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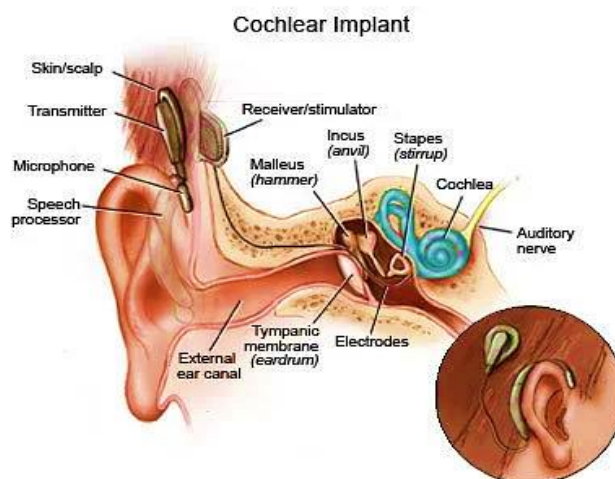
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Best Regards,

Medical Team, Micro Labs

Effectiveness of Cochlear Implants in Pre- and Postsynaptic Auditory Neuropathy: A Systematic Comparison

Introduction: Cochlear implants (CIs) are a pivotal intervention for individuals with severe-to-profound sensorineural hearing loss, yet outcomes vary depending on the underlying pathology. Regardless of success, CI outcomes differ and may be influenced by the underlying pathophysiology of hearing loss.¹ Auditory neuropathy (AN) or auditory neuropathy spectrum disorder (ANSD), is characterized by preserved otoacoustic emissions (OAE) and/or cochlear microphonics with absent or abnormal auditory brainstem responses (ABR).² It can be classified based on the site of dysfunction: presynaptic, postsynaptic, or central. Presynaptic AN, often linked to otoferlin gene mutations, affects inner hair cells or ribbon synapses, while postsynaptic AN involves abnormalities in the auditory nerve, including unmyelinated dendrites, auditory ganglion cells, and their axons. Central AN, typically associated with brainstem lesions such as vestibular schwannomas, falls outside the primary scope of this review. Genetic factors significantly contribute to AN, influencing CI outcomes. While this review does not comprehensively examine genetic etiology, it considers genetic influences to better understand CI efficacy in presynaptic versus postsynaptic cases.¹ Therefore, this review systematically evaluates current evidence comparing CI effectiveness in presynaptic versus postsynaptic neuropathy.



Methods: A comprehensive literature search was carried out using several databases, including MEDLINE (via PubMed), Embase, Cochrane database, Web of Science, Scopus, CINAHL, and PsycINFO. These studies were chosen because they examined the effectiveness of CI in individuals with auditory neuropathy spectrum disease, employing electrophysiological measurements or genetic markers to differentiate between pre- and postsynaptic lesions. Patient demographics, neuropathy type (presynaptic or postsynaptic), genetic predisposition, cochlear implantation specifics (device type and surgical technique), and outcome metrics were among the data taken from each study. The outcome measurements included post-implantation quality of life evaluations, speech recognition thresholds, and auditory performance ratings.

Results: The significance of etiological diagnosis in predicting CI outcomes was repeatedly emphasized by an analysis of seven trials. More positive CI results were associated with genetic alterations, highlighting the significance of genetic causation. Electrophysiological tests were also effective in measuring auditory function, highlighting the importance of comprehensive diagnoses. Predicting CI outcomes in patients with AN requires an understanding of the etiology, including genetic variables and lesion sites, as indicated by the reviewed studies (Table 1). The potential for bias was determined to be low to moderate, reflecting thorough study design and reporting. High consistency and direct relevance to the clinical problems were demonstrated by the research, and the findings' dependability was bolstered by their accurate results.

Analysis design	Investigations count	Summarized conclusion	Bias likelihood	Uniformity	Pertinence	Precision	Extra factors	Trustworthiness
Cohort study	7	Etiology, including genetic factors and lesion site, is central to predicting CI outcomes in AN	Low to moderate	High	High	High	None	Moderate

Table 1: GRADE Observations for the Included Studies.

Discussion: The combined results of this research highlight how important etiology is in forecasting CI outcomes for people with AN and genetic alterations. These studies offer insights into the variables determining CI performance, despite their disparate approaches and target points.¹ Chaudhry et al. analyzed the results of CI in patients with postsynaptic AN and presented a narrative synthesis of the literature that was accessible. They provide insight into the subset of AN patients included in this study with their results of typically good post-CI outcomes in postsynaptic AN case.³

Conclusion: The current study shows that etiological factors have a general influence on CI results; however, success varies between pre- and postsynaptic neuropathies. Predicting CI performance requires the integration of genetic and electrophysiological diagnoses, indicating the necessity for individualized methods in assessing CI candidates for more focused and efficient auditory rehabilitation.

