

Summary & Conclusion

The use of an ultrasonically vibrating needle to remove the nucleus of the human lens was introduced by Charles Kelman in 1968. Since that time, the vibratory mechanism has remained largely unchanged. The tip of the needle moves forward and backward in a linear direction along the axis of the shaft, just as it always has for the past 37 years. It is a remarkable fact that this methodology has remained virtually unchanged for almost four decades. (Boukhny, 2006).

Cataract surgery has enjoyed continuous evolution over the past few decades. Technological advances, enhanced surgical techniques, and smaller incision sizes have led to improved outcomes, both refractive and visual, as well as reduced intraoperative and postoperative complications. (Weikert, 2006).

Torsional ultrasound is a revolutionary new phacoemulsification technology that produces a side-to-side motion of the phaco tip as opposed to the forward and backward motion of traditional longitudinal ultrasound. (Allen, 2006).

Comparing torsional phacoemulsification to what we now refer to as traditional phacoemulsification. Traditional seems to be the best word to describe the past technology that we will be doing with less frequency in the future because of this new, non-traditional phacoemulsification called torsional. (Mackool, 2006).

Torsional phacoemulsification reduces chatter and energy delivered to the eye. It is safer than longitudinal phaco because torsional phaco is associated with a reduced risk of wound burn, less fluid usage, better followability, less turbulence, and less second instrument manipulation. (Mackool, 2007).

The latest development in OZil Torsional Technology is Intelligent Phaco (IP), which is an intelligent energy software package. IP senses vacuum levels at the phaco tip (the surgeon presets the activation threshold for IP to his or her preference) and responsively emits pulses of longitudinal ultrasound to keep lens material at the ideal shearing plane. (Osher, 2010).

OZil IP torsional ultrasound technology has dramatically changed phacoemulsification by significantly improving its speed, versatility, and safety. Every sweep of the OZil phaco tip removes nuclear material, making it twice as effective as longitudinal ultrasound, which only emulsifies fragments on the forward motion. (Tipperman, 2010).

The expanded utilization of torsional ultrasound energy applications such as the OZil Intelligent Phaco may help reduce overall complications. (Mackool, 2010).

OZil IP improves cutting efficiency by its ability to continuously remove nuclear material without chattering and

repulsion, enhanced followability of lens material and reduced amounts of BSS which leads to better protection of corneal endothelium during phacoemulsification. (Mackool, 2010).

Transversal ultrasound is a new concept that is being introduced in the annual meeting of the American Academy of Ophthalmology. The Ellips Transversal Ultrasound technology allows the phaco tip to move in an elliptical fashion, blending the forward and back motion of longitudinal ultrasound with the side to side or transversal motion. (Steinert, 2007).

The primary advantages of incorporating a lateral movement of the ultrasound tip are enhanced cutting power and followability. The lateral movements increase cutting efficiency by emulsifying lens material in more than one direction of movement. In addition, there is much better followability of nuclear fragments with these approaches. (Steinert, 2007).

WhiteStar Signature with Ellips Transversal Ultrasound gives cataract surgeons a new set of tools that maximize the ability to emulsify all types of lens materials with minimal stress on the corneal endothelium and other ocular structures. (Steinert, 2007).

It is hard to believe that cataract-removal technologies can continue to improve, but they do. (Cionni, 2010).