supplementary material

Table 1: Demographic characteristics and indications for surgery

Characteristic	Missing	Description
Gender	0 (0%)	
Male		25 (38.5%)
Female		40 (61.5%)
Age at the time of the operation	0 (0%)	40.9 ± 9.4
Age (Males)	0 (0%)	42.7 ± 11.0
Age (Females)	0 (0%)	39.7 ± 8.2
A family history of Otosclerosis	0 (0%)	18 (27.7%)
Hearing Loss	0 (0%)	
Right		8 (12.3%)
Left		7 (10.8%)
Bilateral		50 (76.9%)
Bilateral hearing loss is worse in	2 (4.0%)	
Right		14 (29.2%)
Left		34 (70.8%)
Tinnitus	1 (1.5%)	
Absent		32 (50.0%)
Right		6 (9.4%)
Left		8 (12.5%)
Bilateral		18 (28.1%)
Vertigo	0 (0%)	
Absent		55 (84.6%)
Present		10 (15.4%)
Facial weakness	0 (0%)	
None		62 (95.4%)
Right		0 (0.0%)
Left		3 (4.6%)
Age of onset	0 (0%)	
Sudden		3 (4.6%)
Progress		62 (95.4%)
Level of hearing loss (WHO grading)*	1 (1.5%)	
No impairment (better than 20 dB)		6 (9.4%)
Mild (20–34 dB)		24 (37.5%)
Moderate (35–49 dB)		23 (35.9%)
Moderately severe (50–64 dB)		8 (12.5%)
Severe (65–79 dB)		1 (1.6%)
Profound impairment (80–94 dB)		2 (3.1%)

*Hearing loss categories are based on the average postoperative AC values at 500, 1000, 2000, 4000 Hz for the better ear (doi: 10.1080/14992027.2018.1518598)

n (%); Mean ± SD

Mean Air-Conduction Thresholds (Pre- and Post-operative)

Figure 1 illustrates the mean AC thresholds across frequencies for both right and left ears, before and after stapedotomy. Preoperatively, hearing thresholds were elevated across all frequencies, with right ears showing slightly higher thresholds than left ears, particularly at 4000 Hz and above. Postoperatively, substantial improvements were observed in both ears, with a notable shift toward lower thresholds across all frequencies.

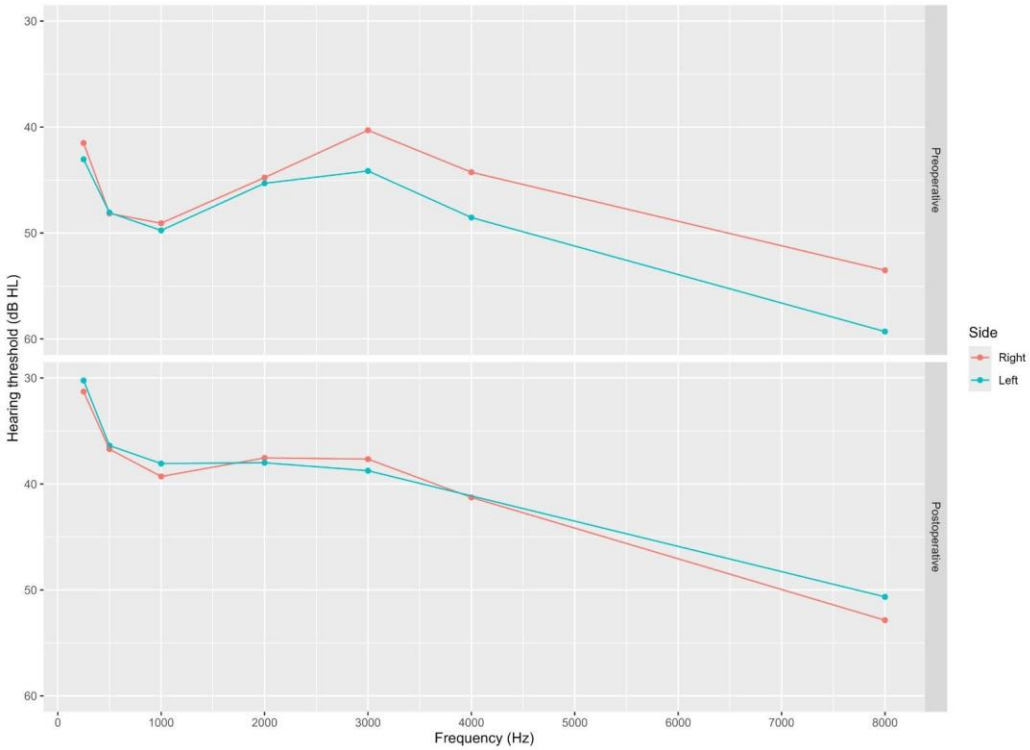

Figure 1: Mean Air-Conduction Thresholds (Pre- and Post-operative)

