

CATARACT & REFRACTIVE

HYDROGEL BANDAGES

Bandages stay put, speed visual recovery and may reduce infection risk

by Howard Larkin in Vienna

Hydrogel bandages for clear corneal incisions are more likely to stay in place than collagen shields, improve early visual outcomes, and may reduce induced astigmatism, according to speakers at the XXIX Congress of the ESCRS. They may also reduce endophthalmitis risk.

Hydrogel bandages are a liquid polymer placed on the eye, where they polymerize into an adherent gel that biodegrades in a few days. Previous research shows they control microleaks after corneal incisions better than stromal hydration alone (*Calladine et al. J Cataract Refractive Surg 2010; 35:1839-1848*) and greatly increase the burst pressure of incisions in cadaver eyes (*Maddula S et al. Presentation, ASCRS, 2010*).

In a prospective randomised trial involving 420 eyes at 17 sites comparing the ReSure (Ocular Therapeutix) hydrogel bandage with the Soft Shield Collagen Corneal Shield (Oasis), 79 per cent of 290 hydrogel bandages remained in place 24 hours after cataract surgery compared with 27 per cent of 98 collagen shields, a statistically significant difference ($p < 0.001$), said John A Hovanesian MD of UCLA, California, US.

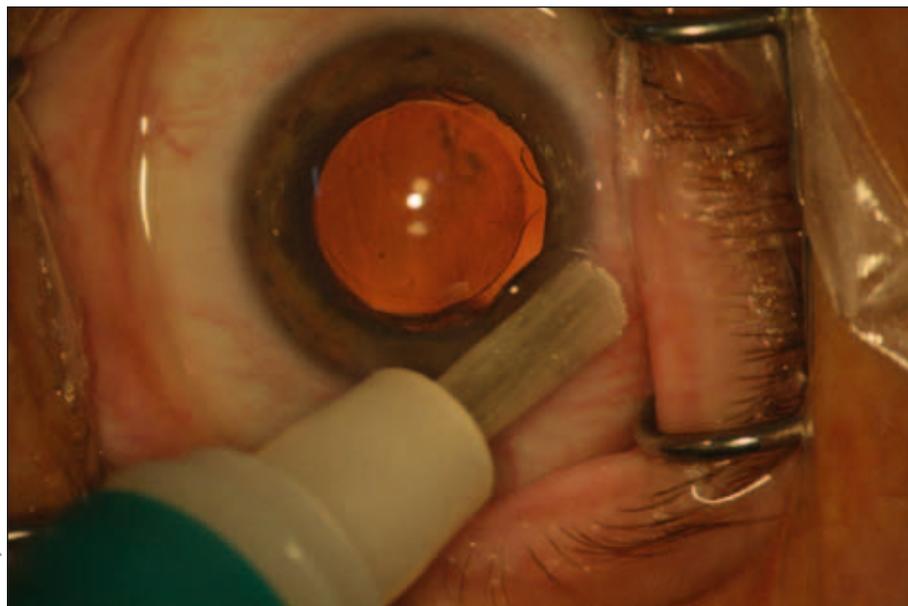
The bandage group also showed significantly less stromal edema and mean best corrected visual acuity at 20/29 compared with 20/40 for the shield group one day after surgery ($p < 0.0001$). “At the slit lamp we saw greater corneal clarity with the hydrogel bandage,” said Dr Hovanesian.

He hypothesised that better-sealed hydrogel wounds had less leakage and hypotony, leading to less corneal edema, although 24-hour IOP findings were similar in the two groups.

