



Introduction

The benefits of surgical resection of vestibular schwannoma compared to stereotactic radiosurgery, such as 10-year hearing preservation rates become less relevant with older age. Given the relative safety profile of stereotactic radiosurgery, there seems to be a trend towards offering radiosurgery as first line for senior/elderly patients with growing vestibular schwannoma^{1,2}. However, the challenges of surgery in a previously radiated tumour will still exist should the tumour progress and increasing age during post-radiation observation periods may make surgery more complicated if delayed. Limited data exists on the safety and efficacy of first line surgery in this group³, and even less data exists on quality of life (QoL) outcomes for these patients.

Methods

A cohort of patients over and under 75 from a single tertiary care centre were included. All patients demonstrated tumour progression prior to surgery or were found to have large tumours requiring resection on presentation. Quality of life data is routinely collected pre and post operatively for all patients. This data was collected from charts in a retrospective fashion.

A control group of randomly selected patients under the age of 75 were also reviewed as a comparator for quality-of-life scoring.

Quality of life measurements were obtained through SF-36 questionnaires.

Results

There were a total of 13 patients at or over the age of 75 who had undergone surgical resection of a vestibular schwannoma. The average age was 79 with a median of 81, ranging from 75-82. 6/13 were female. All tumours were resected through a retrosigmoid craniotomy for the senior patients. One patient in the control group underwent a translabyrinthine craniotomy for resection and the remainder underwent a retrosigmoid craniotomy.

Hearing preservation was not attempted in any patient in the senior group as they all presented with loss of functional hearing to the ipsilateral ear. It was attempted in 3 cases in the control group and was preserved in 2/3 of these cases.

Demographics

Gender, n (%)	Age ≥ 75	Control
Female	6 (46)	6 (46)
Male	7 (54)	7 (54)
Age (years)		
Mean	79	49
Range	75-82	19-69

Table 1. Patient demographics

Surgical Outcomes, n (%)	Age ≥ 75	Control
Surgical Approach		
Retrosigmoid	13 (100)	12 (92)
Translabyrinthine	0 (0)	1 (8)
Extent of Resection		
Gross or Near Total	8 (62)	12 (92)
Subtotal	5 (38)	1 (8)
Facial Nerve Preservation		
HB-1	5 (56)	6 (50)
HB-2	2 (22)	6 (50)
HB-3	1 (11)*	0 (0)
HB-4	0 (0)	0 (0)
HB-5	1 (11)*	0 (0)
HB-6	0 (0)	0 (0)
HB-1 + HB-2	7 (78)	12 (100)
Complications		
CSF leak/hydrocephalus	1 (7.7)	0 (0)
Seizure	1 (7.7)	0 (0)
Hyponatremia	0 (0)	1 (7.7)

Table 3. Surgical approach and outcomes.

*HB-3 and HB-5 palsy was present preop and was not a change from baseline

Tumour Characteristics

Side, n (%)	Age ≥ 75	Control
Left	6 (46)	7 (54)
Right	7 (54)	6 (46)
Size		
Mean Volume	5.86 cm ³	5 cm ³
Volume Range	2.8-14.7 cm ³	0.6-7cm ³
Mean avg. Diameter	3.05 cm	2.56 cm

Table 2. Tumour characteristics. Excludes recurrences and residual tumour reoperations. Size calculated using $4/3 \cdot \pi \cdot r^3$ where $r=D/2$ and $D=$ avg of 3 dimensional measurements in AP, SI and ML orientations on MRI IAC CISS sequences

Quality of Life

When assessed in isolation, the senior patients appear to have differences in QoL post op that is worse than preop when reviewed at the first 4-6 wk post operative follow-up. However, this is not significantly different than the younger control group. Comparing differences in score from pre to post op between the control and senior groups, there is no significant difference.

We additionally assessed QoL scores at a delayed follow-up visit for the elderly group. Although they demonstrated a consistent trend toward improved scores at this time point, they did not reach statistical significance.