Electrophysiological assessments play a key role in accurately differentiating between pre- and postsynaptic auditory neuropathy, guiding diagnosis and treatment strategies.

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Identification of Clinical Determinants with Surgical Outcomes in Persistent Allergic Rhinitis

Introduction: Allergic rhinitis (AR) is a chronic inflammatory disease affecting approximately 30% of adults and is commonly associated with other inflammatory conditions. It results from a T helper 2 (Th2)-mediated immune response to allergens, leading to upper airway inflammation. Major symptoms include sneezing, rhinorrhoea, nasal congestion, itching, and nasal obstruction being the most treatment resistant.¹ Management of AR includes allergen avoidance, antihistamines, intranasal corticosteroids, and decongestants. In refractory cases, surgical interventions such as septoplasty and inferior turbinoplasty are considered. Septoplasty is particularly effective for patients with nasal obstruction due to a deviated septum, while combined septoplasty and turbinoplasty provide greater relief than turbinoplasty alone. Surgical intervention is often preferred by patients with structural airway issues or medication intolerance, as it reduces turbinate volume, alleviates nasal resistance, and expands airway space. Despite the established benefits of septoplasty with turbinoplasty in AR, no study has specifically analyzed factors influencing surgical outcomes.² This study evaluated the efficacy of these procedures in AR patients and identified preoperative subjective and objective predictors of surgical success.

Methods: This prospective study included 128 patients who completed a one-year postoperative follow-up. Patients with positive allergy test findings and PAR were prospectively recruited for surgery. Data from preoperative laboratory tests were collected. Every patient received the Sinonasal Outcome Test-22 (SNOT-22) survey both one day before and one year following surgery. Surveys of sinonasal symptoms have frequently used the SNOT-22, which contains five subdomains: rhinologic, extranasal, ear/facial, psychological, and sleep problems. Each item score ranges from 0 (no symptoms) to 5 (most severe). Major complaints, including obstructive or non-obstructive symptoms and smoking status, were noted

for further examination. In the SNOT-22 subdomains, factors that might be linked to attaining minimal clinically meaningful differences (MCID) were also examined.

Results: Following surgery, there was a considerable improvement in both the overall SNOT-22 score and the five subdomain scores. According to this study, postoperative progress was greater, and MCID was more likely to be reached by women and those with higher preoperative SNOT-22 scores. The probability of achieving MCID was around six times higher for preoperative SNOT-22 scores higher than the established cut-off value of 42.5 (Figure 1). Postoperative improvement in the sleep subdomain was higher in nonsmokers and patients in the nasal obstruction group. In the subdomains of sleep, psychology, and ear/facial function, women showed notable absolute improvements. Both absolute reductions in sleep symptoms and relative improvements in ear/facial and sleep were greater among nonsmokers.

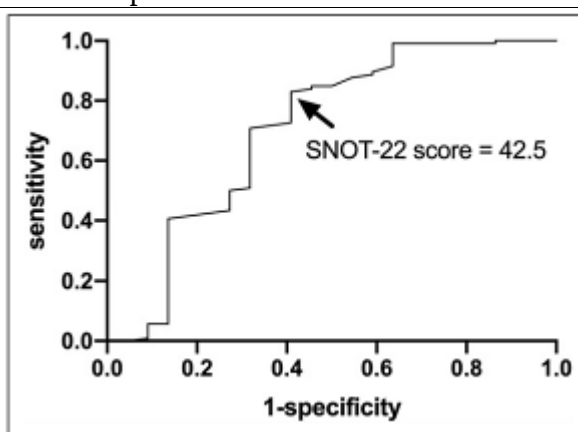


Figure 1. Receiver operating characteristic curve for the preoperative SNOT-22 score of patients with persistent allergic rhinitis to forecast the least clinically significant difference (MCID) on the SNOT-22 after surgery.

Discussion: Patients with nasal blockage and significant anatomic issues are frequently candidates for septoplasty with turbinoplasty. According to the study's SNOT-22 scores, surgical intervention enhanced PAR patients' quality of life for at least a year following surgery.² Lee DD et al. found that septoplasty with or without concurrent inferior turbinoplasty during endoscopic endonasal trans-sphenoidal surgery resulted in significant sleep improvements on the SNOT-22 test.³ Another study by Deveci I et al. found that septoplasty, with or without inferior turbinate radiofrequency, significantly improved the Pittsburgh Sleep Quality Index.⁴ Surgically treating the nasal cavities resulted in notable improvements in sleep complaints, which is in line with the study's findings.

Conclusion: The current study concluded that turbinoplasty combined with septoplasty may enhance the non-obstructive symptoms and quality of life of patients with PAR. Women who had PAR and a preoperative SNOT-22 score higher than 42.5 were more satisfied and were therefore better candidates for surgery. Significantly, within a year following surgery, patients with PAR may have improvements in both rhinologic and non-rhinologic symptoms.

