

# Vestibular Schwannoma and Hypothyroidism: Exploring a Possible Link

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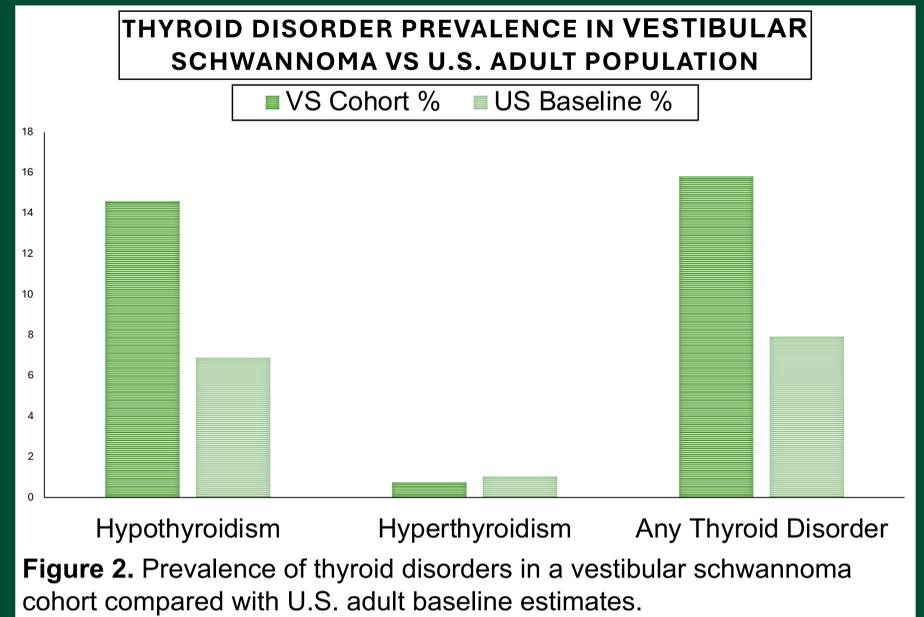
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**Hypothyroidism is overrepresented in a vestibular schwannoma cohort.**

**Clinical implications remain uncertain.**

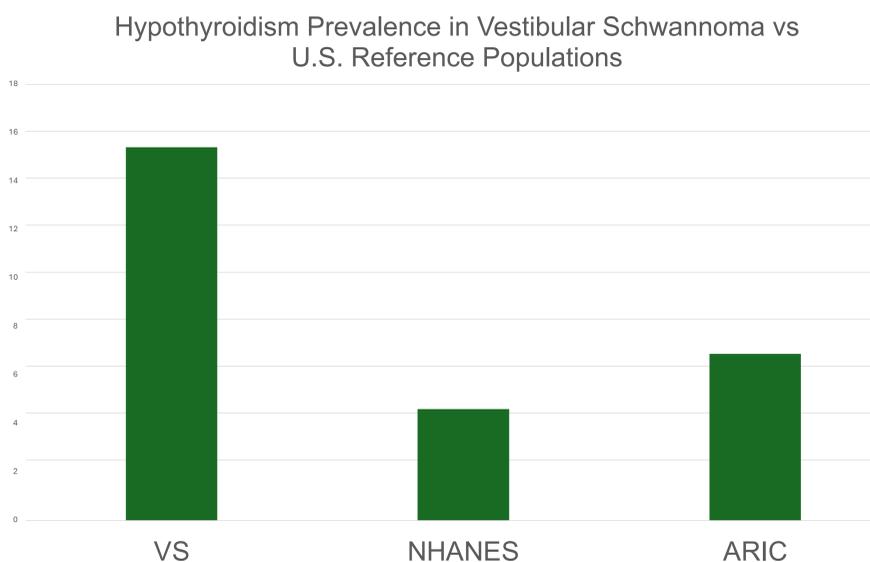


## INTRODUCTION

- Vestibular schwannoma (VS) is a common benign skull base tumor with well-characterized management.
- Thyroid dysfunction is prevalent in the general population, yet its relationship to VS has not been studied.
- This study evaluates whether thyroid disorders are overrepresented among patients treated for VS.

## METHODS

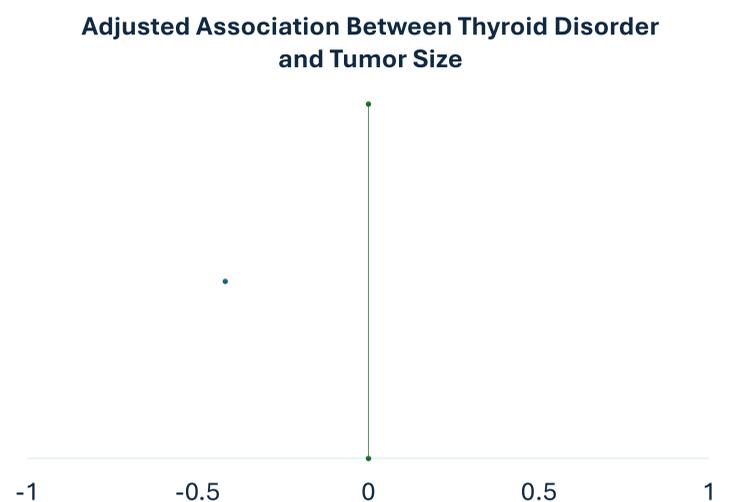
1. Retrospective review of 266 patients undergoing intervention for VS.
2. Thyroid status was determined prior to VS treatment by documented diagnosis and/or thyroid hormone therapy.
3. Patients were categorized as hypothyroid, hyperthyroid, with other thyroid disorders, or without thyroid disease.
4. Statistical analysis included chi-square goodness-of-fit tests, ANOVA, and multivariable linear regression.



**Figure 1.** Hypothyroidism prevalence in vestibular schwannoma patients compared with U.S. reference populations (NHANES and ARIC).

## RESULTS

1. Thyroid dysfunction was present in 19.9% (53/266) of VS patients, driven primarily by hypothyroidism (15.4%).
2. Hypothyroidism prevalence was significantly higher than in U.S. reference populations (NHANES and ARIC; OR 2.47–3.75, both  $p < 0.0001$ ).
3. In adjusted analysis, any thyroid disorder was associated with a small but statistically significant decrease in tumor size ( $B = -0.42$  cm,  $p = 0.038$ ).



**Figure 3.** Adjusted association between thyroid disorder and tumor size. Multivariable linear regression adjusted for age and frailty ( $\beta = -0.42$  cm,  $p = 0.038$ ).

## DISCUSSION

1. Thyroid disorders, particularly hypothyroidism, were more prevalent in this VS cohort than expected.
2. The association with smaller tumor size was statistically significant but modest.
3. These findings may reflect confounding by age, comorbidity, or healthcare utilization rather than causation.

## LIMITATIONS

- Retrospective single-center design limits causal inference.
- Thyroid status was defined clinically rather than biochemically, which may lead to misclassification.
- Residual confounding by age, comorbidity, frailty, and healthcare utilization may persist despite adjustment.