Distribution of HHIA Handicap Categories

Figure 2 displays the distribution of participants according to their hearing handicap severity based on the HHIA. The majority of patients (60.0%) were classified as having a significant handicap, while 32.3% had a mild-to-moderate handicap.

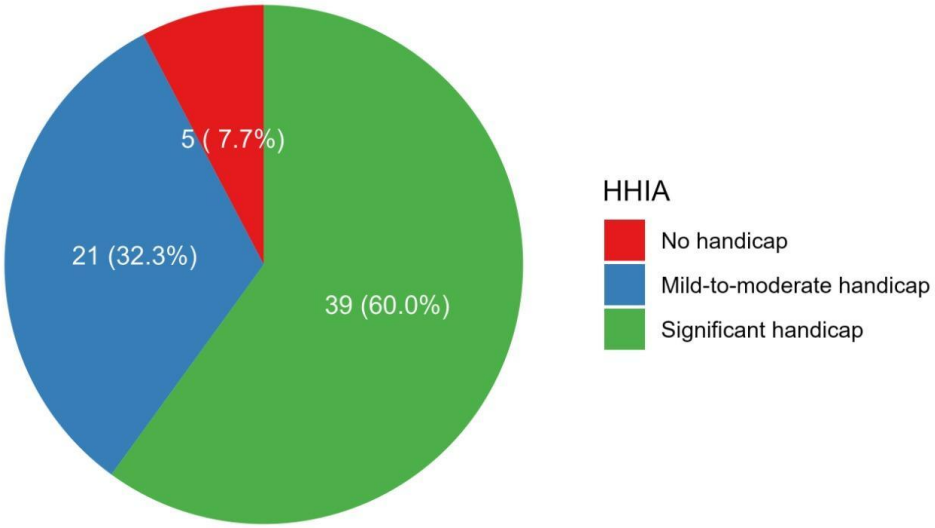

Figure 2: Description of HHIA categories

Statistical differences in GBI and HHIA scores across different WHO hearing loss categories

Postoperative PTA values differed significantly across WHO hearing loss categories, with better scores observed in the no impairment group (14.8 ± 3.0 dB) and progressively worse thresholds among the mild (27.7 ± 4.3 dB), moderate (40.7 ± 5.4 dB), and moderately severe to profound groups (66.5 ± 17.8 dB, $p < 0.001$). However, no statistically significant differences were observed in mean GBI ($p = 0.310$) or HHIA ($p = 0.761$) scores across these categories (**Figure 3**).

