



Dr. Kenneth D. Anthone MD, FACS

The new Crack And Stack Method is a highly adaptable cataract surgical procedure that allows the surgeon to perform phacoemulsification in less time than more traditional procedures, with a better safety profile for the patient. The procedure is ideal for most cataracts, ranging from the soft PSC found in the younger patient, to a hard brunescant cataract. The high degree of predictability of the Crack and Stack Method allows the surgeon to approach his or her more challenging cases with a greater degree of optimism and confidence in the final outcome.

The Crack And Stack Method is a variation of the supracapsular approach which has been advocated by William Maloney, M.D. In a recent article, Dr. Maloney stated that it is much more efficient to remove the nucleus from the capsular bag, prior to emulsification. In the popular intracapsular divide-and-conquer method, the first challenge is positioning the initial quadrant for emulsification. Dense cataracts often prove very difficult to disengage because of the significant resistance of the remaining three quadrants which remain interlocked, even though they have been cracked. The surgeon must move one quarter of the entire nuclear mass against the other 75% - a series of maneuvers, which require significant force to be directed against significant resistance, particularly if residual epinuclear adhesions remain. This maneuver is fraught with potential danger because the cracked quadrants are essentially triangular in shape, thus creating three relatively pointed areas, allowing the possibility of discrete pressure points against the capsule. The need to maneuver this sharp edged residual material increases the possibility of a tear in the posterior capsule.

With the nucleus cracked into four quadrants, the surgeon is forced to deal with three sharp edges per quadrant, or a total of twelve potentially dangerous segments, each of which can cause a rent of the posterior capsule if excessive manipulation is used to engage and position each discrete quadrant for emulsification.

The Crack

In performing the Crack And Stack Method, I begin with a single deep groove in the central nucleus. This deep groove facilitates the cracking of the nucleus into two discrete halves. I now need only concern myself with four pointed areas, which are potential threats to the posterior capsule.

The Stack

Next, I rotate the entire nucleus 90 degrees, orienting the crack horizontally. I then place my phaco tip against the middle of the proximal half of the nucleus. Removing my foot from the pedal causes irrigation to cease, thus softening the eye. Gentle downward and forward force is applied, subducting the proximal half beneath the distal half. The distal half then rotates into an inverted superior position. The halves are now stacked.

Utilizing this method, the capsule remains intact because no pressure is exerted against the capsule by the sharper edges of the nucleus. The deep groove facilitates the cracking of the two nuclei. In more traditional nucleus-flip techniques, the phaco tip must be pushed much further into the eye to achieve inversion than with the Crack And Stack Method. In the Crack And Stack Method, the sharp phaco tip only needs to be pushed half as far into the eye, since the relatively blunt half of the cracked nucleus displaces the other half. Since only the distal half is inverted, the amount of force and manipulation required is minimized.

The Necessity Of A Large Pupil

The Crack And Stack is ideally performed with a large pupil and wide capsulorhexis (approximately 6mm), since the halved nucleus is a relatively large mass to manipulate into a stacked position and ultimately out through the capsulorhexis opening. The large pupil and wide capsulorhexis is also helpful in that it allows adequate space to place the phaco tip at the proper position on the proximal half of the nucleus in order to push it forward. (Smaller capsulotomies do not leave much room between their border and the cracked edge of the nucleus.)

The use of a second instrument, such as a Bechert nuclear spatula, is essential, not only in the initial cracking stage, but as an aid to nucleus inversion.

In the stacked position, the distal half is now tumbled and rests on the proximal half of the nucleus. This leaves plenty of room for manipulation and excellent visibility, as the phaco tip may now engage all of the nucleus in the central area of the pupil. Since no epinuclear adhesions remain, the surgeon also enjoys complete freedom of movement of both halves of the nucleus; thus, phacoemulsification becomes faster, safer and easier. At this point, vacuum level is raised to 7QmmHg and the top half of the nucleus is emulsified. If necessary, that top half can also be cracked into further sections. At this point, each cataract may present in a slightly different manner. As those golfers among you might say, "play it the way it lays"— whichever way the nucleus turns is the way to go.

Following this, the inferior half, which is still in the bag but free from epinuclear adhesions, is easily emulsified since it usually will remain centered after removal of the superior piece. If, however, it does not easily move to the center of the pupil, slightly increase the vacuum power and after insertion of the phaco tip into the middle of it, pull the piece toward the center, or just manually move it with your second instrument.

Manual movement of the inferior half of the nucleus is best achieved by rotating it 90 degrees. Then take your foot off the foot pedal and when the tip of the nucleus tilts upward, the phaco tip can easily engage it. This second half of the nucleus is then easily emulsified longitudinally, or through its strongest middle part where the surgeon has the option of cracking it while emulsifying, if desired.

The Flap and Stack

If you are dealing with a relatively soft cataract, such as might be found in a younger person, cracking may not be necessary; after creating a deep groove, the surgeon may fold the nucleus upon itself, in a position resembling a "taco."

When pushing the proximal half of the nucleus into the distal half, the latter will fold on top of the former in the same manner as previously described for the crack and stack. For cataracts 2+ nuclear sclerosis or less, this method often proves simple and is extremely time efficient.

Summary

The new Anthone Crack And Stack Method (ACASM) offers numerous advantages to the ophthalmic surgeon. By cracking the nucleus directly in half (as compared to creating four separate pieces of nucleus in the traditional divide-and-conquer method), you are reducing your amount of exposure to a capsular tear by 75%. Without question, the procedure minimizes the amount of phaco time, thus providing for more rapid healing and a better overall prognosis for the patient.

In more than five hundred cases, I have experienced significant reductions in surgical time, and I am very pleased to report that I have not experienced a complication.