



Audiovestibular symptoms and facial nerve function between microsurgery and SRS for vestibular schwannomas: A systematic review and meta-analysis

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Introduction

- Vestibular schwannomas (VS) are benign slow-growing tumors, commonly arising along the eighth cranial nerve within the auditory canal.
- The central focus of treatment remains tumor control and preservation of neurological function mainly audio-vestibular and facial nerve functions.
- Surgery and radiosurgery represent the most common treatment options for vestibular schwannoma.
- A contemporary systematic review and meta-analysis of available data in the literature was performed to compare the outcomes of surgery versus stereotactic radiosurgery (SRS)
- Hence, the objective of the study, was aimed to evaluate the long-term vestibular and hearing outcomes as well as facial nerve function for each of microsurgery and SRS.

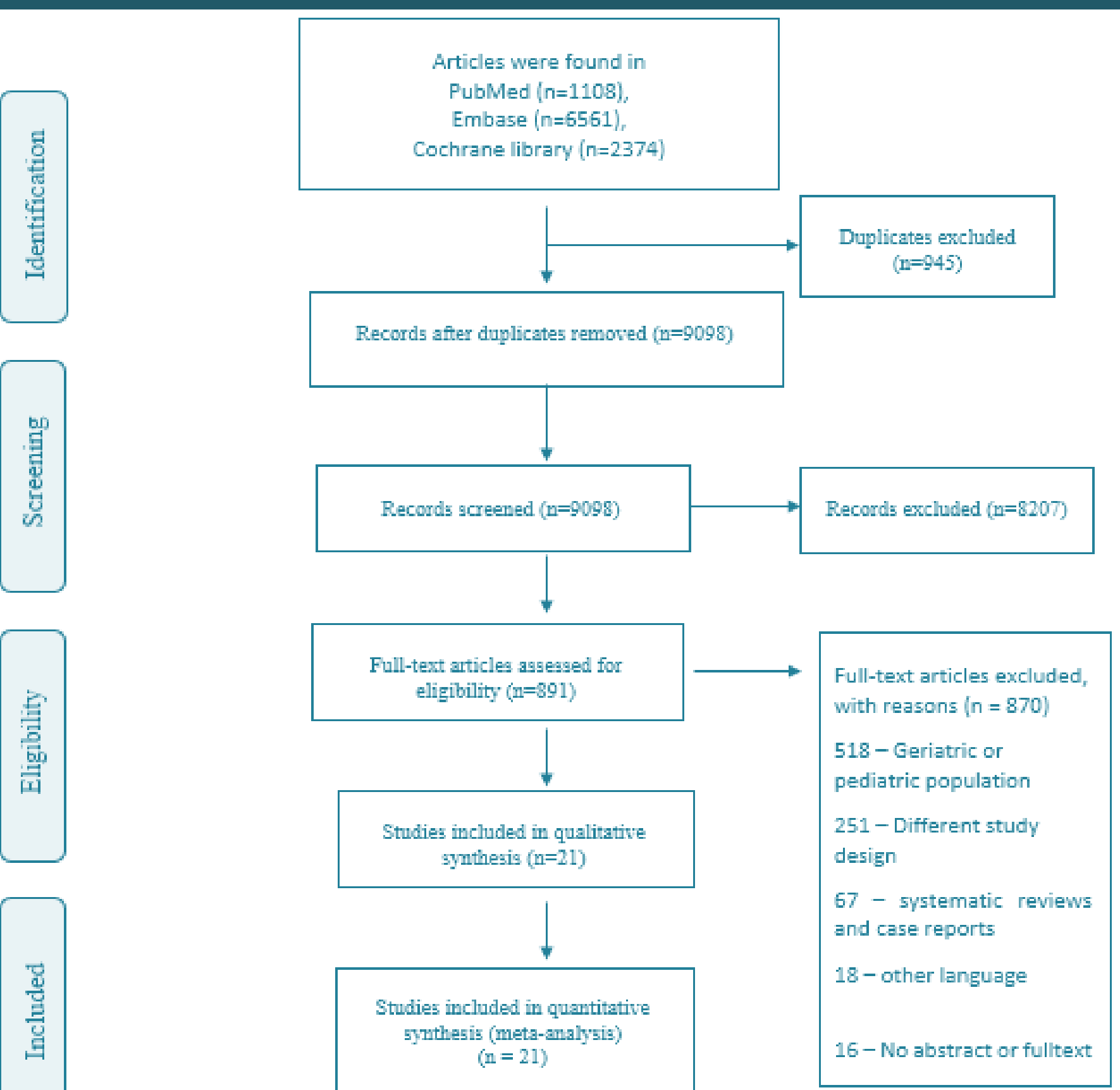
Methods

- The studies were considered for inclusion if they reported patients ages 18-65 years, individuals diagnosed with vestibular schwannoma and treated with either surgery or SRS, and patients’ outcomes such as hearing loss, vestibular complications, or facial symmetry loss.