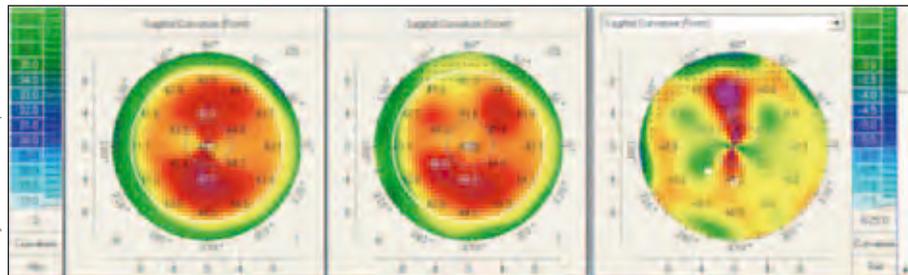
Stephen Lane MD, Minneapolis, US, reported similar results in a 30-eye study he conducted. Of 23 patients with hydrogel bandages, 86 per cent were in place at 24 hours compared with 43 per cent of seven collagen shields ($P = 0.038$) and produced better visual results.

“We would recommend the product in lieu of or in addition to sutures in premium IOLs, where maintaining stability of the capsular bag is key, and in high risk cases.”

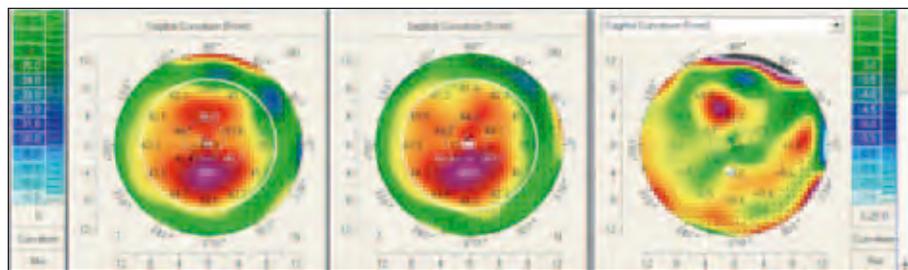
John Kanellopoulos MD of Athens, Greece, and NYU Medical School, US, reported less induced astigmatism with hydrogel lenses. In a study of 166 clear



OcuSeal application on the corneal incision



OS: one month post-op without ReSure



Same patient, OD: one month post-op with ReSure. Although the refractive cylinder is not much different, there is clear irregular astigmatism present in the non-ReSure case that may significantly contribute to difficult visual function especially if a toric and/or multifocal IOL was used

corneal incision cataract cases randomly assigned to the ReSure bandage or closure with stromal hydration alone, topographic cylinder values for the hydrogel group were 0.45 compared with 1.2 D for controls at one-week post-surgery; 0.35 and 0.8 at one

month; and 0.37 and 0.75 at three months respectively, all statistically significant findings. Mean refractive cylinder vectors and corrected and uncorrected visual acuity were also better in the hydrogel bandage group.



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“Specifically statistical tests and the results between ReSure and the standard procedure are statistically significantly different at seven days ($p = 0.03$), but not at one month ($p = 0.50$) and three months ($p = 0.20$). This is based on 166 eyes with data at all three time points,” Dr Kanellopoulos said.

“I don't think the absolute difference in refractive cylinder is as important as the stability of the refractive cylinder. The standard procedure demonstrates a larger change in the one week to one month period than the ReSure procedure, and this ‘procedure by time’ effect is statistically significantly different ($p = 0.04$). That, to me, is one of the potential values of ReSure – reaching astigmatic refractive stability faster. In plain clinical terms and in an era when Femto cataract surgery, toric and multifocal IOLs cater mainly to a better refractive result, the use of ReSure will provide more stable astigmatic behaviour in the first postoperative month,” he said.

“ReSure may be a value adjunct in clear corneal cataract surgery in reducing astigmatic change,” Dr Kanellopoulos said. It may also reduce risk of endophthalmitis by reducing early wound ingress after surgery, though no large trial has demonstrated this.

Matteo Piovella MD, Monza, Italy, reported that another hydrogel bandage, OcuSeal (Beaver Visitec International) reduced foreign body sensation, with only 15 per cent of 98 OcuSeal patients reporting it at 24 hours compared with 70 per cent for controls without the bandage. He also pointed out that hydrogel bandages may help prevent endophthalmitis. “But even if it does not prevent these horrible infections, at least they will help me serve patients by giving them greater comfort after surgery.”