

a case series of 34-years' experience

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Introduction

The extent of vestibular schwannoma (VS) resection has a critical influence on post-operative facial nerve function. While long-term tumour control is the primary aim of surgery, preservation of facial nerve integrity remains a key determinant of quality of life.

Methods

A retrospective analysis of patients undergoing microsurgical VS was identified at a single UK centre (1990-2024). Approaches included translabyrinthine and retrosigmoid. Data were extracted from notes, operative records, imaging, and follow-up.

The House-Brackmann (HB) function at 12 months was the primary outcome where HB I-II was excellent, HB III-VI poor. Secondary outcomes were CSF complications (pseudomeningocele, leak, hydrocephalus), early infection (≤ 30 days), venous sinus thrombosis, and recurrence.

Results

A total of 409 patients were identified. Centre workload increased significantly between 1990-2024 for both retrosigmoid ($p = 0.03$) and translabyrinthine ($p = 0.001$) approaches, with a dip during 2020-2022 attributable to the COVID-19 pandemic. 12 month HB were available for 407/409(99.5%); overall, 87% achieved excellent facial function (retrosigmoid 87%, $n=318$; translabyrinthine 90%, $n=89$; $p=0.55$).

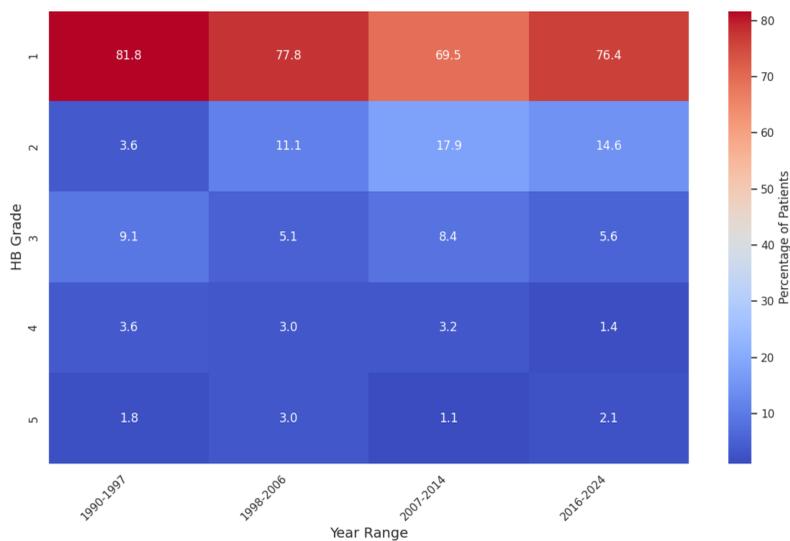


Figure 1 - Heatmap showing HB Grade distribution over time

Results

Over 34 years, immediate excellent outcomes rose from 64% to 86% (1998-2006 vs 2015-2024; $p<0.0001$), but 12-month results were similar- 84-90% HB I-II ($p=0.46$), indicating recovery despite poor immediate HB.

