

# Trypan Blue and Healon5

A three-step technique for capsular staining.

BY ROBERT H. OSHER, MD

Since the independent reports of Horiguchi et al<sup>1</sup> and Melles et al,<sup>2</sup> who introduced indocyanine green and trypan blue, respectively, for staining the anterior capsule, I have been a vocal advocate of capsular dyes. There is no question that capsular dyes increase the safety of performing the capsulorhexis in cases of white cataract. A patient with a dark brunescant cataract or an anterior cortical cataract may also benefit when the visibility of the capsule is enhanced. Although the original reports favored the use of trypan blue beneath an air bubble, I never enjoyed as much control as when performing the capsulorhexis beneath Healon5 (Advanced Medical Optics, Inc., Santa Ana, CA). Unfortunately, injecting a dye when an ophthalmic viscosurgical device (OVD) is present in the anterior chamber can result in an "inkblot," which will interfere with visualization. Moreover, the additional resistance of the OVD may force the dye back through the zonules and cause a loss of the red reflex.

This article describes my three-step technique for capsular staining.

## HOW IT WORKS

The three-step technique allows the surgeon to create the capsulorhexis beneath the OVD with the clearest possible view. First, I fill the anterior chamber with Healon5 (Figure 1). Next, I gently inject BSS through a 27-gauge cannula directly onto the anterior capsule (Figure 2). This monolayer of fluid lifts the Healon5 into the chamber's dome while creating a wafer-thin fluid medium into which the trypan blue can easily be distributed onto the surface of the lens. A special cannula with a hole on its posterior surface (MMP203; Duckworth & Kent Ltd., Hertfordshire, England) facilitates the precise placement of the capsular dye onto the anterior capsule (Figure 3). If some extra dye accumulates within the anterior chamber and compromises visualization, I can easily irrigate it away and replace the volume with a bit more OVD. In the vast majority of cases, the three-step technique alone will offer a surgeon clear visualization (Figure 4) and enable one to complete the capsulorhexis with excellent control by means of either a bent needle or a forceps in combination with a variety

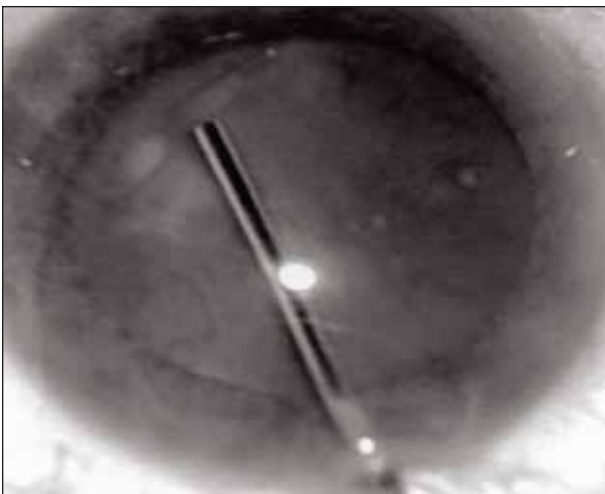


Figure 1. The author fills the anterior chamber with Healon5.

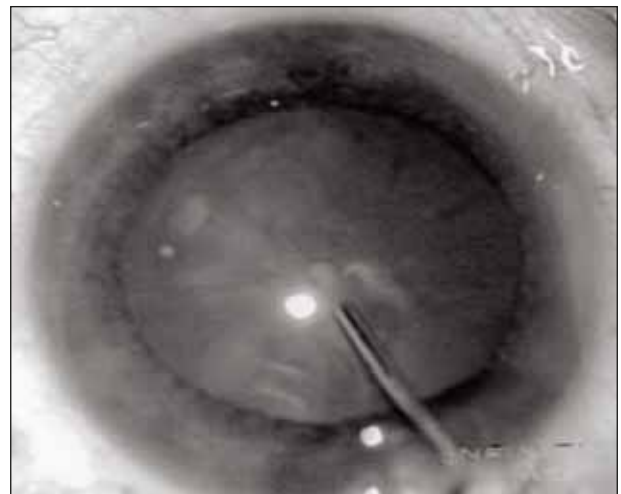


Figure 2. The author injects BSS through a 27-gauge cannula onto the anterior capsule.

