

# Femtosecond studies win refractive poster prizes

**Hungwon Tchah MD, University of Ulsan College of Medicine, Seoul, Korea was awarded first prize in the refractive surgery category of this years ESCRS Congress poster competition.**

His poster was “Femtosecond laser versus mechanical microkeratome: adhesion strength of the flap to stromal bed and cellular reaction in the cornea.” The presentation concerned the results of an animal study which indicated that LASIK flaps created with a femtosecond laser may adhere more strongly to the stroma than microkeratome-created flaps. However, the study also suggested that femtosecond-treated eyes may be more prone to inflammatory reactions in the early postoperative period.

In their study Dr Tchah and his associates divided 48 New Zealand White rabbits into four treatment groups. The first group underwent femtosecond laser flap creation only (IntraLase® FM), the second group underwent femtosecond laser flap creation followed by LASIK, the third group underwent microkeratome flap creation alone (ACS™, Bausch & Lomb), and the fourth group underwent microkeratome flap creation followed by LASIK. In

both of the LASIK groups the ablations were performed with the Bausch&Lomb 217z excimer laser.

At one and three months postoperatively they measured adhesion strength with a tension meter. They found that in the femtosecond LASIK group, 126.67 gram force and 191.33 gram force was needed to detach the flap at postoperative 1 and 3 months, respectively. By comparison, in the microkeratome LASIK group, only 65 gram force and 127.5 gram force was needed to detach the flap at one and three months postoperatively, respectively.

“This difference was statistically significant, suggesting that eyes that have undergone femtosecond laser LASIK are more resistant to trauma.”

TUNEL staining at four and 24 hours postoperatively indicated that there was no difference in apoptosis between femtosecond and microkeratome groups. On the other hand, H&E staining showed that there was more inflammatory cell infiltration in the

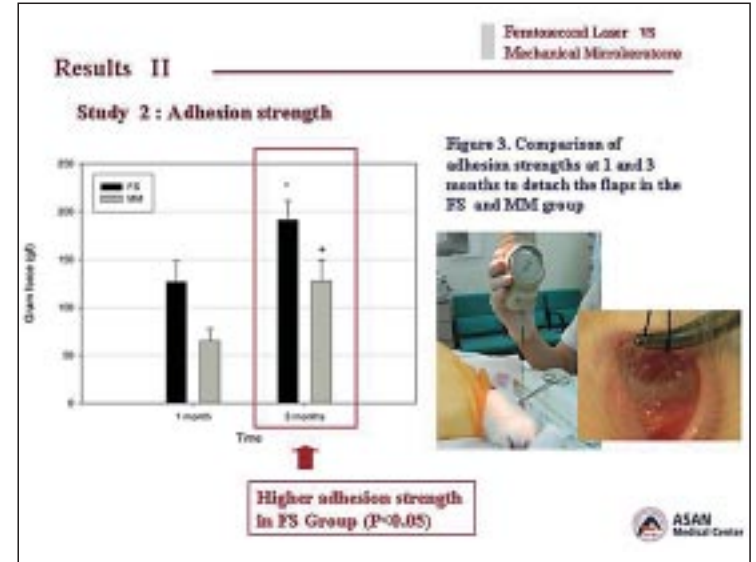
cornea of both femtosecond groups compared to the microkeratome groups.

That is, at 24 hours there were  $27.8 \pm 2.8$  and  $11.7 \pm 2.1$  inflammatory cells per microscopic field in the femtosecond alone and femtosecond +LASIK groups, respectively, compared to  $6.0 \pm 1.2$  and  $2.2 \pm 1.0$  inflammatory cells in the microkeratome alone and microkeratome+LASIK groups, respectively.

“These results provide a biological basis for strong postoperative anti-inflammatory treatment in eyes undergoing femtosecond LASIK.”

## Second Prize

Second prize in the refractive surgery category went to Alejandra Rodriguez MD, VISSUM, Alicante Institute of Ophthalmology, Spain, for her poster “Variability in the population of conjunctival cells after refractive surgery with IntraLase”.



Her study involved an analysis of the ocular surface of 20 eyes by impression cytology before and after IntraLase/LASIK surgery. The investigators found a reduction in the goblet cell populations in all the samples examined. Dr Rodriguez suggested that the

phenomenon may result from the long period that the suction ring is applying pressure on the conjunctiva to create the flap.