

Otosclerosis in Older Adults: Indications Beyond Chronological Age

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Stapes surgery continues to play a central role in treating otosclerosis when there is a significant conductive component and sufficient cochlear reserve to expect hearing improvement. Evidence-based recommendations from the Brazilian Society of Otology include stapes surgery, hearing aids, and implantable devices among the therapeutic options, with individualized selection according to audiological and clinical characteristics. In this context, chronological age has received particular attention because older adults may have a concomitant sensorineural component and may require hearing rehabilitation even after technically successful surgery.^{1,2}

Redivo, Fernández Long, and Pérez Raffo report a 20-year institutional series of 63 patients and 72 ears with otosclerosis and more than one year of postoperative follow-up. The cohort included patients aged 65 years or older as of January 1, 2025: 41 underwent surgery before age 65 and 22 at age 65 or older. Mixed hearing loss was present in 98.6% of cases. Air-bone gap (ABG) closure to ≤ 10 dB was achieved in an average of 85.4% of ears, and the change in bone-conduction thresholds remained ≤ 10 dB in 85%. Mean follow-up was 7.9 years; 22% required hearing aids after surgery, and complications occurred in 9.52% of patients. These findings should be interpreted in light of the age distribution of the cohort and the limitations acknowledged by the authors: the retrospective, descriptive design, selection of surgical patients, and absence of a younger comparison group.¹

The literature specifically addressing stapes surgery in older patients is consistent on one point: hearing outcomes can be comparable to those achieved in carefully selected younger patients. Vartiainen compared 46 ears operated on in patients older than 60 years with 330 ears from younger patients and found similar ABG outcomes, with no higher rate of postoperative sensorineural hearing loss in the older group. Ayache et

al. studied 16 patients older than 65 years: all achieved an ABG < 20 dB, 87.5% achieved an ABG < 10 dB at one month, and 81.8% maintained this result at the last follow-up. In a prospective series of 3,050 stapedectomies, Vincent et al. reported ABG closure to ≤ 10 dB in 94.5% of the subgroup of patients older than 65 years and found no age-related increase in the risk of complications.³⁻⁵

More recent studies likewise do not show that age alone determines surgical outcomes. In a series with long-term follow-up, Dhooge et al. achieved an ABG ≤ 10 dB in 70.7% of cases at the late assessment and did not identify age as an independent predictor of long-term success. Zhang et al. evaluated 188 ears and found significant improvements in air-conduction thresholds and ABG across all age groups. Although air-conduction gain showed a modest negative correlation with age, changes in air conduction, bone conduction, and ABG closure did not differ significantly between younger and older groups. The authors concluded that age should not be considered a contraindication when audiological criteria are met.^{6,7}

Long-term follow-up is particularly relevant in otosclerosis because successful correction of the conductive component does not eliminate the possibility of sensorineural progression. In 357 ears with a mean follow-up of 14 years, Ishai et al. found that 34% had clinically significant progression of sensorineural hearing loss beyond that expected for age. This finding provides important context for the Hospital Italiano series: a closed ABG and preserved postoperative bone conduction do not preclude the future need for amplification.¹⁻⁸

The relationship between surgery and hearing aids, therefore, should not necessarily be viewed as an either-or choice. Wardenga et al. analyzed 374 procedures in patients with mixed hearing loss: 44.9% no longer required hearing aids after surgery, and among those

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who continued to need amplification, a power hearing aid could meet audiological requirements at all four frequencies studied in 81.6% of cases. In the series by Fernández Long et al., 14 patients (22%) required hearing aids after surgery, with a mean interval of 3.9 years between surgery and hearing aid fitting. These findings support considering surgery and hearing rehabilitation as potentially complementary stages of treatment.^{1,9}

Safety is also a key consideration when determining surgical indications. In the Swedish registry analyzed by Pauli et al., which included 832 patients who underwent stapedectomy, complications were uncommon, and 91% reported better or much better hearing at one year. In the Hospital Italiano study, no severe auditory sequelae were reported among the complications described. These included residual tympanic membrane perforation, granuloma, prosthesis extrusion, transient worsening of tinnitus, and one case of Ramsay Hunt syndrome, while favorable audiological outcomes were maintained.^{1,10}

The main contribution of this institutional experience is the addition of long-term follow-up data in an older adult population, a group underrepresented in many surgical series. At the same time, interpretation of the study requires distinguishing between patient age during follow-up and age at the time of surgery, given that 65.1% of the cohort underwent surgery before age 65. Published evidence that includes age-group comparisons and subgroups specifically operated on after age 60–65 consistently indicates that chronological age alone does not predict poorer ABG closure or a consistent increase in complications. Surgical indications should be based on audiological assessment, cochlear reserve, and the expected need for subsequent hearing rehabilitation, including hearing aids when necessary. In this context, the present series reinforces an approach supported by several decades of evidence: in selected patients,

advanced age alone is not a reason to exclude stapes surgery.^{1,3-7,9,10}

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