- Studies were excluded if they involved participants undergoing a combined treatment approach of surgery and SRS, used a different type of intervention such as hypo-fractionated stereotactic radiotherapy (HSRT) or conventional external beam radiation therapy failed to report data on the needed information.
- The Cochrane library, PubMed, Embase, and clinicaltrials.gov were searched through October to find all relevant studies.
- From the random-effects model, pooled odds ratios (OR) and their 95% confidence intervals (CI) were derived for pre-post studies.

Results

- Twenty-one studies (18 pre-post design; three case series) with 987 patients were included in the final analysis.
- Comparing post- to pre-intervention, both surgery (OR: 3.52, 95%CI 2.13, 5.81) and SRS (OR: 3.30, 95%CI 1.39, 7.80) resulted in greater odds of hearing loss, lower odds of dizziness (surgery OR: 0.10; 95%CI 0.02, 0.47 vs. SRS OR: 0.22; 95%CI 0.05, 0.99), and tinnitus (surgery OR: 0.23; 95%CI 0.00, 37.9; two studies vs. SRS OR: 0.11; 95%CI 0.01, 1.07; one study).
- Pooled incidence of facial symmetry loss was larger post-surgery (14.3%, 95%CI 6.8%, 22.7%) than post-SRS (7%, 95%CI 1%, 36%). Tumor control was larger in the surgery (94%, 95%CI 83%, 98%) than the SRS group (80%, 95%CI 31%, 97%) with small-to-medium size tumor.

PRISMA Flow chart



Results (Continued)

