Risk of circumferential viscodilation in viscocanalostomy

Rękas et al. report on a new technique for lavage of predescemetic hemorrhage and blood clot removal after canalostomy assisted using the iTrack microcatheter (Ellex, Inc.). We have been using canaloplasty since 2006. In the beginning we used a 6-0 polypropylene suture for the catheterization of Schlemm canal and placing of a tension suture. This technique was adapted from 360-degree trabeculotomy for congenital glaucoma. Since 2008, we used a flexible microcatheter (iTrack) to perform viscocanaloplasty. Although this catheter made catheterization of Schlemm canal much easier, we realized that injecting a high-viscosity ophthalmic viscosurgical device into Schlemm canal might cause Descemet membrane detachment, rupture of the trabecular meshwork with cheese-wiring of the polypropylene suture, or opening of the suprachoroidal space and detachment of the ciliary body. All this can happen with the best surgical practice because viscodilation cannot be sufficiently controlled. Even the intraoperative use of ultrasound biomicroscopy or optical coherence tomography could not prevent this complication in our hands.

Circumferential viscodilation makes the procedure less controlled and reproducible. After having multiple eyes with Descemet membrane detachment, we stopped using iTrack-assisted viscocanaloplasty and continued to perform canaloplasty while paying more attention to the proper tensioning. In recent years, we have been using the Glaucolight microcatheter (D.O.R.C. International BV), which does not have a lumen for viscoinjection but is easier to handle and more economical. We performed more than 1500 canaloplasties, and Descemet membrane detachments involving the optical axis after iTrack-assisted viscocanaloplasty has never happened to us. In our experience, even large hemorrhagic Descemet membrane detachments do not require immediate surgical intervention.

In the case reported by Rękas et al., the involvement of the central cornea also happened only after immediate intraoperative intervention. A see-and-wait strategy is preferable (Figure 1). The risk for corneal hematomas and other complications is very low because the intraocular pressure (IOP) is low in the early postoperative period. We believe that immediate intraoperative lavage of the predescemetic hemorrhage and blood clot removal are more dangerous than useful. However, if lavage is considered later, we believe that the technique described by Rękas et al. is the best practice.

In a retrospective analysis of eyes in which we had performed canaloplasty, we found 10 patients with iTrack-assisted viscocanaloplasty in 1 eye and Glaucolight-assisted canaloplasty in the other eye. There was no difference in the postoperative IOP after 1 year between the 2 groups. Therefore, and because of the risks of circumferential viscoinjection into Schlemm canal, we believe that canaloplasty with placement of a tensioning suture alone is highly effective, safe, and reproducible glaucoma surgery in eyes with open-angle glaucoma and would prevent the described complication.

Figure 1. A: Large Descemet membrane detachment with mixture of blood and OVD 1 day after iTrack-assisted viscocanaloplasty. B: Without intervention, the Descemet membrane detachment resolved completely and the corrected distance visual acuity returned to the preoperative value after 2 weeks. Note the small predescemetic brownish residuum 1-year postoperatively.
Gabor B. Scharioth, MD, PhD
Recklinghausen, Germany

The author is consultant to D.O.R.C. International BV. He is inventor of the Glaucolight and receives royalties.

REFERENCES

OTHER CITED MATERIAL

Reply: The authors would like to thank Dr. Scharioth for his useful and expert opinion. Pre-Descemet hematoma is a relatively rare intraoperative complication of canaloplasty.1 The mechanism of Descemet membrane detachment during procedures on Schlemm canal is not entirely clear, and both the surgical technique and anatomic factors might contribute to this complication. The classic canaloplasty surgical technique does not allow control of the pressure inside Schlemm canal during the viscodilation, which is presumed to cause Descemet membrane detachment.2–4 Other authors have described it as a complication of canaloplasty and viscoscanalostomy.5–9 Nonetheless, pre-Descemet hematoma occurring the visual axis is an extremely rare complication of canaloplasty.1 Our team is also very experienced in glaucoma surgery. We have performed approximately 8000 nonpenetrating as well as 400 canaloplasty procedures, and such a complication was observed in 1 patient only.

In our opinion, the way of handling pre-Descemet hematoma was accurate. Only early hematoma evacuation done during the primary procedure, which was presented in the article as a new surgical technique, made it possible to achieve good visual acuity immediately after the surgical procedure. Thanks to this method, waiting for long-lasting resolution of the hematoma was avoided. Moreover, the outcome of a wait-and-see strategy suggested in Dr. Scharioth’s letter would be uncertain; in the worse-case scenario, it could lead to permanent vision impairment. There was no need to perform a second surgery, which seems to be very comfortable for both the patient and surgeon. This method was inspired from the teams’ experience in performing lamellar corneal transplantation.

Dr. Scharioth pointed out that classic canaloplasty using the iTrack flexible microcatheter might carry a higher risk for Descemet membrane detachment because one of its elements is viscodilation of Schlemm canal in comparison to modified canaloplasty using the Glaucolight, in which viscodilation of Schlemm canal is not performed. It should be emphasized that there is not a sufficient number of reports in the literature on this modified method; no clinical studies published describe different aspects of this procedure. For this reason, it is difficult to agree with Dr. Scharioth’s opinion of a favorable safety profile for modified canaloplasty.

Large prospective randomized clinical trials comparing the iTrack and Glaucolight devices should be planned to assess the differences between these 2 surgical methods of canaloplasty in regard to IOP, the need for antiglaucoma medication, and the rates of intraoperative and postoperative complications. A study comparing those 2 methods is being performed at our clinical center. We hope that we will be able to present the outcomes in the near future.

In our opinion, canaloplasty assisted with the Glaucolight device requires a longer learning curve and seems to be more challenging than with the iTrack device because the catheter is thinner and more flexible. Use of the Glaucolight might result in technical difficulties during intubation and might be more traumatic to Schlemm canal. However, this is only the experience of our team and cannot be verified because no scientific papers on the subject are available.—Marek Rekás, MD, PhD, Anna Byszewska, MD, Anselm Jünemann, MD, PhD

REFERENCES