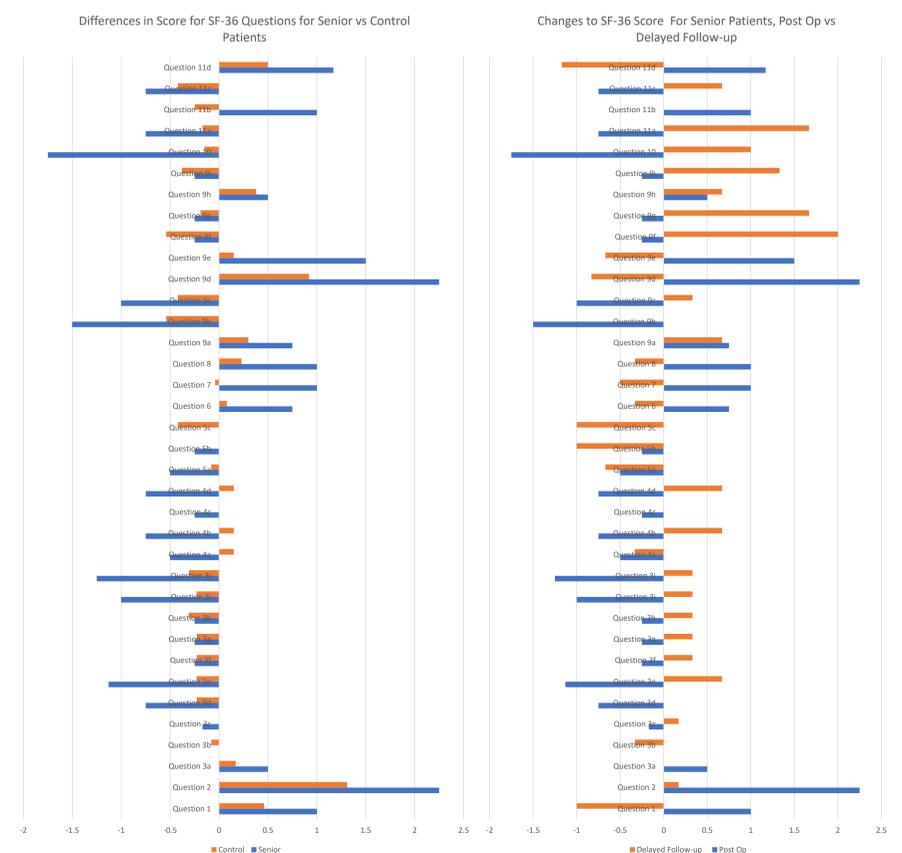


Figure 1A. Compares the change from pre to post op scores between the control and senior patients. The SF-36 questionnaire is a multidimensional, widely accepted, and used instrument to evaluate nonspecific disease HRQoL. It comprises eight scales: physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional, and mental health. Scoring for the SF-36 is as follows.

Questions 1, 2, 6, 7, 8 are scored from 1-5 with 5 being worse

Question 3 is scored from 1-3 with 1 being worse

Question 4, 5 is scored from 1-2 with 1 being worse

Question 9 is scored from 1-6 with 6 being worse

Question 10 is scored from 1-5 with 5 being worse

Question 11a, c are scored from 1-5 with 1 being worse

Question 11b, d are scored from 1-5 with 5 being worse

Figure 1B. Compares the initial postop scores to the follow up scores for Senior patients.

Discussion and Conclusion

Surgeons faced with the decision to operate on elderly patients may favor stereotactic radiosurgery over open resection due to the perception of lower procedural risk in a population generally considered at higher risk for complications. However, our findings suggest that patients in this age group do not experience significantly worse postoperative quality of life (QoL) compared with younger patients. With longer-term follow-up, elderly patients demonstrated a meaningful return to— and in some cases improvement beyond— their preoperative QoL scores, although these changes did not reach statistical significance.

Notably, elderly patients in our cohort underwent subtotal resection at a significantly higher rate than their younger counterparts. Although our institutional practice is to pursue gross total resection (GTR) when appropriate, we adopt a more conservative surgical approach in patients over the age of 75. This likely reflects an inherent bias that patients in this age group may be less likely to require repeat intervention in the future, as well as a greater emphasis on preserving quality of life when determining the extent of resection.

Limitations

This study is limited by its relatively small sample size. Additionally, it reflects the experience of a single surgeon at a single institution, which may limit the generalizability of the findings.

Conclusion

Surgical resection of vestibular schwannoma in patients over the age of 75 appears to be safe and well tolerated, without significant deterioration in SF-36 scores, a validated measure encompassing multiple domains of quality of life.

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References

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