

# **Glaucoma surgery in the blink of an eye**

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Prof. Ehud Assia, of Tel Aviv University's Sackler School of Medicine is, quite simply, a rock star in the field of eye surgery.

One of a small number of surgeons in the world who currently perform a complicated form of glaucoma surgery, Prof. Assia has developed a novel laser device that promises to revolutionize treatment of the disease. The laser, called the OTS134 for now, is expected to give most practicing eye surgeons the ability to master complex glaucoma surgery very quickly.

Glaucoma, nicknamed the silent sight thief, is the second leading cause of blindness in the West. "Glaucoma is a serious problem that starts to cause nerve damage to people without them realizing that anything is happening to their eyesight, often before it is too late," says Prof. Assia, who is also the director of Ophthalmology at Meir Hospital in Israel, which treats thousands of glaucoma patients each year.

The most common surgical treatment in use today perforates the wall of the eye, often resulting in collapse of the eyeball, infection, cataract formation and other complications. A more effective and elegant approach, a specialty of Prof. Assia's, involves penetration of the eye wall to a depth of only about 95 percent, leaving a razor-thin layer intact. The difference between success and failure may amount to just a few microns.

This highly-specialized non-penetrating surgery, requiring years of rigorous training and great skill, is performed by only a small number of

surgeons at leading international ophthalmology centers. But a small observation led Prof. Assia to think about a method that could make the procedure accessible to eye surgeons without the long and involved training.

“Several years ago I served as a consultant for a company that produces CO2 lasers, which are used for different kinds of cosmetic and skin surgery. Because it is a relatively strong type of laser, it was not a likely candidate for use on something as delicate as the eye. However, one of the CO2 laser's unique characteristics is that it does not function when it comes in contact with liquid. It occurred to me that this would be a perfect fit for non-penetrating surgery, because the moment the CO2 laser came in contact with the intra-ocular liquid, it would automatically shut off,” he recalls.

Working in partnership with the Israeli-based company IOptima, Prof. Assia has already carried out a series of successful human trials. A larger worldwide study will take place this year before the company launches the OTS134 — as it plans to do in the United States — by the middle of 2008.

Glaucoma affects 3 million Americans every year, with onset around the age of 40. It is a disease that is brought on by a seemingly harmless increase of pressure in the eyeball. When this pressure builds up over time, the aging body cannot seem to correct the pressure effectively. Glaucoma eventually damages the optical nerve in the eye, with extreme tunnel vision and complete blindness ensuing.

“There are drug treatments that can reduce the intra-ocular pressure, but that means life-long treatment involving two or three kinds of eye drops three times a day,” says Prof. Assia. “We find that a large number of patients don’t comply with this treatment, especially because the harmful effects of not taking the medicine properly are not immediately felt.”

Although he counsels that surgical approaches to glaucoma also carry risks, the OTS134 is a promising tool for more widespread treatment with fewer complications.

Source: American Friends of Tel Aviv University

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