

# Techniques for Inserting and Removing OVDs

BY FRANK A. BUCCI JR, MD; ERIC D. DONNENFELD, MD; JAY S. PEPOSE, MD, PhD;  
AND R. BRUCE WALLACE III, MD

*What is your preferred viscoelastic agent and method for injecting and removing it for routine cataract surgery?*

—Topic prepared by R. Bruce Wallace III, MD.

## FRANK A. BUCCI JR, MD

The ophthalmic viscosurgical device (OVD) I use most often for routine cataract surgery is Cellugel (Alcon Laboratories, Inc.). This dispersive viscoelastic is made of hydroxypropyl methylcellulose 2%. I instill the viscoelastic just before I complete my temporal clear corneal wound and perform the capsulorhexis. I inject the OVD through the paracentesis, which is located 3 hours clockwise from the main temporal clear corneal wound. I place the cannula across the anterior chamber and inject the viscoelastic while withdrawing the cannula back toward the paracentesis site. I find that this motion aids in removing any bubbles that may have accumulated in the anterior chamber during prior maneuvers. The properties of Cellugel allow me to perform a capsulorhexis rapidly without major concern that it will run to the periphery.

I am increasingly using a supracapsular technique during phacoemulsification, which I find to be compatible with high-vacuum venturi phaco systems. I hydrodelineate the entire nuclear and epinuclear entity 90° into a vertical position. I then stabilize this entity by placing a small amount of OVD on each side of the nucleus. I also find it useful to push the iris away from the nucleus during this maneuver if pupillary dilation is less than ideal. Most importantly, I place a generous amount of viscoelastic between the corneal endothe-

lium and the superior pole of the “tipped” nuclear entity. This maneuver has allowed me to employ an aggressive supracapsular technique without creating increased corneal edema postoperatively.

Before I insert the IOL, I inflate the capsular bag with viscoelastic and push the subincisional iris posteriorly with a small amount of viscoelastic upon exiting the main incision. After I properly place the IOL, I remove all viscoelastic with irrigation and aspiration. I am careful to remove all of the material from under the optic.

## ERIC D. DONNENFELD, MD

I prefer to use a cohesive viscoelastic to start my cataract surgery, and my agent of choice is Healon (Abbott Medical Optics Inc.). The most crucial aspect of phacoemulsification is creating the capsulorhexis, and I find the capsule to be most responsive under this OVD. I moderately hyperinflate the eye to push back the lens and create more pressure in front of the lens than behind it. In my experience, this simple maneuver virtually eliminates radial capsular tears caused by the lens' pushing forward and having the capsulorhexis run to the periphery. In about 20% of cases, I will add a dispersive viscoelastic (Viscoat; Alcon Laboratories, Inc.) when I begin phacoemulsification if I am dealing with a moderate to dense nucleus and I desire additional endothelial protection.

When I am ready to insert the IOL, I refill the anterior chamber with Healon to open up the space between the anterior and posterior capsules and ensure the proper placement of the IOL. After I implant the IOL, I use high vacuum in the venturi mode to maximize the removal of the viscoelastic. This

step is even more important if I have used Viscoat, because this OVD will sequester nuclear fragments, and the venturi mode does not require occlusion of the tip to maintain vacuum. My final maneuver to ensure that the OVD has been completely removed is to tap on the IOL and tilt it to allow the I/A tip behind the lens.

### JAY S. PEPOSE, MD, PhD

The ideal OVD would be retained in the anterior chamber throughout phacoemulsification and then easily and completely removed afterward to eliminate a postoperative rise in IOP. At different stages of the procedure and at different flow rates, I find that it is sometimes best to have an OVD with more dispersive, protective, coating properties (usually associated with a low viscosity and molecular mass), whereas at other times, a viscoelastic with more cohesive properties (higher viscosity) is necessary for maintaining space and easy removal. I have found that, in a single syringe, Amvisc Plus (Bausch + Lomb) has a combination of both dispersive and cohesive characteristics that facilitates phacoemulsification. Because of these viscoadaptive rheologic features, this OVD has become my choice for routine cataract surgery.

With regard to technique, I inject a small amount of the OVD before I enter the eye to remove all of the air from the syringe and the cannula. Avoiding downward pressure of the cannula within the paracentesis can prevent the rapid efflux of aqueous, which might cause the anterior chamber to collapse. I begin injecting the OVD immediately upon advancing the cannula into the anterior chamber in order to create a protective shield of OVD that obviates contact with intraocular tissues. Next, I advance the tip all the way across the anterior chamber and forcefully inject the OVD while withdrawing the tip, thereby propelling the aqueous out of the paracentesis.

I rock and rotate the IOL to help express the OVD from between the IOL and the capsular bag. In some circumstances, I place the I/A tip under the IOL to ensure the OVD's complete removal.

### R. BRUCE WALLACE III, MD

I use the dispersive-viscoadherent soft shell technique described by Steve A. Arshinoff, MD, FRCSC.<sup>1</sup> I inject DuoVisc (Alcon Laboratories, Inc.) through the phaco incision, because I make the sideport incision with a blunt-sided diamond knife (Wallace Sideport Diamond Knife; Rhein Medical, Inc.). The sideport incision serves as a fixation device for the phaco incision and obviates the need for an injection of viscoelastic before creation

of the temporal phaco incision, because there is no downward pressure on the globe with this maneuver. I inject the viscodispersive agent (Viscoat) and then the viscoadherent agent (ProVisc; Alcon Laboratories, Inc.) on top of the anterior capsule, which elevates the viscodispersive to help coat the corneal endothelium. If the nucleus is unusually dense during phacoemulsification, I reinject the viscodispersive agent. Before I insert an IOL, I inject the viscoadherent OVD. My technique for removing the viscoelastic depends on the IOL I am implanting. For single-piece IOLs, I first place the I/A tip under the optic and then anterior to the optic. I reverse these steps for three-piece IOLs. ■

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1. Arshinoff SA. Dispersive-cohesive viscoelastic soft shell technique. *J Cataract Refract Surg.* 1999;25:167-173.