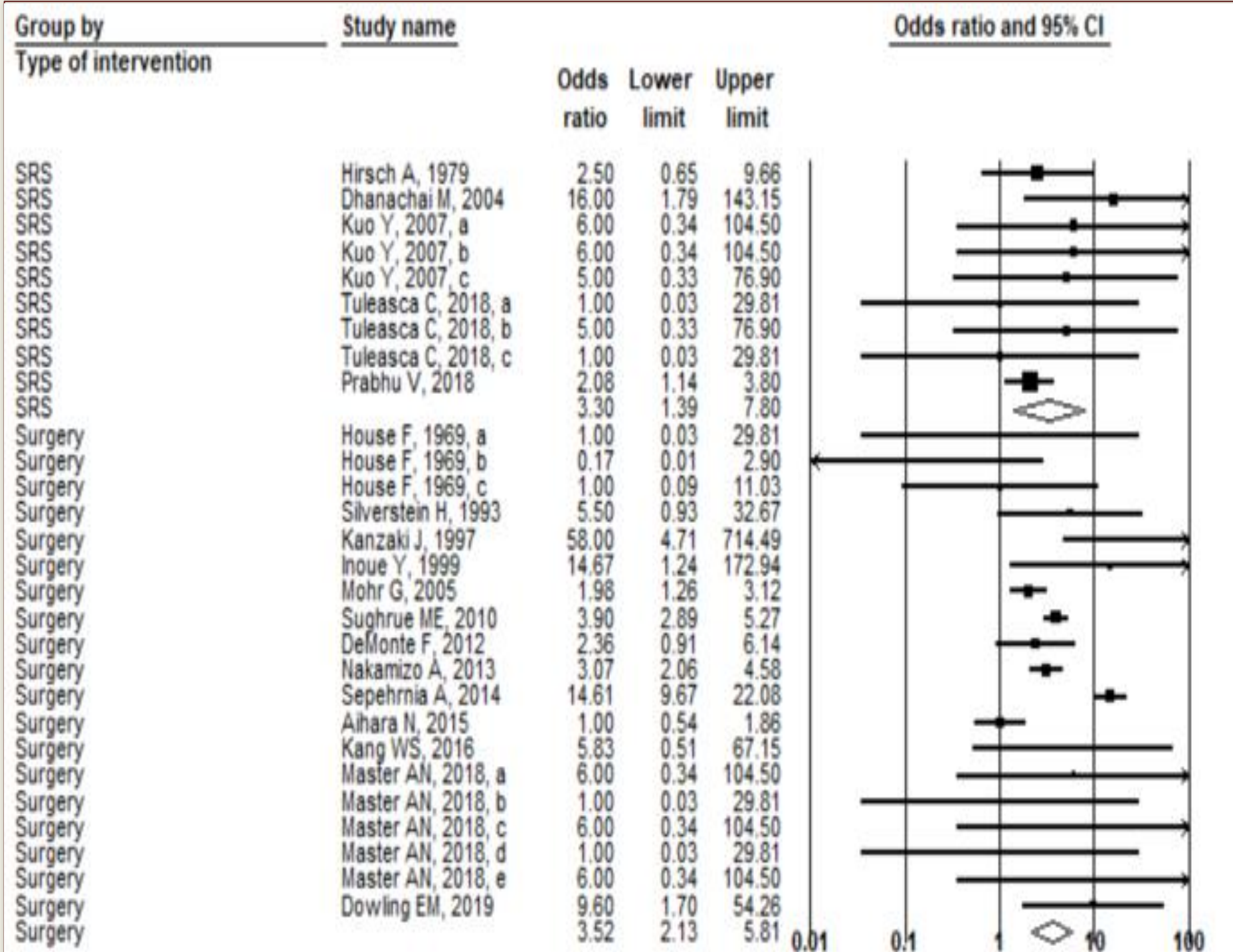


Fig:1 Forest plot showing the odds ratio of post vs pre-hearing loss Stratified by treatment (Surgery vs SRS)

