

Improving Cataract Surgery Outcomes With an Ocular Bandage

Hydrogel adhesive can help to achieve better postsurgical results.

BY A. JOHN KANELLOPOULOS, MD

With each technological advance, the expectations of consumers are inflated. People in the developed world now expect goods to contain the most innovative technologies and services to be of the highest quality.

When it comes to cataract surgery, patients' perceptions of the quality of our services is no different. For many patients, the expectation after cataract surgery is for perfect vision and spectacle independence. This anticipation is magnified for patients who select a premium lens technology, as they pay a premium price for the procedure.

In an attempt to meet our patients' increasing demands, surgeons continue to look for new intraoperative strategies that improve outcomes and achieve better immediate and long-term results. A move from scleral tunnel incisions toward clear corneal incisions enabled cataract surgeons to create self-sealing wounds, therefore performing a less invasive procedure and spending less time in the operating room. Additionally, changing the location of the incision from temporal to nasal can correct minor degrees of astigmatism, whereas limbal relaxing incisions can resolve more difficult cases and toric lenses can be implanted to correct preexisting astigmatism with more predictable results. These techniques have enhanced visual acuity after surgery; however, the procedures themselves can induce unintended changes in corneal curvature.

Residual astigmatism after cataract surgery can normally be controlled within a reasonable margin of error. But significant surgically induced astigmatism around the incision site can affect visual function. This problem is exacerbated when wounds do not properly seal and thus require sutures, as suture placement induces astigmatic change. Suturing clear corneal incisions in premium lens patients can interfere with our efforts to provide the best possible vision after surgery.

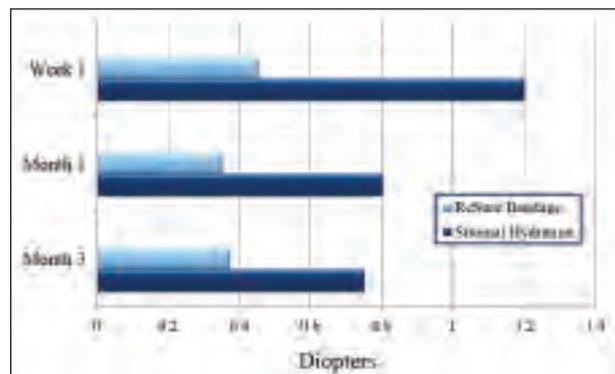


Figure 1. Cylindrical change after cataract surgery.

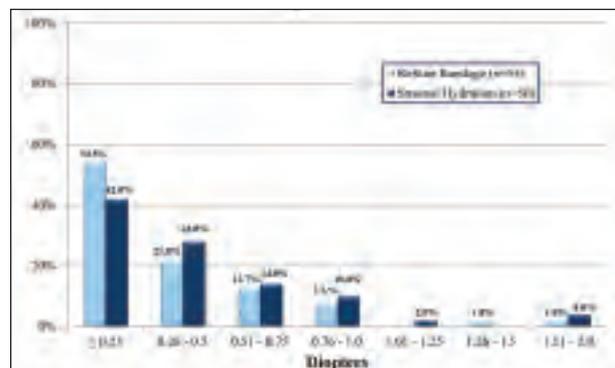


Figure 2. Refractive astigmatism 3 months after surgery.

STUDY DESIGN

I recently conducted a study in which 155 patients received an ocular bandage to seal a clear corneal incision.¹ The ReSure Adherent Ocular Bandage (Ocular Therapeutix) is a Conformité Européenne (CE) Mark-approved novel synthetic tissue adhesive that has been shown in eye-bank eyes to prevent fluid ingress and egress.² In one clinical study, the bandage appeared to pre-

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vent microleaks as seen under optical coherence tomography.³ The substance is applied to the wound as a liquid; a hydrogel then forms in situ on the ocular surface, selectively adhering to the deepithelialized tissue and creating a protective barrier over the incision during the healing process. For a video demonstration of the application and use of ReSure, visit eyetube.net/XXX.

In our randomized, consecutive-case, parallel-arm study, patients received either the bandage to seal 3-mm clear corneal cataract incisions (group A) or current standard of care (group B) for wound closure. The ocular surface must be dry prior to application of the ReSure bandage, and therefore stromal hydration was used in group A only when an active leak prevented proper application. Patients received either the AcrySof IQ Toric (45%), the AcrySof ReStor (5%), or the AcrySof IQ (50%) IOL (all by Alcon Laboratories, Inc.). Age, sex, UCVA, BCVA, intraocular pressure (IOP), changes in refraction, topographical cylinder, and postoperative complications were recorded for all patients.

RESULTS

Patients were examined at 1 week, 1 month, and 3 months after surgery. In group A, the average postoperative cylindrical changes were 0.45, 0.35, and 0.37 D at each time point, respectively, whereas the changes in group B were 1.20, 0.80, and 0.75 D, respectively (Figure 1). These results demonstrate statistically significant differences between group A and

TAKE-HOME MESSAGE

- Suturing clear corneal incisions in premium lens patients can interfere with surgical efforts to provide the best postoperative vision.
- The ReSure Adherent Ocular Bandage is applied to the wound as a liquid; a hydrogel then forms in situ on the ocular surface to create a protective barrier during the healing process.
- The tissue adhesive produced better and more consistent results when compared with stromal hydration alone.

group B in astigmatic change over time.

Furthermore, the standard deviation of astigmatic change at each time point was smaller for group A than group B, suggesting that more consistent wound-healing results might be achieved with routine use of the bandage. By 3 months, surgically induced astigmatic change had stabilized (Figure 2). Results were similar regardless of the type of IOL implanted, and no significant differences in IOP or postoperative complications were observed.

Our conclusion from this experience was that the tissue adhesive produced better and more consistent results when compared with stromal hydration alone. We were unable to validate the exact mechanism that produced these results, but we suspect that the large amount of balanced salt solution required for stromal hydration distorted the wound in group B. This may also explain the difference in postoperative cylindrical changes between the two groups at week 1. Alternatively, the bandage may have kept the lips of the wound properly apposed during the reepithelialization process, preventing wound gape and allowing the tissue to heal more closely to its original structure.

CONCLUSION

Because clear corneal incisions are normally watertight, many surgeons think that they do not need extra protection after surgery. However, investigative work with this and other tissue adhesives has shown that the benefits of these adhesives extend beyond wound protection. As indicated by the results of this study, the ReSure Adherent Ocular Bandage may be a valuable adjunct in routine clear corneal cataract surgery. In my experience, it reduced surgically induced astigmatic changes and provided better postoperative results. In a time when emmetropia is the expected outcome after cataract surgery, an ocular bandage may be significant in helping us achieve the best postoperative results possible. ■

A. John Kanellopoulos, MD, is the Director of the LaserVision.gr Eye Institute in Athens, Greece, and is a Clinical Professor of Ophthalmology at New York University School of Medicine. Dr. Kanellopoulos is also an Associate Chief Medical Editor of CRST Europe. He states that he has no financial interest in the products or companies mentioned. He may be reached at tel: +30 21 07 47 27 77; e-mail: ajkmd@mac.com.



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