

IN FOCUS

A wide-open YAG posterior capsulotomy

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Use of the neodymium: YAG laser to perform posterior capsulotomy following extracapsular cataract extraction has been a welcome technologic advance for cataract surgeons. The ease and safety of YAG capsulotomies, with the elimination of at least one possible postoperative complication, endophthalmitis, has led to international use of this technique.

Nevertheless, the guidelines on how to perform a Nd: YAG capsulotomy remain fairly nonspecific. Table 1 summarizes the technical points described by a number of the investigators who developed the technique.¹⁻⁶

All recommend that the media be clear enough for adequate focusing of energy at the target site and that a contact lens be used to diverge the radiation posterior to the focus. There is a consensus that coaxial optics are necessary to avoid optical breakdown (OBD) in an astigmatized focal line and that the lowest possible energy and the lowest number of pulses be used.

These investigators agree that it is best to focus slightly posteriorly, start in the center, and move in a cross pattern to achieve a capsular opening of approximately 3×3 mm. Most advise avoiding flaps, especially the flaps that are superiorly hinged and thus may continue to impede the visual axis. They recommend that the operator not fire repeatedly at the same site because repeated pulses at subthreshold levels may lower the OBD threshold in a posterior chamber pseudophakos. They caution that the iris should be avoided primarily because it bleeds easily. A second session is suggested if things are not

going well or if it appears that too much energy is being applied.

Table 2 presents revisions that I have made in my own technique of performing YAG posterior capsulotomy based on personal experience. The first six recommendations and the final one remain the same and are not repeated in Table 2.

My revisions are based in part on the recognition that slightly higher energy levels not only break the capsule but also tend to push it slightly posteriorly and separate it from the optic. That in turn may

result in the need for far fewer pulses and ultimately in a smaller amount of energy being applied to the eye.

I also use large flaps so that the amount of energy that would destroy capsular tissue does not need to be applied, provided that the flaps can be fashioned and rolled posteriorly out of the way.

Finally, I start at the 12 o'clock position rather than centrally so that if the lens implant is marked at the initial power setting and focus, the marking will be peripheral to the visual axis. The capsulotomy

Table 1

Published guidelines for Nd: YAG posterior capsulotomy

Clear media
Abraham contact lens
Coaxial optics (to avoid astigmatized focal line)
Lowest possible energy
Low number of pulses (one only, if possible)
Focus posteriorly (+1 D on eyepieces)
Start centrally, move in cross pattern (for 3×3 mm opening)
Cut perpendicular to capsular tension lines
Avoid flaps, especially any superiorly hinged
Don't fire repeatedly at same site
Avoid hitting iris
Consider second session

Table 2

Revised technique for Nd: YAG posterior capsulotomy

Stay within circle described by positioning holes
Start at 12 o'clock and cut to 6 o'clock position (using 2.3-2.5 mJ)
Start at cut edge at 10 o'clock and cut horizontally to surgeon's left
Start at cut edge at 2 o'clock and cut horizontally to surgeon's right
Start at cut edge at 8 o'clock and cut horizontally to surgeon's left
Start at cut edge at 4 o'clock and cut horizontally to surgeon's right
Focus directly on—not behind—any residual flaps to scroll them posteriorly, and amputate if necessary

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that results from this technique is certainly larger than the standard 3-x-3-mm opening, which I have found inadequate for full evaluation of the fundus periphery.

By following the guidelines in Table 2, I usually achieve a very symmetrical hexagonal posterior capsulotomy with stable flaps that are scrolled posteriorly and an opening that allows evaluation of the fundus periphery. Postoperative photographs show the reproducibility of the technique (Figs 1 and 2).

References

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Fig 1. Cuts are made within circle described by lens positioning holes.



Fig 2. Residual flaps are scrolled and rolled posteriorly out of the way.