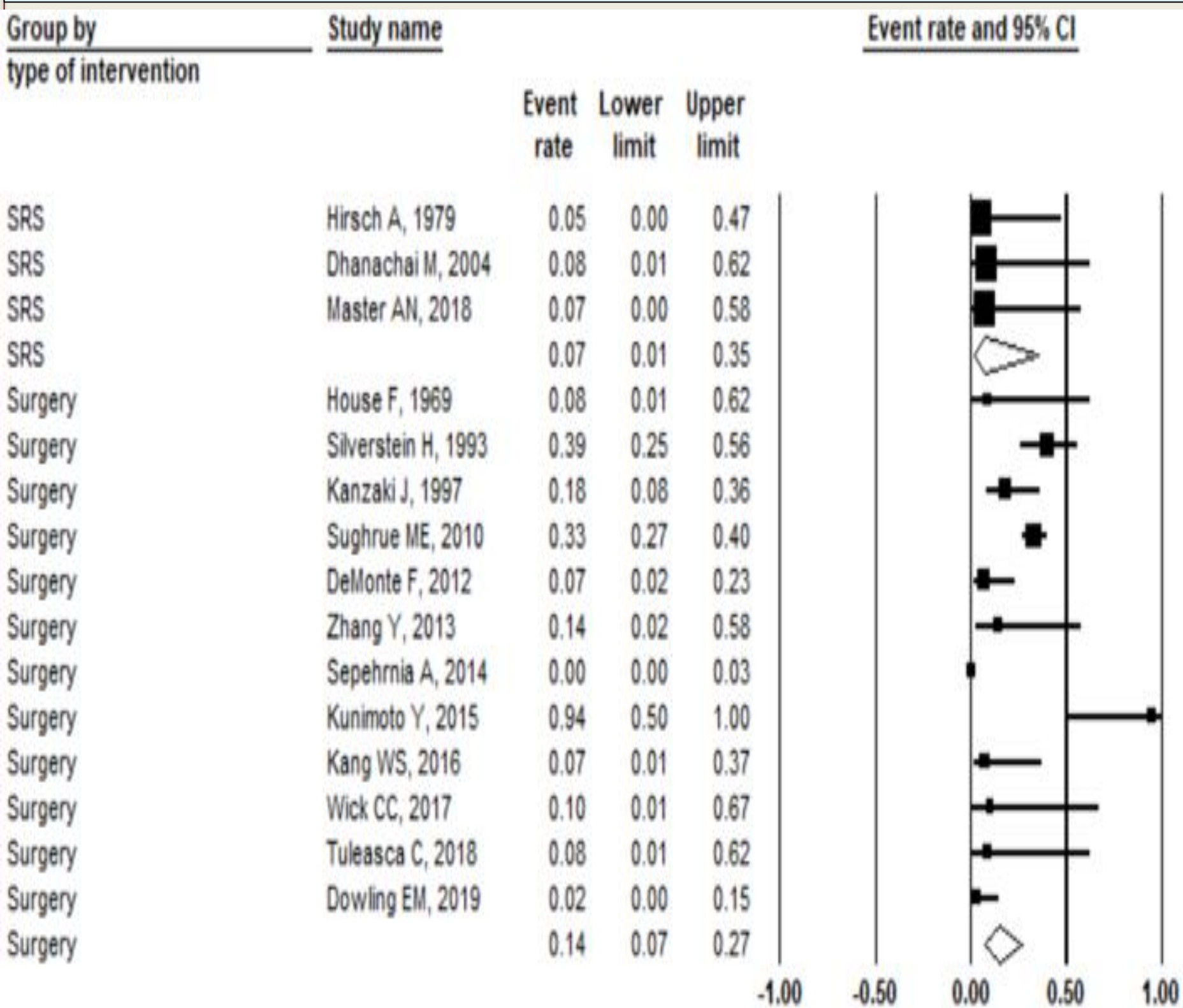


Fig:2 Forest plot showing the incidence of loss of facial symmetry Stratified by treatment (Surgery vs SRS)

