Bandage contact lenses provide a variety of benefits

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in Las Vegas

BANDAGE contact lenses can be used as adjunct therapy in a wide range of disorders, thanks to the current generation of lenses that offer high oxygen permeability.

"We have a number of different options today for therapy using contact lenses. The high DK lens has really made them a very safe and effective tool," said Donald J Doughman MD in a presentation at the annual AAO meeting. Dr Doughman is a professor of ophthalmology at the University of Minnesota.

For example, bandage contact lenses can be used to relieve eye pain; to stabilise and promote healing of the epithelium and stroma; to correct residual errors of refraction by modulating wound healing; as a splint for lacerations, perforations, and ulcerations; to protect the surface of an abnormal cornea; and to deliver drugs. As a bonus, they also may improve vision.

Patients with painful bullous keratopathy, corneal epithelial defects, corneal perforation, leaking filtering blebs, and wound leaks may benefit from bandage contact lenses; they may also benefit patients recovering from refractive surgery or keratoplasty.

A honey-soaked start

The first person to use ocular bandages was Celcius, who applied honey-soaked linen dressing to the inferior fornix in 1 AD in an effort to prevent symblepharon.

When bandage contact lenses were first approved for use in the US in the 1970s, they had a low water content and a thick design, and were associated with secondary infection, corneal vascularisation, giant papillary conjunctivitis, and deposits. It wasn't until ultrathin third-generation lenses appeared that "we were getting close to what we needed," said Dr Doughman.

Fourth-generation lenses were made of a silicone elastomer that provided high oxygen permeability, but were uncomfortable to wear for long periods because of evaporation of the tear film. Finally, the fifth generation of lenses, made with silicone-hydrogel, provide high oxygen permeability and a variety of water concentrations. This helps surgeons tailor the lens to the specific eye condition.

For example, when there is a need to stimulate corneal vascularisation, Dr Doughman recommended a thick bandage soft contact lens with a low water content, such as the Plano T (B & L). When there is a need to prevent edema and vascularisation, he recommended the use of an ultra-high Dk silicone-hydrogel contact lens such as PureVision (B & L) or Focus N & D (CIBA). He explained that the oxygen requirement of the cornea is about 60 Dk; these lenses provide a Dk of 99 and 140, respectively.

"There is no secondary vascularisation with these silicone-hydrogel lenses," said Dr Doughman. They're also less likely than older lenses to produce secondary infection, giant papillary conjunctivitis, and deposits. He also cited the results from the Focus N & D trial, which found that silicone-hydrogel lenses were "equal to or better than traditional lenses in terms of pain relief and corneal signs." In addition, "the success rate – no matter how it was judged – was almost twice that of conventional lenses."

Problems with the silicone hydrogels remain, however. First, there is still a potential for infections. Second, they can be uncomfortable to wear. Finally, they have an extremely thin tear layer, and experiments in rabbits indicate that they might affect the limbal stem cells.

Dr Doughman said that fitting silicone hydrogel contact lenses is similar to fitting cosmetic contact lenses, but there are several important differences. First, they have a larger diameter – 14 or 15mm – which is important to provide stability to an often-irregular ocular surface. Second, it's important that they do not decentre with movement or blinking. Finally, they should show minimal movement, although the amount of acceptable movement varies with the therapeutic goal and type of lens.

"I like to fit the lens and observe the patient after 20 or 30 minutes," Dr Doughman said. He also recommended a 24-hour follow-up visit, followed by a second visit in a week or less and a third visit at one to three months, depending on the condition.

"The high-DK silicone lenses are becoming the lens of choice for many therapeutic applications because many of us believe that the increased oxygen will enhance healing and help prevent serious complications like infectious keratitis," said William H Ehlers MD, who co-chaired the session on healing of the ocular surface, in an interview with *EuroTimes*.

"Remember that these are not healthy eyes, and an extra measure of caution is wise. The frequency of follow-ups is determined by the nature of the underlying problem and the tolerance for the therapeutic lens," he added.

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