

Intracapsular Cortical Management in Laser Cataract Surgery

Adapt the laser to your technique.

BY PETER J. CORNELL, MD

When the femtosecond laser is used to assist cataract surgery, a sharp edge of the “intracapsular” cortex is created as opposed to the fluffy tags when the capsule is torn with a traditional capsulorhexis. This cut edge creates two issues that can be managed, and it is helpful to be aware of the potential associated problems and options for management. The sharply cut edge makes hydrodissection more difficult, because there is no natural plane into which the cannula can pass. The cut edges of cortex make its removal more difficult.



CORTICAL REMOVAL

In traditional cataract surgery, I use a J-shaped cannula and can obtain a fluid wave and excellent mobilization of the nucleus in almost every case. In my initial experience using the femtosecond laser, I found that getting a fluid wave was much more difficult, as was the mobilization of the nucleus. These problems extended my surgical times, and I sometimes struggled to remove the nucleus. Similarly, I found it took me longer to remove the cortex, particularly that located subincisionally.

The key to making the laser procedure easier, I found, is to use an instrument to define the plane between the anterior capsule and the cortex. Although this can be accomplished with a cannula or a Shepherd Capsule Polishing Curette, these instruments have a high profile and are not ideal to minimize capsular stress. In conjunction with Epsilon USA, I have developed a cortex club to accomplish this goal. This two-sided instrument has an angled,

blunt, low-profile club at each distal end that will fit through a 1-mm incision and allows the surgeon to dissect a plane between the cortex and capsule for 360°.

I generally make three sweeps: initially 5 clock hours for the right side, through the main incision for the left, and then from the subincisional area through the sideport last. Next, I go about the case as usual, and performing the same hydrodissection as I would in standard surgery, I typically obtain a thorough fluid wave. I recommend being gentle with the fluid wave, because the posterior gas bubbles already take up some space in the posterior capsule, and one does not want to put pressure on it. There have been reports of posterior capsular ruptures with these laser cataract procedures with the possible mecha-

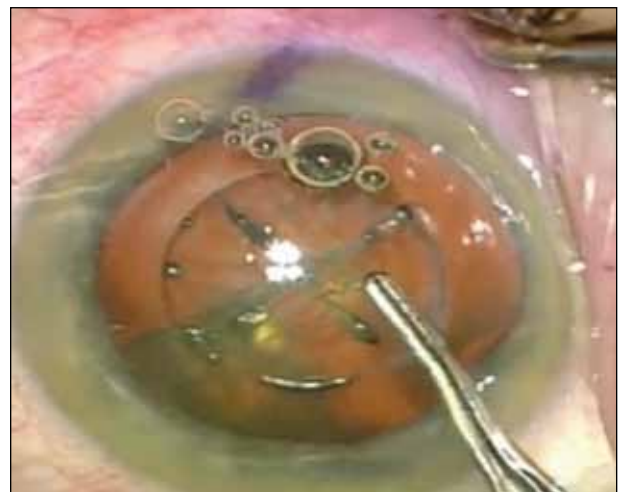


Figure 1. The author carefully removes the laser-cut capsular disc.



Figure 2. The author creates the cortical cleavage plane with the cortex club.

nism's being increased pressure from the combination of the posterior bubbles and hydrodissecting fluid. Although the gas bubbles may come out during hydrodissection, they do not always.

Next, I use my usual technique to rotate the nucleus 90°, which sets up my standard vertical chop approach. I can then execute my traditional technique for cortical removal, and the cortex will have nice tags similar to those created by a manual capsulorhexis.

ADAPTING THE LASER TO THE TECHNIQUE

Adapting the laser to assist one's standard cataract technique makes using the technology a pleasure rather than a chore. I acquired a LenSx Laser (Alcon Laboratories, Inc.) in September 2011, and for the first 20 cases or so, I was using the recommended settings of chops and cylinders with a divide and conquer technique. Between that and the problems I had managing the cortex, my cases were neither fluid nor comfortable. Once I decided to adapt the technology to me, instead of my adapting to the technology, and solved the puzzle of the cortical management, the cases became much more comfortable (Figures 1-3).

The major change that I made was to use a cross two-chop for the nucleus (instead of the initially recommended cross-and-cylinders program or "hybrid"). This approach allows me to use my usual chopping technique with the nucleus' now being prechopped. The capsule's removal is generally easy, but I must watch closely for capsular tags or adhesions that require careful management. I deal with any small area of adhesion by gently pulling the capsule toward the

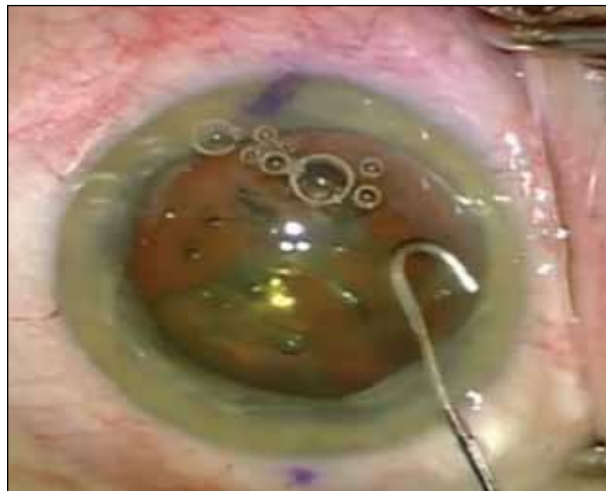


Figure 3. The author performs hydrodissection through the infracapsular cleavage plane.

center of the capsule. For a greater area of adhesion, I turn the capsule over and treat it similarly to a regular capsulorhexis that has been preperforated.

As noted previously, I then do the cortical sweep with the club instrument. Although this step takes an extra minute, in my opinion, it is time well spent. Next, I perform my standard (gentle) hydrodissection and 90° nuclear rotation, which leaves the nucleus prechop in line with my incision. I then perform a faster-than-standard nuclear removal with my usual technique by making a vertical groove most of the way down the precut nucleus, dividing it in half (the bubbles will come up at this time if they have not already), rotating it 90°, and taking the two precut quadrants with minimal chopping. I conclude the case with standard cortical removal and insertion of the lens.

CONCLUSION

The femtosecond laser holds much promise for the future, and I am sure that innovators will find ways to use it to augment the already wonderful cataract procedure in ways we surgeons cannot imagine. I have found the device to provide accurate and precise assistance for cataract surgery—once I solved the problem of the cut cortical edge and learned to adapt the laser to my technique. ■

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