OZil IP Torsional Ultrasound in Routine Cataract Surgery

BY ROBERT KAUFER, MD

I used to use a Venturi phacoemulsification system before the INFINITI Vision System (Alcon Laboratories, Inc., Fort Worth, Texas) became available. I adopted OZil Torsional Ultrasound as soon as it debuted, because I thought the concept of the technology—the oscillatory shearing motion of the phaco tip—made a lot of sense. I have enjoyed using this technology, even before the addition of the Intelligent Phaco (IP) software (Alcon Laboratories, Inc.). I have been using OZil IP Torsional Ultrasound since December, and I think the concept is brilliant.

TECHNIQUE AND LEARNING CURVE

Although I thought that learning to use the OZil Torsional Ultrasound was easy, after a little while, I discovered that the technique I was using was not taking full advantage of the technology. I was maneuvering the phaco tip the same way I did in longitudinal phacoemulsification, by embedding it in the nucleus. However, Torsional ultrasound works most effectively when the phaco tip is held just in front of the nuclear material so that it has room to shear the material with its side-to-side motion. If the OZil tip is embedded in the nucleus, it cannot work as quickly or effectively.

With this technique in mind, before the IP software, I used my left-hand instrument to keep the nucleus in front of the OZil phaco tip and not let the tip enter the material. Whenever I saw the vacuum start to rise, I would push the material away from the tip with the second instrument.

OZIL INTELLIGENT PHACO (IP)

The Intelligent Phaco (IP) technology essentially repositions the nuclear material for the surgeon. It prevents clogging at the phaco tip, although I never experienced problems with occlusion with the first-generation OZil technology. Now, instead of having to use my left-hand instrument, the IP software senses any rise in vacuum and responds by emitting short pulses of longitudinal ultrasonic energy through the OZil handpiece to briefly repel the material from the tip and give the tip the space it needs to continue shearing. The surgeon can set the IP software to respond at a determined vacuum level; I typically set it at 98%. Because I still use my left-hand instrument to assist the emulsification, the IP rarely turns on for me. The IP technology is a lot like having ABS brakes on a vehicle; you likely won't need it very often, but knowing that it is there gives you peace of mind during surgery.

CASE PRESENTATION

As the corresponding video shows, I operated on the left eye of a 75-year-old female with grade +3 to +4 cataract. The eye's preoperative vision was 20/200. This case is representative of many of the operations I perform with the OZil IP Torsional Ultrasound technology.

INCISIONS AND CAPSULORHEXIS

I began the surgery by making the paracentesis followed by a 2.2-mm clear corneal nasal incision. Next, I instilled lidocaine 1% onto the corneal surface and into the anterior chamber, and then I filled the anterior chamber with VISCOAT OVD (Alcon Laboratories, Inc.) as the first part of the DuoVisc technique (Alcon Laboratories, Inc.). VISCOAT OVD stabilizes the anterior chamber and protects the endothelium during the surgery.

I used Utrata forceps to make a 5-mm capsulorhexis. I prefer this size of capsulorhexis so that it will cover the anterior portion of the IOL to help keep it centered in the immediate postoperative period. Then, I performed

TABLE 1. PARAMETERS

Procedure Step	Chop	Fragment Removal
Bottle Height cmH_2O	110	110
Energy %	Torsional, Continuous linear	Torsional, Continuous linear
Vacuum mmHg	350 linear	300 linear
Aspiration cc/min	35 linear	30 linear
Dynamic Rise	1	0
OZil IP	Off	On

TABLE 2. OZIL IP PARAMETERS

Procedure Step	Chop	Fragment Removal
Vacuum threshold % of Vacuum Limit	95	95
Phaco Pulse On Time Ms	10	10
Longitudinal/ Torsional Ratio	1	1

Figure 1. The author fragments the nucleus and uses the second instrument to position the fragments at the OZil tip.

Figure 2. As the author emulsifies the nuclear material, the OZil IP software activates (top left) to prevent occlusion.

hydrodissection with a curved cannula. I used the cannula to rotate the nucleus in one move, and then I inserted the 0.9-mm Mini-Flared OZil handpiece to remove the superficial cortex.

NUCLEAR CHOPPING AND EMULSIFICATION

I switched to foot pedal position 2 and increased the vacuum to 350 mm Hg in order to chop the nucleus. I use a quick-chop technique for nuclear removal. I always try to extend the fracture through the entire nucleus and chop the nucleus into as many fragments as I can to facilitate emulsification. Then, I switch to quadrant mode on the INFINITI System and use my left-hand instrument to bring the fragments into the anterior chamber for emulsification. A routine cataract takes me between 6 and 8 minutes to emulsify using OZil IP Torsional ultrasound; very dense nuclei may take up to 10 minutes. I do not alter my technique between hard and soft nuclei; instead, I use the foot pedal to adjust my power settings as needed (for this reason, I keep all my settings in linear mode).

For emulsification, I simply moved to foot position 3 and lower the vacuum to 300 mm Hg (in contrast to the technique for longitudinal phacoemulsification). I kept my bottle at 110 cm. While emulsifying the final fragment, I stayed in foot position 3 and let the vacuum build to see how the IP software responded to the fairly dense material. The video shows how the IP activated and effectively prevented the material from occluding the tip.

IOL INSERTION

For irrigation/aspiration (I/A) of the anterior capsule, I usually use the silicone OZil phaco tip, although I did not in this case. My energy use remained at 9.82, which is fairly low for the density of this nucleus. After removing the cortex, I instilled PROVISC OVD (Alcon Laboratories, Inc.) into the anterior chamber and implanted an AcrySof IQ ReSTOR IOL +3.0 D using the MONARCH III inserter (Alcon Laboratories, Inc.). I removed the OVD from the anterior surface of the IOL while it unfolded. I switched to foot position 0 and waited for the IOL to rise from the lack of pressure, and then once the IOL was in place, I proceeded to remove the viscoelastic from underneath the lens. I raised the implant slightly, and then I slipped the phaco tip underneath the IOL, between the lens and the posterior capsule. I moved to foot position 1, which caused the posterior capsule to fall back and give me enough space in which to remove the viscoelastic from behind the lens. I use PROVISC for inserting IOLs because it is so easy to remove at the conclusion of surgery.

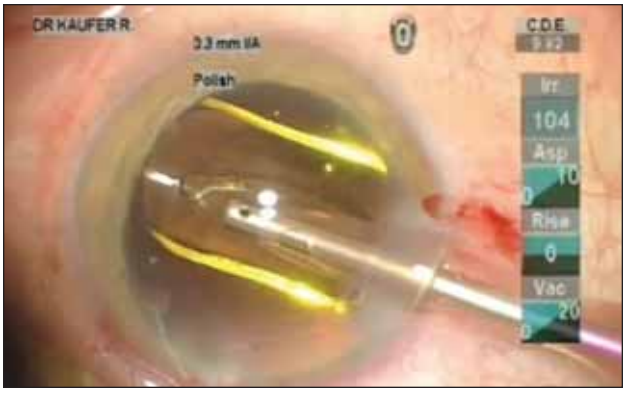

Figure 3. The author aspirates PROVISC OVD from the anterior side of the IOL.

OUTCOME

On the first postoperative day, the patient's vision was 20/15, and her cornea was crystal clear. She was thrilled with the result and the quality of her vision; she especially commented on the brightness of colors. She wanted to know how soon she could have the other eye operated on.

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