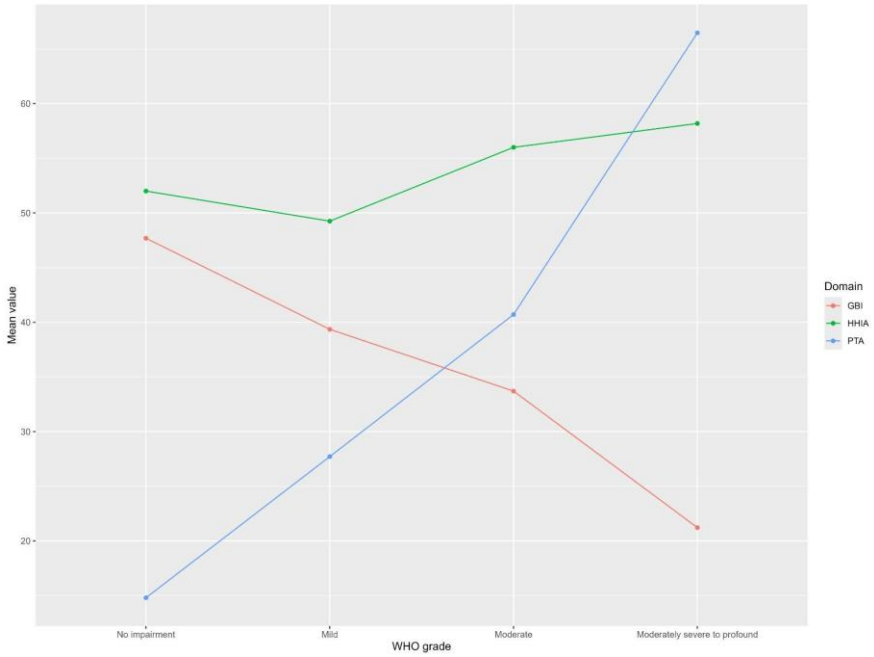

Figure 3: Mean values of GBI and HHIA scores among different WHO hearing loss categories
Figure data:

Characteristic	**No impairment** N=6[1]	**Mild** N=24[1]	**Moderate** N=23[1]	**Moderately severe to profound** N=11[1]	**p-value**[2]
GBI	47.7 ± 30.3	39.4 ± 24.5	33.7 ± 35.3	21.2 ± 35.3	0.310
HHIA	52.0 ± 36.3	49.3 ± 25.9	56.0 ± 27.3	58.2 ± 20.9	0.761
PTA4_AC_Postop_Operated	14.8 ± 3.0	27.7 ± 4.3	40.7 ± 5.4	66.5 ± 17.8	<0.001

[1]Mean ± SD
[2]One-way analysis of means

Bivariate Correlations Between PTA and HHIA and GBI Scores

Figure 4 Presents scatter plots showing the relationship between PTA and self-reported outcomes on the HHIA and GBI scales. In panel A, no significant correlation was observed between PTA and HHIA scores (R = 0.118, p = 0.355). In contrast, panel B reveals a statistically significant negative correlation between PTA and GBI scores (R = –0.277, p = 0.027).

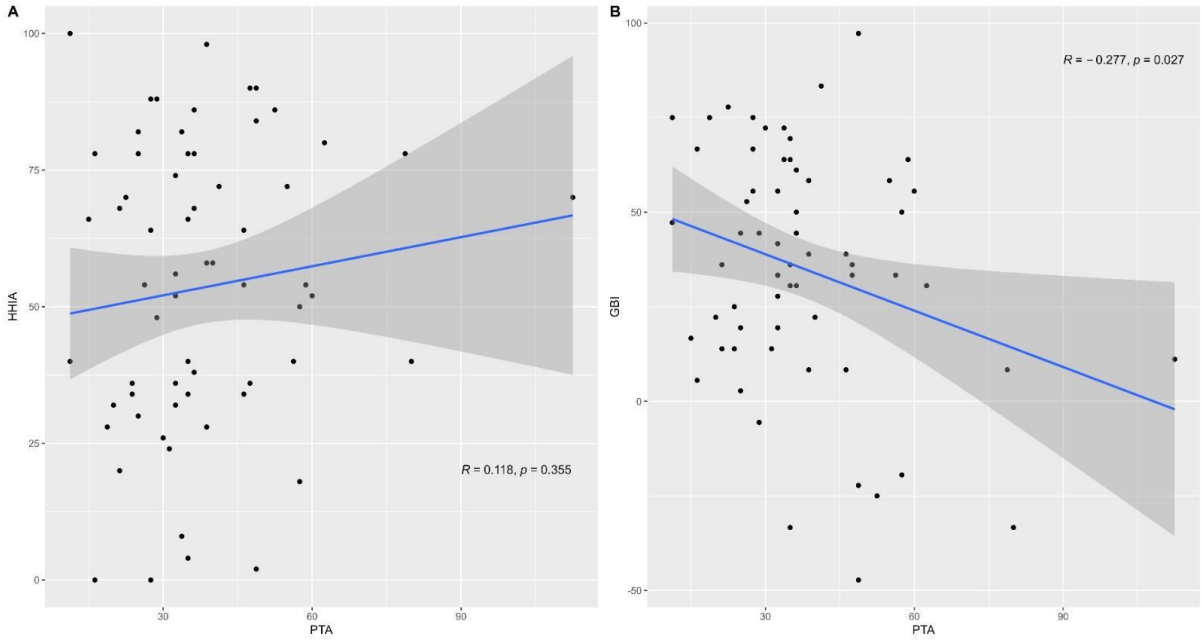

Figure 4: Bivariate correlations between PTA and HHIA (A) and GBI (B)