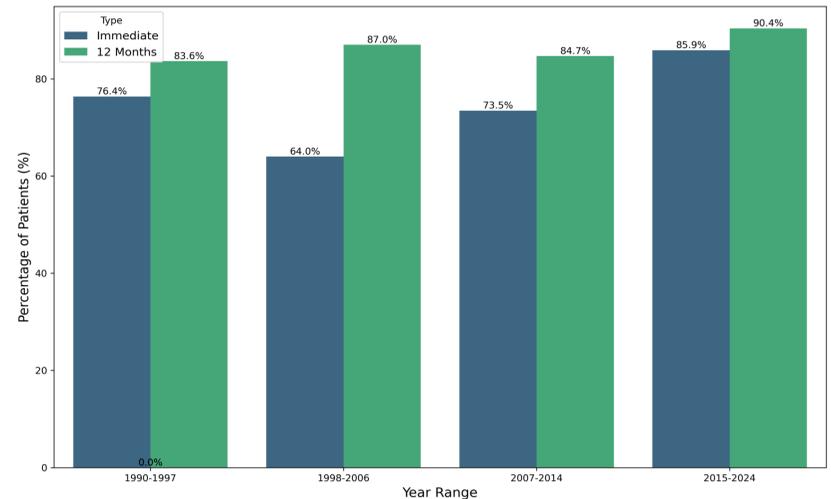


Figure 2 - Immediate vs 12-month HB Grade by Year Range

48.36% of patients with poor immediate HB (III-VI) improved to excellent (I-II) by 12 months ($p=0.11$) and was similar across approaches. Stereotactic radiosurgery (SRS) after VS resection fell from 14% (1990-2014) to 8% (2015-2024) ($p=0.06$) (13% to 7% - retrosigmoid; 22% to 9% - translabyrinthine). CSF-related complications ranged between 1-5% across subgroups.

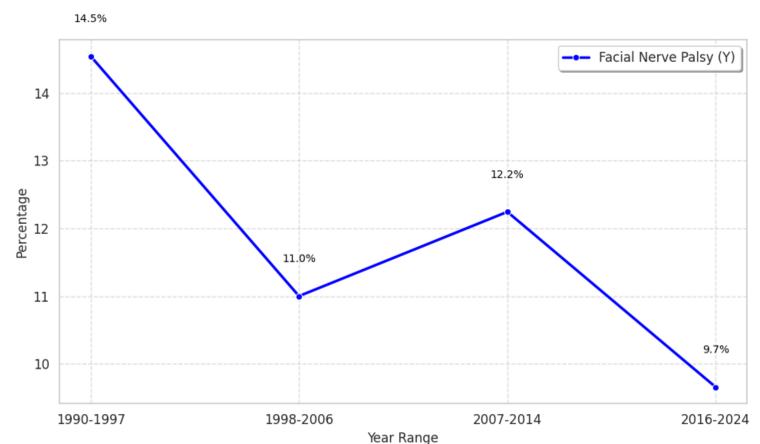


Figure 3 - Facial Nerve Palsy over time by Year Range (defined as HB III - VI)

	Retrosigmoid 1990-2014	Retrosigmoid 2015-2024	Translab 1990-2014	Translab 2015-2024
Total N (%)	219 (53.55%)	99 (24.21%)	32 (7.82%)	57 (13.94%)
Median Age	54	55	57	54
Gender M:F	105:108 (6 missing)	49:50 (0 missing)	17:12 (3 missing)	28:29 (0 missing)
Poor/Excellent Facial Nerve Outcome - 12 months				
Poor	29 (13.4%)	10 (10.1%)	4 (12.5%)	5 (8.8%)
Excellent	187 (86.6%)	89 (89.9%)	28 (87.5%)	52 (91.2%)
Unrecorded	3 (1.4%)	0	0	0
House Brackman (HB) Score - 12 months				
I	162 (73.97%)	72 (72.73%)	22 (68.75%)	44 (77.19%)
II	25 (11.42%)	17 (17.17%)	6 (18.75%)	8 (14.04%)
III	17 (7.76%)	6 (6.06%)	2 (6.25%)	3 (5.26%)
IV	7 (3.20%)	1 (1.01%)	1 (3.12%)	1 (1.75%)
V	5 (2.28%)	2 (2.02%)	1 (3.12%)	1 (1.75%)
Unrecorded	3	0	0	0
Post VS resection SRS	29 (13%)	7 (7%)	7 (22%)	5 (9%)

Conclusions

Facial nerve outcomes improved across eras, reflecting evolving microsurgical practice and use of continuous monitoring. Despite variability in immediate HB, 12-month facial function converged to a high rate of HB I-II, underscoring that early postoperative weakness does not necessarily predict long-term function. Selective use of adjuvant SRS appears to be decreasing over time, supporting a strategy of tailored resection with surveillance and salvage therapy to optimise facial nerve preservation.

Table 1 – Summary of Demographics, Post VS resection FN Outcomes and SRS proportions

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