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Otosclerosis

CO2 Laser-Assisted Stapedotomy Combined With aWengen Titanium Clip Stapes Prosthesis: Superior Short-Term Results

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Abstract

Objective: To report on the short-term results of CO₂-laser assisted stapedotomy combined with the aWengen titanium clip stapes prosthesis. A comparison with published series using other prostheses and/or different stapedotomy techniques is made.

Study Design: Retrospective case series.

Patients: Patients with a history and audiologic data matching stapes fixation and computed tomographic imaging excluding other anomalies such as malleus fixation, dehiscent superior semicircular canal, and large vestibular aqueduct that may mimic stapes fixation-like hearing loss.

Intervention: All patients underwent CO₂ laser-assisted stapedotomy (Lumenis Co. Israel CO₂ laser, Acuspot 712, SurgiTouch 870 scanner) and subsequent reconstruction by means of the aWengen titanium clip stapes prosthesis by Heinz Kurz Medizintechnik GmbH (Germany).

Outcome Measures: Comparison and statistical analysis of preoperative and postoperative audiologic data.

Results: Sixty-two stapedotomies were performed (61 patients) using the CO₂ laser and aWengen titanium clip stapes prosthesis. The mean postoperative air-bone gap 3 months postoperatively was 5.1 ± 0.5 dB (standard deviation [SD], 4.1 dB; 0.5, 1, 2, 4 kHz). Air-bone gap closure less than or equal to 10 dB was achieved in 54 cases (87%). Air-bone gap closure less than 20 dB was achieved in all cases. The average gain was 27.8 ± 1.5 dB (SD, 12 dB; 0.5, 1, 2, 4 kHz). The average bone-conduction threshold shift or "overclosure" on 2,000 Hz was 13.6 ± 1.3 dB (SD, 10 dB). There was no postoperative perceptible hearing loss exceeding 15 dB on any measured frequency. The Amsterdam Hearing Evaluation Plots have also been used to evaluate our data. These data were statistically analyzed and compare favorably to other published series.

Conclusion: The authors conclude that the combination of CO₂ laser-assisted stapedotomy and the aWengen titanium clip stapes prosthesis is a combination likely to yield superior results in experienced hands.

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