

Retrieval Maneuver for CCC Tear-Out

This technique is simple and effective for rescuing a rhexis tear-out.

BY BRIAN LITTLE, MD

One of the most disheartening ways to start any phaco operation is with a tear-out of the capsulorhexis. It happens to every surgeon at some point, and retrieving a tear-out is always a technical challenge that, unfortunately, is all too often unsuccessful. This article describes a simple yet highly effective technique for salvaging this situation. It works reliably even when the tear has gone out into the zonules, and it can retrieve tears that appear impossible to recover by any other means. This procedure will hopefully prove to be a useful addition to your personal library of surgical rescue maneuvers.

PREVENTION

As with all surgical complications, the concept that prevention is better than cure applies here without exception. Surgeons can avoid a tear-out of the rhexis in nearly all cases just by using an adequate amount of appropriate ophthalmic viscosurgical device (OVD) to

keep the chamber deep throughout creation of the rhexis.

In the case of significant positive vitreous pressure with a tendency for aggressive chamber collapse, there are a few helpful strategies that surgeons can employ. You can use one of the higher-molecular-weight cohesive OVDs such as Healon 5 (Advanced Medical Optics, Inc., Santa Ana, CA) to perform the rhexis through a sideport using a needle cystotome or microcoaxial forceps, or use an infusion of OVD through a syringe that is held in the non-dominant hand through the sideport.

The other principle for prevention is early recognition of a threatening situation while it is still retrievable, before it develops into a full-blown complication. As soon as there is even the slightest hint of the rhexis migrating out peripherally, surgeons should immediately stop and then refill the chamber to flatten the anterior lens surface. This rapid response is usually sufficient to maintain control of the tear.

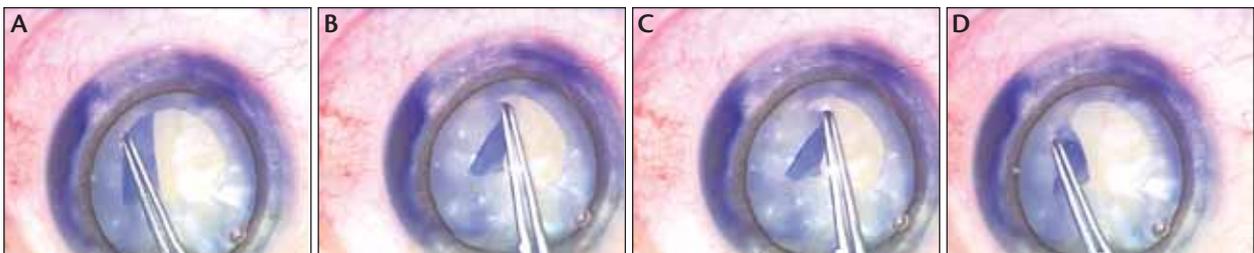


Figure 1. The use of trypan blue stain highlights the basic steps of the technique. The flap is folded forward as the capsulorhexis is constructed (A). The flap is unfolded and grasped (B). The flap is pulled backward to redirect the tear centrally (C). The flap is refolded forward, and the tear is continued (D).

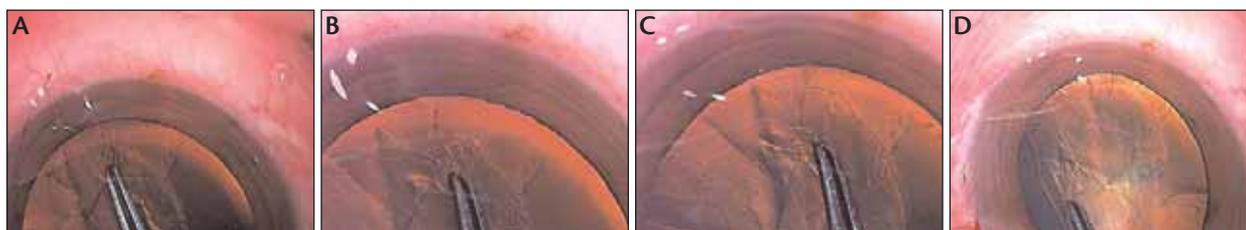


Figure 2. Demonstration of the technique where the capsulorhexis is torn in the area of zonular attachments. The capsulorhexis has inadvertently torn into the zonules (A). The flap is unfolded, grasped, and pulled backward (B). Backward traction on the flap has redirected the tear (C). The capsulorhexis is continued in the standard fashion (D). (Reprinted with permission from Little BC, Smith JH, Packer M. "Little" capsulorhexis tear-out rescue. *J Cataract Refract Surg.* 2006;32:1420-1422.)

