second visit in a week or less, and a third visit at one to three months, depending on the condition, is recommended.³ Properly fitted bandage lenses must have corneal coverage with adequate mobility in order for the condition to be appropriately managed. Lastly, it is critical for the eye care practitioner to keep an eye on the healing process and to adjust lens measurements as the eye mends, if necessary.⁴

Contact Lens Drug Delivery

There are certain shortcomings of eye drops for patients suffering from glaucoma, corneal ulcers and other ocular surface diseases, including a decrease in compliance. Unfortunately, only about 5% of a topically administered drug enters
the anterior segment. Even when eye drops are applied six or more times a day, the amount of medicine that can be directed at a surface wound is low and constantly fluctuating.

Drug/device combination lenses may be a solution to this issue. Not only are lenses an appropriate measure for healing eyes, they also add a combative one-two punch of efficacy and therapy. Techniques investigated to integrate drugs and contact lens materials include soaking contact lenses in a drug, among others. The efficacy of this technique was examined by Zvi Friedman, M.D., and colleagues who demonstrated that a hydrogel soft contact lens (Saulfon PW) soaked in acetazolamide 5% solution caused a 6.3 ± 0.4 mm Hg mean reduction in intraocular pressure in albino rabbits. Lenses like these may act as a reservoir for topical medications, increasing the amount of time a medication stays in contact with the eye.

Drug/device combination lenses are on the horizon for a wide array of indications, such as the contact lens with ketotifen (Vistakon Pharmaceuticals), designed for the contact lens-wearing patient with allergic conjunctivitis, as well as an antifungal contact lens containing econazole used to treat fungal keratitis, though both are yet to be FDA-approved.

Whether for healing purposes or drug delivery, it’s likely that therapeutic applications of contact lenses will continue to expand. It’s essential for eye care practitioners to stay knowledgeable about these innovations in order to maintain the best possible standard of care.