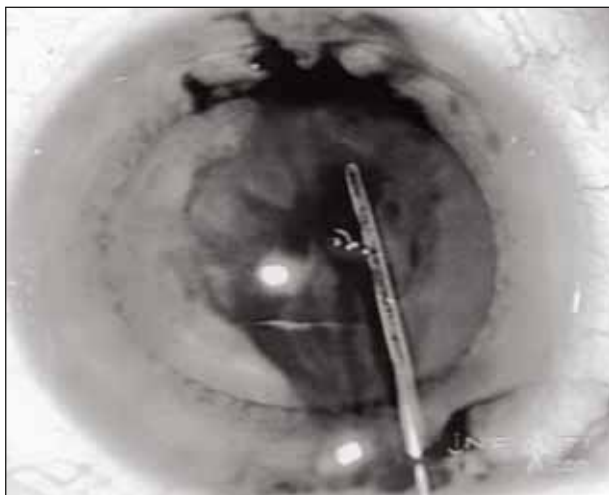


Figure 3. The author uses a special cannula with a hole on its posterior surface to inject dye into the fluid monolayer on the anterior capsule.



Figure 4. The edge of the capsulorhexis is easy for the surgeon to visualize.

of capsulorhexis techniques.

I prefer the same bent 22-gauge needle that I have used since 1986, unless the zonules are loose, in which case I will use a forceps. I call my favorite capsulorhexis technique the *safety capsulorhexis*, because it offers me a second edge to use if I encounter a problem with the initial one. I start the capsulorhexis approximately 160° opposite to the incision by creating a midperipheral,

left-to-right slash with the bent tip of the 22-gauge needle, which raises a <-shaped flap (Figure 5A). Turning around the proximal edge with the needle (essentially a U-turn) makes the edge point to my left (Figure 5B). I then direct the distal edge clockwise 360° and complete the capsulorhexis outside of the proximal safety edge (Figure 5C).

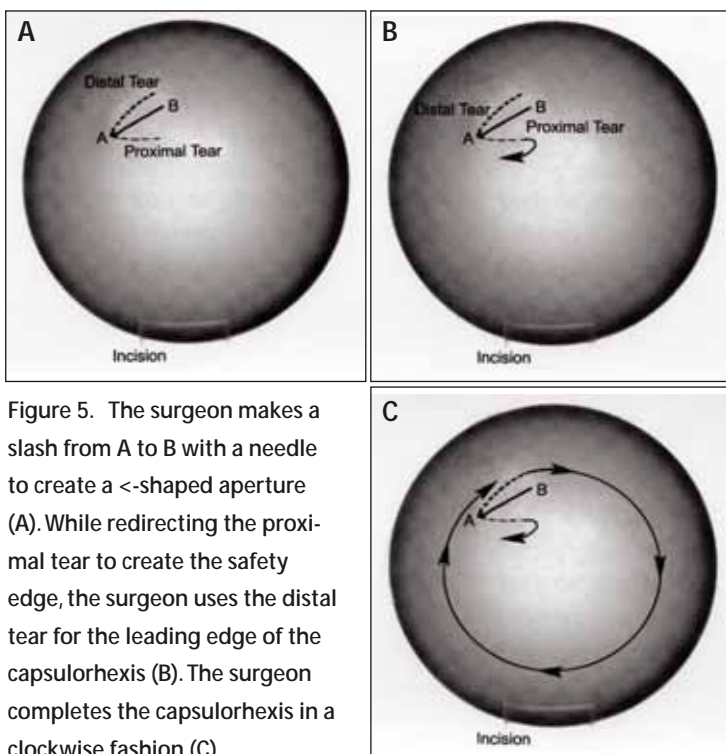


Figure 5. The surgeon makes a slash from A to B with a needle to create a <-shaped aperture (A). While redirecting the proximal tear to create the safety edge, the surgeon uses the distal tear for the leading edge of the capsulorhexis (B). The surgeon completes the capsulorhexis in a clockwise fashion (C).

### CONCLUSION

Regardless of the technique or the choice of instrument, performing the capsulorhexis safely has never been easier than with the three-step method for capsular staining. Capsular dyes give surgeons an advantage when critical visualization is compromised. ■

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1. Horiguchi M, Miyake K, Ohta I, Ito Y. Staining of the lens capsule for circular continuous capsulorhexis in eyes with white cataract. *Arch Ophthalmol.* 1998;116:535-537.
2. Melles GR, de Waard PW, Pameijer JH, Beekhuis WH. Trypan blue capsule staining to visualize the capsulorhexis in cataract surgery. *J Cataract Refract Surg.* 1999;25:7-9.