OZIL IP in a Uniformly Dense Nucleus

Torsional ultrasound offers unsurpassed safety with challenging cases.

To watch a video of this case, visit CRSTodayEurope.com and enter the keyword "RTBFonseka" in the search bar.

BY CHARITH FONSEKA, MD

I have been using OZil Torsional Ultrasound (Alcon Laboratories, Inc., Fort Worth, Texas) since 2006. Previously, I used longitudinal ultrasound on the INFINITI Vision System (Alcon Laboratories, Inc.), with which I had to use burst mode and high parameters: flow rates of 50 mL/min, vacuum of 650+ mm Hg, and a bottle height of 135 cm H_2O. After being introduced to the OZil Torsional technology, I readily adopted it because of its ability to perform cataract surgery faster and safer. The OZil Torsional handpiece moves in a sweeping, oscillating motion that cleaves nuclear material on each pass. Thus, it is much more efficient than longitudinal ultrasound, which only emulsifies material during the forward motion. The ability to complete cataract surgery faster and expend less thermal energy in the main incision were the two main reasons I switched to the OZil Torsional technology. With experience, however, I realized I could also use much less fluid in the anterior chamber to emulsify cataracts, and I was able to lower my phaco parameters considerably.

BENEFITS OF OZIL INTELLIGENT PHACO (IP)

I adopted the Intelligent Phaco (IP) software for OZil technology about 1 year ago. In my view, with OZil technology, the nuclear fragment needs room to tumble, which is why the phaco tip performs best at the outer edges of nuclear fragments and should not be embedded. I use increased pressure on the foot pedal to maximize efficiency with OZil technology. I also reduce the foot pedal's span in foot position 3, which enables me to go from zero to 100% power in a very short time. These steps reduce the chance of minor occlusion during fragment removal. This strategy, combined with high vacuum (450 to 500 cm H_2O), lets me emulsify any grade of cataract with only OZil Torsional ultrasound without experiencing occlusion during fragment removal. Before OZil IP, I never combined longitudinal ultrasound with OZil Torsional emulsification, even for dense cataracts. Because I used high vacuum, I had to use a high flow rate to compensate for the slight chamber instability following occlusion break. OZil IP has allowed me to reduce my vacuum to 300 mm Hg and my flow rate to 20 mL/min, because the phaco tip no longer occludes. Unless I am working with a black

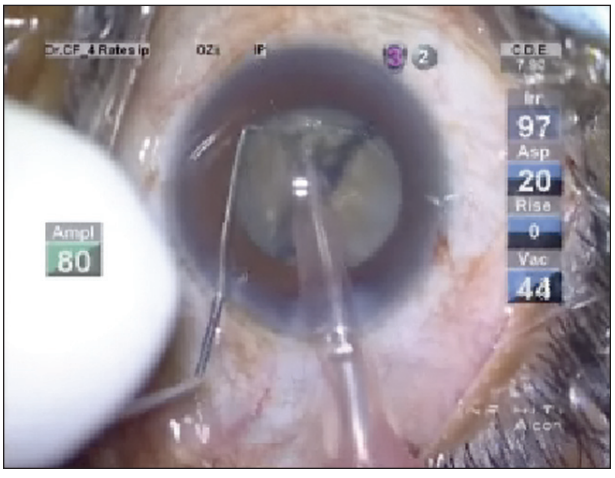

Figure 1. The author initiates nuclear disassembly in the capsular bag using OZil Torsional ultrasound and a Fonseka chopper.

cataract, my bottle height is typically a maximum of 80 cm H_2O compared to the 100 cm H_2O that I used for all cases prior to OZil IP. With OZil IP, I no longer anticipate the phaco tip's occluding, because a pulse of longitudinal energy occurs when the vacuum threshold is reached. This allows me to concentrate on the overall aspects of the surgery.

EXCEPTIONAL SAFETY WITH OZIL TORSIONAL EMULSIFICATION

This case illustrates the level of confidence that I feel OZil Torsional ultrasound provides me. In my view, it shows how OZil IP improves the efficiency of nuclear extraction, generates less heat, and imparts less trauma to the main incision versus my experience with traditional longitudinal phacoemulsification. Furthermore, because OZil Torsional ultrasound creates less chatter at the phaco tip, there is less turbulence in the anterior chamber, which may also reduce the risk of endothelial damage. Day-1 outcomes certainly prove the benefit of these lower fluidics—my patients' corneas are all crystal clear, even those eyes that had a very dense cataract. With OZil Torsional phacoemulsification, I spend approximately 10% less time working on medium-to-hard cataracts, and I am able to turn over more cases than I could previously.

