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The “One Shot” Diode Laser Stapedotomy

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Objective: The purpose of this study was to evaluate the effectiveness and the safety of diode laser stapedotomy, through the functional results analysis.

Materials and methods: A total of 179 primary cases of otosclerosis that had been operated on with a diode laser technique from 2004 to 2012 were retrospectively reviewed. Preoperative, 1 month postoperative, and late annual follow-up audiograms (up to 8 years) were obtained in all the cases. Mean preoperative and 1 month postoperative pure-tone average (500-1000-2000-4000 Hz) bone conduction thresholds (PTA-BCs), air conduction (AC) hearing outcomes for 8 kHz and mean postoperative air-bone gap (PTA-ABG) closure were analyzed.

Results: The mean preoperative (pre) PTA-BC was 24.22 dB (± 8.7 SD) whereas the mean postoperative (post) PTA-BC was 21.11 dB (± 9.1 SD). The mean preoperative 8 kHz AC was 56.41 dB (± 22.86 SD) and the postoperative 8 kHz AC was 52.56 dB (± 24.35 SD). A statistically significant improvement of the PTA-BC post and of the postoperative 8 kHz AC was observed. The 1 month ABG closure within 10 dB in 89.02% of the patients and within 20 dB in 97.69% of the patients was obtained with statistically significant stability over long-term follow-up. No major complications occurred in the series.

Conclusions: The use of diode laser with high power and short time exposure as setup can be considered a safe, precise, and useful tool in stapes surgery.