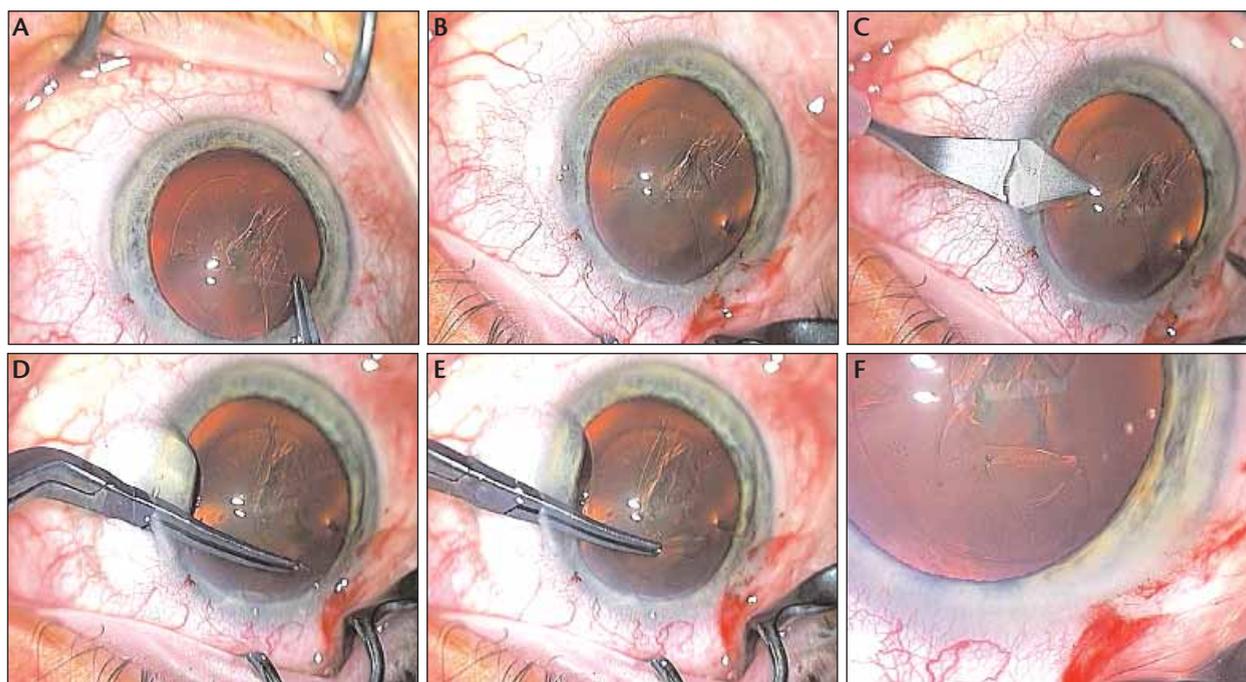


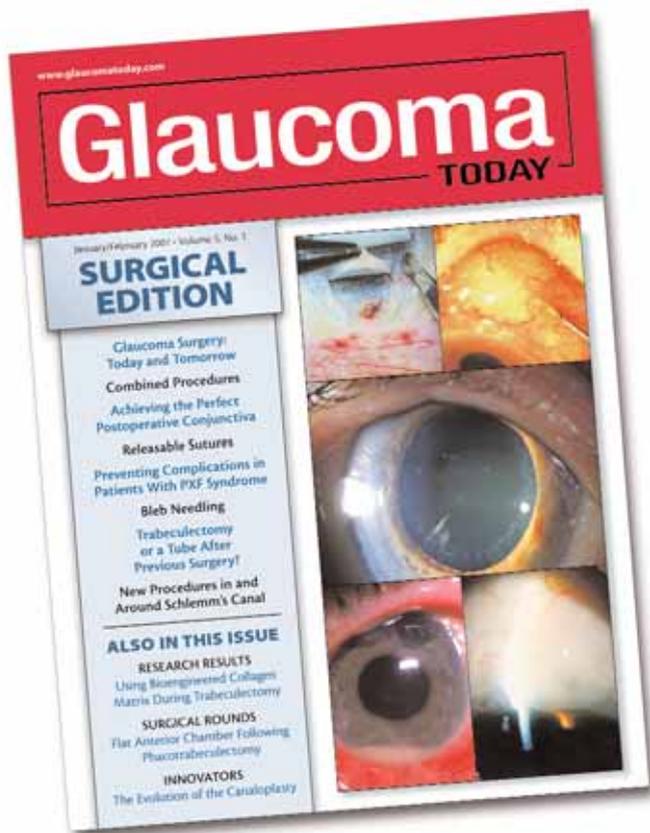
Figure 3. The surgeon demonstrates the use of a new paracentesis to obtain optimal positioning for redirecting the tear. The capsulorhexis is tearing out (A). The forceps are removed from the eye, and the tear-out is examined (B). A new incision is made across from the position of the tear-out (C). The apex of the flap edge is grasped and pulled backward from the direction of the tear (D). The tear is redirected centrally (E). The surgeon demonstrates the capsulorhexis U-turn (F). (Reprinted with permission from Little BC, Smith JH, Packer M. "Little" capsulorhexis tear-out rescue. *J Cataract Refract Surg.* 2006;32:1420-1422.)

SURGICAL TECHNIQUE

Once a surgeon feels he has lost control, he should stop all activity in order to calmly assess the situation and decide on a surgical strategy. With a rhexis tear-out, the primary aim is to prevent its posterior propagation around the equator and through the posterior capsule. In my practice, this happens surprisingly infrequently, possibly due to the criss-crossed insertions of the zonules offering an interwoven web of resistance and blocking extension of the tear. Having acknowledged that it has happened, the next step is for the surgeon to completely fill the chamber with an OVD before making any attempt to rescue the rhexis.

The surgeon needs to redirect the tear centrally back to its original path. The most efficient way of doing this is to unfold the anterior capsule flap and lay it flat against the lens cortex. Using forceps, the trick is then to hold the flap near the root of the tear and pull it back circumferentially in the direction from where it came, applying the force in the plane of the capsule, to put it under tension. While holding the flattened flap under tension, the surgeon should then direct traction more centrally to initiate the retrieval of the tear. Resolution of the tangential and central vector forces redirects the tear predictably toward the center of the pupil. The flap can now be refolded and the rhexis safely continued in the usual manner.

