

Additionally, as alluded to by the authors, it would have been beneficial to compare vision with endothelial graft thickness at the same 6-month point because grafts undergo significant early thinning after surgery.

In summary, in our opinion, there is substantial evidence to support a role for thinner donor thickness to obtain better visual outcomes in DSAEK. We await the emergence of data from thin DSAEK techniques to further elucidate this benefit.

The authors declare no conflicts of interest.

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Deep Intrastromal Injection of Bevacizumab for the Management of Corneal Neovascularization

To the Editor:

The report by Yeung et al¹ on combined subconjunctival and intrastromal injection of bevacizumab for decreasing corneal neovascularization is much appreciated. There are, however, some considerations to be pointed out.

It is well documented that vascular endothelial growth factor is a key mediator in the process of neovascularization. The effect that the inhibition of angiogenesis by neutralization of vascular endothelial growth factor has on promotion of corneal graft survival in animal models has been demonstrated in several studies. The use of bevacizumab has now been widely adopted and is part of the standard of care for the treatment of neovascular age-related macular degeneration in many patients.² Recently, off-label use of topical and subconjunctival bevacizumab has also been considered as a new treatment modality for corneal neovascularization.^{3–6}

In Yeung et al's study, an ~0.05-mL injection of subconjunctival bevacizumab near the limbus adjacent to the pathological blood vessels growing into the cornea is followed by an administration of 0.05 mL of intrastromal bevacizumab toward the distal end of corneal neovascularization. In addition, patients were treated with topical Tobradex (tobramycin and dexamethasone) postoperatively. The results showed the need for 2 or 3 injections for controlling the vascularization in some cases.

I also employed this technique and confidently presumed that combined conjunctival and intrastromal injection of bevacizumab is more potent than the single intrastromal injection. However, because of frequent recurrences of corneal neovascularization with the application of this technique, a deep stromal injection was administered into the cornea by making a small deep pass through

the vascularized site without any subconjunctival injection, which is recently published in *Cornea*⁷ with a supplemental video (Supplemental Digital Content 1, <http://links.lww.com/ICO/A12>).

In this method, a concentration of 2.5 mg/0.1 mL of bevacizumab is injected deep into the stroma. The primary procedure of injection involved the use of a 27-gauge needle to make a pass into the deep corneal stroma ensued by using an irrigation needle. Bevacizumab was injected into the deep stroma until stromal whitening was visible in the paracentral area of 2 adjacent quadrants of the corneal stroma.

In my recent experience, multiple injections are no longer required, sparing painful subconjunctival introduction that sometimes causes subconjunctival hemorrhage, which may exacerbate the inflammatory process.

I believe that the deeper the intrastromal injection is, the later the clearance of the drug and the lesser the need for recurrent injections. This will exempt us from subconjunctival administration, which has a more limited half-life. Also, there is no need for postoperative antibiotics because bevacizumab injection is performed in a sterile condition.

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Unstable Corneal Thickness During Hypoosmolar Riboflavin Irrigation for Collagen Cross-linking

To the Editor:

I read with interest the recent article titled “Intraoperative Corneal Thickness Measurements During Corneal Collagen Cross-linking With Hypoosmolar Riboflavin Solution in Thin Corneas”¹ and would like to offer my comments on the findings in this article.

Kaya et al¹ in their study observed that the thinnest pachymetric readings decreased significantly after 10 and 30 minutes of isoosmolar riboflavin application compared with the thickness at the end of hypoosmolar riboflavin application and reached a conclusion that the artificial swelling effect

of hypoosmolar riboflavin was transient. As established previously,² the deepithelialized cornea can be swelled with irrigation of hypoosmolar riboflavin in such a way that the patients with corneal thickness of less than 400 μm will be suitable for the corneal collagen cross-linking. Under physiological circumstances, the intact epithelium that seals the cornea off the outer side, together with the endothelial cell layer that actively transports water out of the cornea to work against the swelling pressure, plays an important role in maintaining corneal thickness. Accordingly, the resultant increased corneal thickness from this artificial swelling may not be stable because of water evaporation from the corneal stroma because it decreases by approximately 19% during UV-A irradiation even with the standard application of hypoosmolar riboflavin (0.1%).³ So I would like the authors to specify whether a lid speculum was used and how long the deepithelialized cornea was exposed to the air before they inferred that the reduction of the corneal thickness was induced by the hyperosmolar effect of the dextran. The aim of this study to some extent is to demonstrate how the dextran would have influenced corneal thickness during cross-linking. Dextran 500 is a 500-kDa polyglucose biopolymer with a high affinity to water because of its abundant hydrophilic hydroxyl

groups. Because the oncotic effect of a concentration of 5% dextran in organ culture can successfully deswell corneal transplants to a thickness close to physiologic values,⁴ a 20% concentration, therefore, may lead to cornea deswelling beyond the physiological level and may effect corneal thinning, as the authors observed in this study.

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