Conclusions

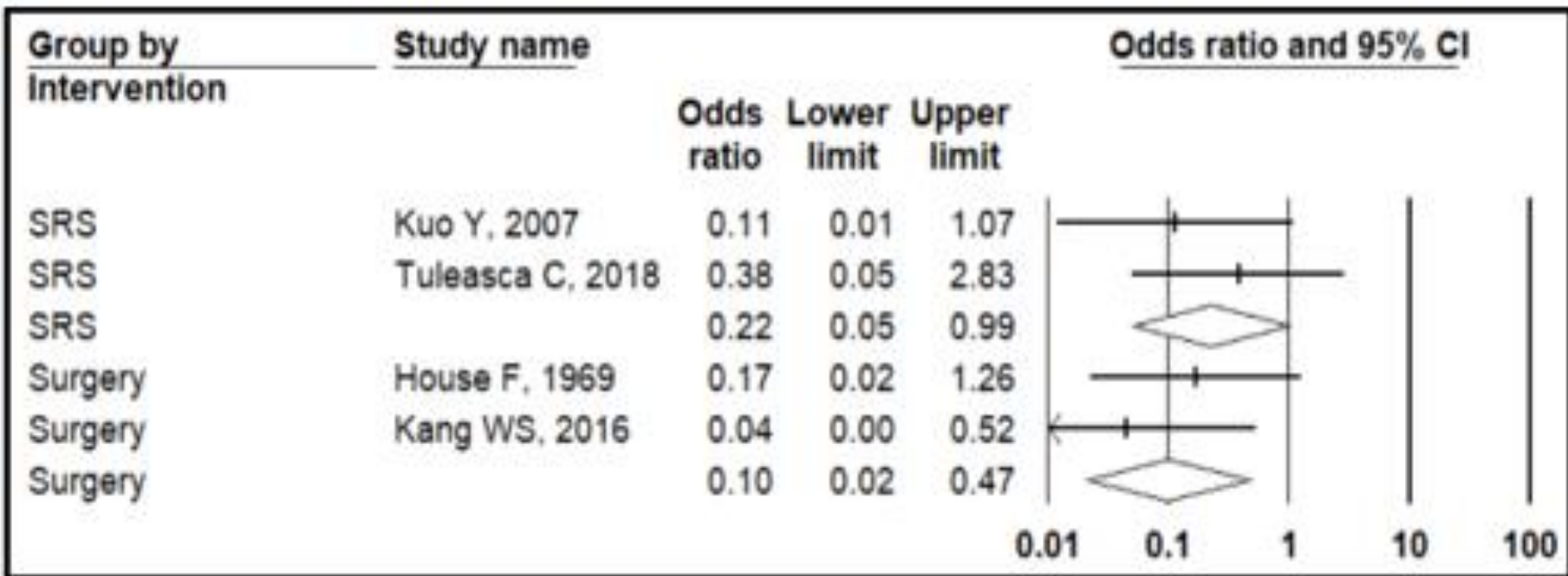


Fig:3 Forest plot showing the odds ratio of post vs pre dizziness Stratified by treatment (Surgery vs SRS)

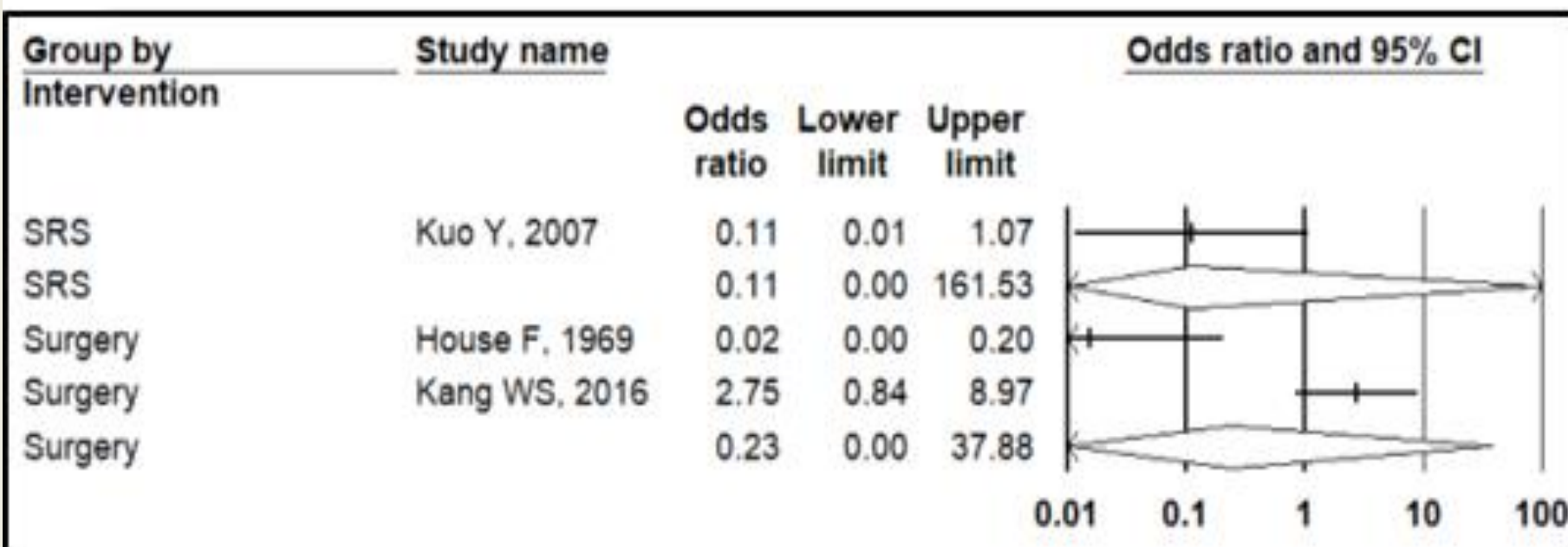


Fig:4 Forest plot showing the odds ratio of post vs pre tinnitus Stratified by treatment (Surgery vs SRS)

- Both surgery and SRS resulted in similar odds of hearing loss and similar improvements in dizziness and tinnitus among patients with vestibular schwannoma.
- However, facial symmetry loss appeared higher post-surgery while tumor control was larger post-surgery.

References

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