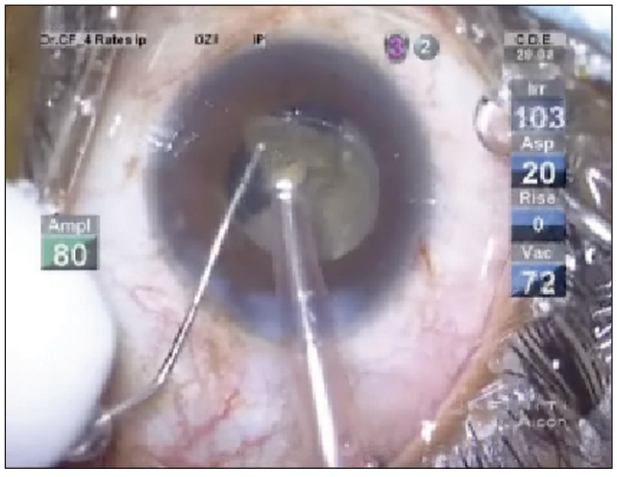

Figure 2. Keeping the phaco needle at the outer edges of nuclear fragments allows the torsional techique to shear off material.

CASE EXAMPLE

Presentation

A 68-year-old patient presented with a dark brown cataract that was uniformly dense from the center to the periphery. In spite of that, the video shows how smoothly and efficiently the surgery progressed with OZil Torsional ultrasound. I was able to remove most of the cataract using only OZil Torsional emulsification.

Surgical Course

I began the surgery by applying topical anesthesia. I created a 2.2-mm clear corneal incision and then instilled trypan blue dye into the anterior chamber. After completing the capsulorhexis and rotating the nucleus, I inserted a KELMAN 0.9-mm Mini Flared tip with an Ultra Sleeve (Alcon Laboratories, Inc.) and began to sculpt the nucleus. I use a stop-and-chop technique for nuclear disassembly, for which I employ a chopper I designed myself (ASICO LLC; Westmont, Illinois). It is a blunt chopper that assists with both vertical and horizontal chopping. I usually disassemble the nucleus into several fragments (six to eight) depending on its density. If I bury the tip and move to foot position 2, it holds the fragment extremely well, with no repulsion, so I can chop it.

I generally prefer to perform most of my surgery within the capsular bag. I do not like fragments rising above the iris, because then I have to use the phaco needle close to the endothelium. Large nuclear fragments do not have much room to tumble, so I work around the edges of the fragments and shear off material bit by bit until each piece is small enough to tumble and be emulsified. Table 1 shows the parameters I used for this case.

When emulsifying dense cataracts, micro-occlusions can occur. This is when the OZil IP technology is most useful. When the software senses suction building at the tip, it sends a pulse of longitudinal ultrasound through the phaco tip that repositions the material and allows the tip to continue its shearing motion. I appreciate having the ability to customize the OZil IP settings to the individual surgeries (Table 2). With dense cataracts such as this one, I set the IP to come on at 96% of maximum vacuum.

TABLE 1. CASE PARAMETERS

Procedure Step	Chop	Fragment Removal
Bottle Height cm H_2O	80	80
Energy Amplitude min%/max%	Torsional, Linear Continuous 100	Torsional, Linear Continuous 100
Vacuum mm Hg	Linear 300	Linear 300
Aspiration cc/min	Linear 20	Linear 30
Dynamic Rise	0	0
OZil IP	On	On

TABLE 2. OZil IP PARAMETERS

Procedure Step	Chop	Fragment Removal
Vacuum Threshold % of Vacuum Limit	96	96
Phaco Pulse On Time Msec	-	10
Longitudinal/ Torsional Ratio	-	1.0

I was able to disassemble and emulsify the nucleus with ease using OZIl Torsional ultrasound alone. The corresponding video shows that although I used the same parameters throughout the duration of the case, the anterior chamber did not fluctuate at all, thanks to the superb INTREPID Fluidic Management System of the INFINITI Vision System.

I routinely use DisCoVisc OVD (Alcon Laboratories, Inc.) as my viscoelastic. This agent provides an excellent coating on the endothelium, and I am able to remove it completely at the end of the case. DisCoVisc OVD leaves all my patients' corneas looking pristine on the first postoperative day.

I successfully removed the cataract and polished the capsular bag. I inserted an SN60WF IOL (Alcon Laboratories, Inc.) without complication. The patient's outcome was excellent; on the first postoperative day, his UCVA was 20/30+, and his cornea was very clear. ■

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