

Phaco Pearls

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With improvements in phacoemulsification techniques and technology, there has been a paradigm shift not only in the energy delivery modalities, but also the fluidic systems, and the fluidic parameters that we use. I am now switching to lower and lower fluidic parameters, and I find them to be dramatically effective in emulsification of all types of cataracts, even in the most difficult scenarios.

I recommend using a modestly low aspiration flow rate as a routine for all surgeries. This will reduce the turbulence within the anterior chamber, therefore having a beneficial effect on both, the corneal endothelium as well as postoperative inflammation. Another advantage would be that the reduced outflow from the eye will require a reduced inflow, therefore, allowing the surgeon to perform emulsification at lowered bottle heights. This, in turn will maintain lower intraocular pressure (IOP) during surgery. We have found during in vivo studies measuring the IOP during phacoemulsification, that the use of high bottle heights and high aspiration flow rates is associated with higher levels of intraoperative IOP. This would be important in all eyes, but especially in eyes that have a compromised circulation, such as glaucomatous eyes or eyes with a vascular compromise. I follow and recommend the slow motion technique, propagated by Dr. Osher, which involves using low flow rate and low bottle height. Additionally, I also recommend the step-down technique, wherein the flow rate and bottle height are progressively lowered as more fragments are removed and more and more posterior capsule is exposed. This will allow the surgeon to perform emulsification at a posterior plane without endangering the posterior capsule.

This approach is useful in all eyes, but especially in complicated scenarios such as small pupil, floppy irides, high myopes, subluxated cataracts and pediatric eyes. This will prevent the pupil from becoming smaller during surgery and will also minimize iris prolapsing through the incisions.

Here are the settings that I would use for a grade 3 nuclear sclerosis. I operate on the Infiniti Vision system (Alcon) using the Torsional Ultrasound (Ozil).

	Torsional amplitude (linear mode)*	Aspiration flow rate (cc/min)	Bottle height (cm)
Sculpting	80	25	60
Chopping	80	25	60
Fragment removal (initial)	80	25	80-90
Fragment removal (late)	80	20-18	80-90

* Variable depending on grade of cataract

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