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COVER STORY

KEY POINTS OF THE RHEXIS RESCUE TECHNIQUE

- Fill the chamber completely with viscoelastic before any attempt at retrieval.
- If necessary, make a second stab incision at the position that allows the optimal angle of approach for applying traction on the flap.
- Unfold the flap of the anterior capsule and flatten it against the lens (instrumental or viscomanipulation).
- If visibility of the capsule edge is compromised, use trypan blue to visualize the edges of the tear.
- Refill the chamber immediately before attempting retrieval.
- Use only rhexis forceps; do not attempt this technique with a needle cystotome because the directional control is inadequate, and the needle tip is likely to tear the flap.
- Grasp the flap as near to the root of the tear as possible.
- Apply traction in the horizontal plane of the capsule and do not lift it forward.
- The initial pull should be circumferentially backward, and while holding the flap in tension, pull more centrally to initiate the tear, which will then propagate toward the center.
- The big mystery is how much force can be safely applied—the answer is as much as you feel safe using, and you will better understand this concept as you become more experienced. If in doubt, abandon the technique and use an alternative recovery method.

Three contrasting cases are illustrated (Figures 1 through 3). In the rare event that the capsule refuses to tear easily and the entire lens is pulled centrally, surgeons should abandon the rescue maneuver to avoid a wrap-around tear of the capsule. Alternative recovery techniques such as completing the capsulotomy from the opposite direction, making a relieving cut in the flap edge and continuing in the same direction, or resorting to a can-opener technique are all appropriate options. ■

The article was adapted with permission from Little BC, Smith JH, Packer M. "Little" capsulorhexis tear-out rescue. J Cataract Refract Surg. 2006;32:1420-1422; and Little BC. Rescuing Capsulorhexis Tear-Out. Cataract & Refractive Surgery Today. 2007;2:2:30-31.

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