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Epi-LASIK 'favorable' in comparison to LASEK in U.S. soldiers

A study compared epi-LASIK to alcohol-assisted LASEK in procedures performed at Fort Bragg.

By Erin L. Boyle

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**Lt. Col.
Scott
Barnes**

Lt. Col. Scott Barnes, MC, USA, presented results from the study, which was conducted at the Warfighter Refractive Eye Clinic at Fort Bragg, N.C., during the American Society of Cataract and Refractive Surgery meeting. Dr. Barnes said the base is the home of the U.S. Army and Airborne Command, rapidly deployable frontline soldiers.

He said 23,000 laser procedures have been performed at the base in the past 5 years. Of those cases, about 5,000 were alcohol-assisted laser epithelial keratomileusis (LASEK). That procedure was typically performed on soldiers with refractive errors of -4 D and above because the clinic had seen postoperative haze in PRK above that level of refractive correction, Dr. Barnes said. He said haze had not been a problem in PRK performed in patients with less than -4 D of error at the clinic.

Dr. Barnes said he and his colleagues wanted to evaluate the newer epi-LASIK procedure using a mechanical epikeratome to determine if it is a viable alternative to LASEK.

"We've had great results with our alcohol-assisted LASEK. It's been good for us," Dr. Barnes said at the meeting. "We wanted to see if there was something that could be better, could allow the soldiers to recover faster and could allow the soldiers return to duty quicker."

Epi-LASIK and alcohol-assisted LASEK

Dr. Barnes discussed results in 65 patients who were entered into a prospective, contralateral eye study with non-customized laser treatment.

Epi-LASIK was attempted in 65 eyes, but 20 experienced complications and were converted to other procedures. In 11 patients with insufficient suction, Dr. Barnes said, the procedure was converted to alcohol-assisted LASEK. In nine patients with partial epithelial flaps, PRK was performed. Dr. Barnes said he has significant experience with PRK and was comfortable using it in those cases.

Those 20 patients were placed in a complications group, Dr. Barnes said.

Switching from a 19 mm ring to a 20 mm vacuum ring prevented further problems. Dr. Barnes said the company that manufactures the microkeratome used in the study indicated that the high vacuum, 20 mm ring might be advantageous, and he found that to be the case.

“We haven’t had any problems since then,” he said. “It appears that solution was a fix for us.”

The study included 90 eyes of 45 patients, directly comparing one eye with alcohol-assisted LASEK to one eye with epi-LASIK, plus the 20 patients in the complications group. Dr. Barnes used conventional laser treatment with a Visx laser. The patients were examined at days 1, 5, 30 and 60, as long as they were not deployed during that time, Dr. Barnes said.

Results

Subjectively, for best visual acuity at day 1, 49% of patients said they preferred the epi-LASIK eye; for the least pain, at day 1, 62% said there was no difference. However, while most patients said they felt that their eyes were fairly equal, some patients said they did note a difference, Dr. Barnes said.

“In our hands, it appeared that epi-LASIK was favorable to alcohol-assisted LASEK,” Dr. Barnes said. “The complications group still had favorable results, so when the worst-case scenario happened in my hands, patients still did great. So that was very encouraging.”

Dr. Barnes said the worst-case scenario he referred to was not achieving a complete epithelial flap, either with a transected flap or a partial flap of epithelium. In those cases, the procedure was converted to PRK, he said.

Postoperative spherical equivalent refraction was almost the same in all three groups, Dr. Barnes said. Differences at day 1 were not statically significant, he said. The average visual acuity on day 1 was 20/40–2 in the epi-LASIK group, 20/50+2 in the LASEK group and 20/50–2 in the complication group. By day 5, average visual acuity was 20/30–2 in the epi-LASIK group, 20/30+1 in the LASEK group and 20/40+1 in the complications group.

On a subjective scale rating pain on day 1 from 0 to 10, from mild to severe, patients rated epi-LASIK 3.7, alcohol-assisted LASEK 3.2, and PRK (in the complication group) 4.5. Pain at day 5 was nearly nonexistent, Dr. Barnes said, with alcohol-assisted LASEK registering on the scale at 0.9 and the other groups lower than that.

In the direct comparison groups, not counting the complication group, at day 5, 85% of patients said there was no difference in either eye for pain, according to Dr. Barnes.

Mean uncorrected visual acuity at 1 and 2 months was good. At 1 month, mean visual acuity for epi-LASIK was 20/20; for alcohol-assisted LASEK, it was also 20/20; and for the complications group, it was 20/25.

Asked to choose which eye had the best visual acuity at 1 month and 2 months, patients said both eyes were similar, he said.

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