

## Simultaneous phacoemulsification and DSEK in patients with concomitant cataract and bullous keratopathy due to Fuchs endothelial dystrophy

We would like to comment on the study by Oshima et al.<sup>1</sup> of the safety and efficacy of chandelier retroillumination–assisted torsional oscillation for cataract surgery in patients with severe corneal opacity due to bullous keratopathy in the context of Fuchs endothelial dystrophy. First, the cause of corneal haziness in patients with bullous keratopathy is usually the edematous epithelium, which is caused by poor endothelial cell function. Removing the epithelium before phacoemulsification usually leads to fairly clear media that allows the surgeon to proceed with surgery and perform Descemet-stripping endothelial keratoplasty (DSEK) after implantation of a posterior chamber intraocular lens (IOL).

Patients with longstanding bullous keratopathy who suffer from concomitant corneal vascularization and stromal haziness are not appropriate candidates for DSEK because of stromal scar formation and corneal vascularization, recently attributed to limbal stem cell deficiency.<sup>2</sup> It is quite unusual for a patient to have simultaneous cataract and severe corneal opacity due to Fuchs endothelial dystrophy, as claimed by Oshima et al.

Second, insertion of a chandelier 25-gauge fiber into the vitreous cavity through the pars plana is not a safe procedure. Any manipulation of the vitreous architecture alters its scaffold and increases the chance of retinal detachment, cystoid macular edema, and even postoperative endophthalmitis.

Third, using a chandelier illumination fiber may limit the visualization of the posterior capsule and may delay recognition of a possible tear in the posterior capsule or vitreous presentation during cataract surgery that could lead to catastrophic complications such as nucleus drop, which is very hard to manage in cases with severe corneal haziness.

In conclusion, we suggest removing the epithelium and stripping Descemet membrane to increase the corneal clarity before phacoemulsification and performing DSEK after IOL implantation in the same session in cases with concomitant cataract and bullous keratopathy due to Fuchs endothelial dystrophy.

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## REFERENCES

1. Oshima Y, Shima C, Maeda N, Tano Y. Chandelier retroillumination-assisted torsional oscillation for cataract surgery in patients with severe corneal opacity. *J Cataract Refract Surg* 2007; 33:2018–2022

2. Uchino Y, Goto E, Takano Y, Dogru M, Shinozaki N, Shimmura S, Yagi Y, Tsubota K, Shimazaki J. Long-standing bullous keratopathy is associated with peripheral conjunctivalization and limbal deficiency. *Ophthalmology* 2006; 113:1098–1101

**REPLY:** We think the concerns about our previous publication<sup>1</sup> raised by Mohammadpour and Jabbarvand can be answered by our recent publication<sup>2</sup> describing the technique for chandelier illumination–assisted Descemet-stripping automated endothelial keratoplasty (DSAEK).

As we showed in the online video in our previous publication ([http://www.jcrsjournal.org/article/S0886-3350\(07\)01674-4/addOns](http://www.jcrsjournal.org/article/S0886-3350(07)01674-4/addOns)) the edematous epithelium of the case had been removed before phacoemulsification was started. Nevertheless, the intraocular visibility was poor under the conventional microscopic illumination because the corneal haze was caused not only by the edematous epithelium, but also by fibrotic changes in the interface between the corneal stroma and Descemet membrane. Even in this challenging situation, chandelier retroillumination can help intraocular visualization, as demonstrated in the online videos in our 2 articles ([http://www.jcrsjournal.org/article/S0886-3350\(07\)01674-4/addOns](http://www.jcrsjournal.org/article/S0886-3350(07)01674-4/addOns); [http://www.jcrsjournal.org/article/S0886-3350\(08\)00318-0/addOns](http://www.jcrsjournal.org/article/S0886-3350(08)00318-0/addOns)).

Although removing the edematous epithelium is a useful technique for improving intraocular visualization in cases with bullous keratopathy, it does not work for all corneal hazes, particularly cases with corneal stromal opacities. Furthermore, there is a major concern that removing the corneal epithelium in diabetic patients may lead to intractable recurrence of corneal erosions. Therefore, removing the corneal epithelium is not safe for every patient. In contrast, our technique is more universally applicable in patients with severe corneal opacities.

We agree with the comment that DSAEK cannot replace penetrating keratoplasty to treat every advanced case, especially those with irreversible severe stromal opacification. Nevertheless, the clear visibility under chandelier illumination makes it safe and easy to perform complete intraocular surgery through a hazy cornea, enhancing favorable surgical outcomes in the selected case, as shown in our representative cases.<sup>1,2</sup> We have performed chandelier illumination–assisted cataract surgery and/or DSAEK in a consecutive series with advanced bullous keratopathy with fibrosis in Descemet membrane but without dense opacification in the corneal stroma. The visual acuity improved in all patients by more than 3 lines in logMAR units (unpublished data).

Mohammadpour and Jabbarvand have presumably misunderstood our statements regarding the