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Capsular tension rings a boon for dealing with weak zonules

In severe cases, capsule retractors may be utilized as well, according to surgeon

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Ophthalmology Times



San Francisco—Weak zonules pose a great deal of concern to cataract surgeons. However, the availability of capsular tension rings (CTRs) is a real boon in helping surgeons deal with loose zonules. David F. Chang, MD, provided his practical tips for using CTRs during cataract surgery at the fourth annual San Francisco Cornea, Cataract, and Refractive Surgery Symposium.

Weak zonules can result from a number of different problems, notably, ocular trauma, aging, pseudoexfoliation, or Marfan's syndrome; however, weak zonules can also be associated with retinopathy of prematurity, prior trabeculectomy or vitrectomy, or an ultra-brunescent cataract.

David F. Chang, MD, reported that he was an investigator for the Morcher capsular tension ring and a consultant for AMO. He has no financial interest in any product mentioned. E-mail: dceye@earthlink.net

"Weak zonules complicate every step of the surgical procedure as well as the postoperative centration and stability of the IOL," Dr. Chang said.

"Capsular tension rings are designed to redistribute all of the surgical and capsular forces to the areas of the strongest intact zonules. The ring will increase the tension of the posterior capsule, resist contraction of the capsulorhexis, and may retard the development of posterior capsule opacification."

The devices do have disadvantages, however, in that their insertion can cause zonular trauma, they impede cortical clean-up, and they can become dislocated if the posterior chamber ruptures, pointed out Dr. Chang, clinical professor, University of California, San Francisco, and in private practice in Los Altos, CA.

Insertion of CTRs is contraindicated in the presence of a torn capsulorhexis or posterior capsule, or when one cannot adequately visualize the capsulorhexis. The device is inserted using either forceps or an injector.

When to insert

"The main surgical decision about capsular tension rings is when during the course of a procedure to insert them. Insertion can be done before, during, or after phacoemulsification, after cortical irrigation/ aspiration cleanup, or even after the IOL has been implanted," he said. "The objectives can vary with each situation. In some cases we are primarily worried about the postoperative stability of the IOL, while in other cases our main concern is with avoiding capsular rupture and vitreous loss during phaco."

Dr. Chang first demonstrated insertion of the CTR with the injector prior to IOL implantation in a case in which the cataract had already been extracted. To reduce the risk of perforating a lax posterior capsule with the ring, a generous amount of viscoelastic should be used to inflate the capsular bag. He uses a Lester hook to help bend the CTR into place as it is injected into the bag. This, he explained, allows the brunt of the bending forces to be borne by the hook instead of the capsulorhexis or the bag.

"This is the easiest situation in which to insert a capsular tension ring. It is ideal for surgeons just learning the procedure, because the capsular bag is empty," he



Figures 1A and 1B. Capsular tension ring (Ophtec/AMO) is injected into the bag, following use of two Mackool capsule retractors (FCI) to stabilize the capsular bag during phacoemulsification. (Figures courtesy of David F. Chang, MD)

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