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Analysis of the Influence of PRISMA Guidelines on Systematic Reviews in Vestibular Schwannoma

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BACKGROUND

- Vestibular schwannomas (VS) are benign slow-growing tumors that arise from the vestibular component of the eighth cranial nerve¹.
- Management strategy depends on various factors, including the size and location of the tumor, the presence and severity of symptoms, and the overall health and preferences of the patient².
- Many systematic reviews (SRs) have been performed to assess the best treatment for VS, with varying conclusions.

PURPOSE

- To qualitatively compare potential factors pre- and post-PRISMA implementation to uncover trends in the reviews that influence management recommendations and outcomes in VS.

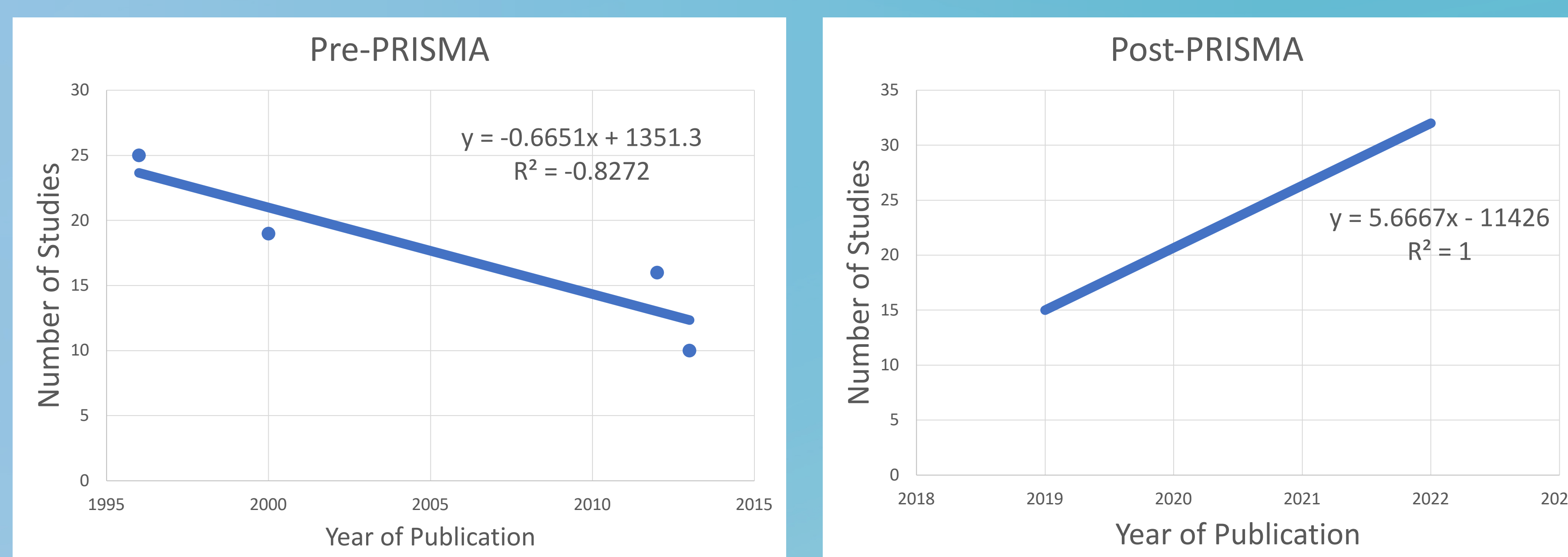
MATERIALS & METHODS

- Systematic review of systematic reviews was performed following the 2020 PRISMA guidelines.
- Inclusion criteria: 1) published after 1995, as this represents the introduction of literature on Radiosurgery (RS) as treatment modality in VS, and 2) SRs comparing at least two different modalities: Microsurgery (MS), RS, or Observation.
- SRs were divided into MS vs RS; Observation vs Intervention (MS/RS); and All Treatment Options.
- Qualitative analysis was performed

Table 1. Studies Included in Final Systematic Review and Trends Analysis

Categorization	Authors	Year	Number of Studies Included	Conclusions	Eligibility Criteria
Microsurgery vs. Radiation	Sekhar, Laligam N., et al	1996	25	Microsurgery	0
	Kaylie, David M., et al	2000	19	Microsurgery	6
	Maniakas, Anastasios, et al	2012	16	Radiosurgery	5
	Wolbers, John G., et al	2013	10	Radiosurgery	2
	Romiyo, Prasanth, et al	2019	15	Radiosurgery	5
	Savardekar, Amey R., et al	2022	32	Comparable	10
Observation vs. Intervention (MS/RS)	Shin, Young Je, et al	2003	7	Observation	6
	Maniakas, Anastasios, et al	2012	14	Radiosurgery	5
	Gosselin, Emilie, et al	2015	31	Microsurgery	7
	Leon, Janet, et al	2019	21	Radiosurgery	8
All Treatment Options	Yamakami, Iwao, et al	2003	38	Comparable	9
	Gauden, Andrew et al	2011	47	Comparable	7
	Papatsoutsos, Efstathios, et al	2017	39	Microsurgery	4
	Cavada, Marina Neves, et al	2021	71	Comparable	8
	Thai, Nghia Le Ba, et al	2022	35	Radiosurgery	4

Figure 1. Year of Publication vs. Number of Studies Included in Microsurgery vs. Radiosurgery Subgroups



A) Pre-PRISMA Guidelines: Demonstrates the inverse correlation between included studies per year

B) Post-PRISMA Guidelines: Demonstrates the positive correlation between included studies per year.

REFERENCES

1. Jacob A, Robinson LL, Bortman JS, Yu L, Dodson EE, Welling DB. Nerve of Origin, Tumor Size, Hearing Preservation, and Facial Nerve Outcomes in 359 Vestibular Schwannoma Resections at a Tertiary Care Academic Center. *Laryngoscope*. 2007;117(12):2087-2092. doi:10.1097/MLG.0B013E3181453A07 .
2. Gupta VK, Thakker A, Gupta KK. Vestibular Schwannoma: What We Know and Where We are Heading. *Head Neck Pathol*. 2020;14(4):1058-1066. doi:10.1007/s12105-020-01155-x

RESULTS

- Microsurgery vs. Radiosurgery: The number of studies included increased in post-PRISMA guideline years. Most studies concluded that RS was superior, while two favored MS.
- Observation vs. Intervention: One study favored Observation, while three favored Intervention.
- Results varied among the categories, with RS often being favored in MS vs. RS comparisons.
- Tumor size was inconsistently used as an eligibility criterion, leading to variations in conclusions and recommendations.

DISCUSSION

- Post-PRISMA publications showed an increasing number of studies, suggesting improved transparency and reliability due to guidelines.
- Standardizing eligibility criteria for SRs is crucial for ensuring appropriate SR methodology.
- Standardizing eligibility criteria is crucial for unbiased overviews.
- Lack of qualitative trends demonstrates the inconsistency in reporting measures and the need for additional research.
- Limitations include lack of homogenous data that precluded quantitative analysis and creation of our own inclusion/exclusion criteria.
- SRs in VS are lacking in consistency. The heterogeneity in reporting measures of SRs for VS treatment leads to variations in conclusions and impacts how evidence is applied to patients. PRISMA is an attempt to change this and has had influence on the number of studies in SRs. Standardizing reporting is essential for unbiased conclusions and recommendations.