

FEMTOSECOND LASER ASSISTED SURGERY: A ROUTINE PROCEDURE?

Femtosecond laser-assisted cataract surgery (FLACS) can be considered to be one of the most divisive topics in current ophthalmology. Almost six years after the general introduction of FLACS, the jury is still out as to whether FLACS is superior to phacoemulsification, as in initial comparisons, there are no significant differences with regards to visual outcomes.

Last year, director of Jakarta Eye Centre, Dr Johan A. Hutauruk concluded that, “FLACS is a nice technology to have but cannot replace conventional phacoemulsification, because standard phacoemulsification has evolved over 50 years whilst FLACS is still in its infancy”.

“However, this is not the case with the femtosecond flap-maker in LASIK which is significantly better and safer for creating thinner flaps and can completely replace the microkeratome,” said Hutauruk in the June 2016 edition of EyeWorld Asia Pacific.¹

Clinical professor David F Chang from the University of California, San Francisco, recommends that as with any operation, cataract surgeons should be free to select whatever surgical technique they prefer based on their expertise and comfort, as well as the availability of technology. While he has said that he is not anti-FLACS, he is concerned about the overall cost-benefit to patients, which FLACS has yet to prove.²

Amidst this ongoing controversy, in the second half of 2016, a research team led by Professor Tchah Hung-won of the department of ophthalmology at the University of Ulsan, Republic of Korea, introduced a femtosecond laser-assisted cataract surgery and started surgical operations. Professor Tchah is a prolific and recognized leader in corneal, cataract, refractive, and laser surgery who has been at the forefront of ophthalmology’s evolutionary changes throughout his career as a researcher, educator, lecturer and acclaimed physician and surgeon. He is also the 20th President of the Korean Ophthalmological Society for the 2016 – 2018 term, and a member of the Board of Officers of the Asia-Pacific Association of Cataract and Refractive Surgeons (APACRS) – which recently issued the following practice guidelines³:

The APACRS “Principles and of Preferred Practice in Cataract Surgery”, originally issued in 2006 and updated in 2017, states that:

“FLACS is currently approved for the creation of corneal incisions, corneal astigmatism treatment, anterior capsulotomy, and nuclear fragmentation. It



Professor Tchah Hung-won is performing a cataract surgery using FS laser system.

FLACS – the Lowdown⁶

The femtosecond (FS) laser is an infrared laser that produces a wavelength in one quadrillionth of a second, which is used in fields requiring precise processing by minimizing the loss of the surrounding tissues.

In traditional cataract surgery, an incision is made in the cornea using a surgical blade to break the eye lens that holds the cataract using ultrasonic waves. In this case, the results rely on a doctor's surgical skills which are slightly different in opening suture and intraocular lens insertion. It causes amblyopia or complications and may damage the surrounding tissues such as corneal endothelial cell due to the long exposure to ultrasound waves depending on the severity of patient's conditions.

On the other hand, femtosecond (FS) laser system scans a patient's eye to make an incision of the cornea accurately and quickly in seconds without an error in angle and depth to meet the needs of each patient. The center of the eye lens where cataract was created is broken in advance to minimize the loss of corneal endothelial cell inside the eyeball.

A research by German medical team compared the eyeballs that underwent FS laser surgery and traditional surgery, and found that FS laser surgery uses 83.6% of ultrasound energy on average compared to traditional surgery, reducing 36.1% of loss of corneal endothelial cell.

Professor Tchah's team predicts that the FS laser technology will allow fast and accurate procedures in the corneal section and the breakout of eye lens required for cataract surgery. It significantly improves patient satisfaction as it lessens corneal astigmatism to allow efficient correction of eye sights. Especially it will benefit high risk bleeding patients due to the use of anticoagulant, cataract patients with the complication of taking prostate drug, and patients with mature cataracts who are highly likely to cause complications with precise and safe cataract surgery.

- From Asan Medical Centre Newsletter, 29 October 2016 <http://eng.amc.seoul.kr/asan/lang/about/news/langAboutNewsDetail.do?pageIndex=1&idx=1451>

Sources:

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