Identifying predictors of surgical outcomes in AR can guide preoperative counselling, improve patient selection, and set realistic expectations for better treatment satisfaction.

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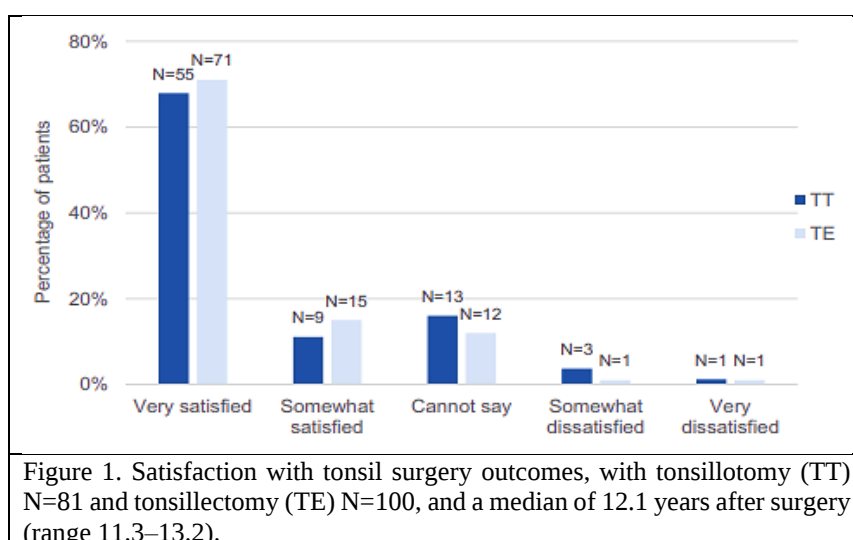
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Comparison of the long-term effectiveness of Tonsillotomy and Tonsillectomy

Introduction: Classic tonsillectomy (TE), the surgical removal of the palatine tonsils, remains a widely performed head-and-neck procedure, with cold dissection TE considered the gold standard. While TE in adults primarily addresses chronic or recurrent tonsillar infections,¹ tonsillotomy (TT) has gained popularity for treating sleep-disordered breathing (SDB) in children due to tonsillar hyperplasia. TT offers advantages such as reduced postoperative pain, lower hemorrhage risk, and faster recovery compared to TE, though concerns exist regarding tonsillar regrowth and potential recurrence of infections or peritonsillar abscesses. While TT has demonstrated short-term benefits in quality of life (QOL) improvements for children with SDB, long-term data remain limited.² This study evaluated the 12-year outcomes of TT versus TE in terms of disease-specific QOL, SDB symptoms, throat infections, and reoperation rates.

Methods: This retrospective analysis comprised 189 patients under the age of 16 who had tonsil surgery. Following tonsil surgery, QOL was evaluated using the Tonsil and Adenoid Health Status Instrument (TAHSI). The TAHSI is a validated disease-specific quality of life measure for tonsil and adenoid diseases in children aged 2 to 16. Data regarding potential re-examinations and re-operations was collected. The Research Electronic Data Capture (REDCap) tool was used to compile the tonsil-related history and symptoms survey and compile the data. Every question in TAHSI is graded on a 5-point Likert scale, with 0 denoting "not a problem" and 4 denoting "severe problem". The item scores for each subscale are added together to provide a subscale raw score. Significant values suggest a significant disease load, while low levels imply asymptomatic individuals.

Results: Among them, 87 had received TT and 102 TE. The TT group's median follow-up was 11.8 years, whereas the TE group was 12.4 years. In both groups, the disease-specific quality of life was equally good. After TT and TE, throat infections occurred to the same degree and had not been a problem for the great majority of patients. There were no significant differences between the groups, and most subjects (79.0% TT, 86.9% TE) expressed satisfaction with the procedure. Reoperation rates were 6.9% and 1.0% following TT and TE, respectively, with very few revisits resulting from tonsil-related issues. Most participants expressed satisfaction with the surgical outcome, and no statistically significant differences were observed between the groups (Figure 1). Sixty-four respondents (79.0%) in the TT group and 86 (86.9%) in the TE group expressed some degree of satisfaction. Just one respondent (1.0%) and three (3.7%) in the TT and TE groups expressed some degree of dissatisfaction, whereas one respondent in each group expressed extreme dissatisfaction.



Discussion: In this study, which included only 87 patients, 6.9% of those who had TT surgery had to have it done again, primarily because of tonsillar regrowth. Sakki AJ et al. involved 3141 children and found the hospital's rate of resurgery following TT was 1.9%.³ According to the Swedish retrospective register-based cohort study involving over 27,000 patients, the rate of revision surgery following TT was 3.9%.⁴ Recurrent obstructive symptoms were the primary reason for most resurgeries in both studies, and younger age at surgery was significantly linked to a higher risk of reoperation.

Conclusion: This study concluded that tonsillotomy appears to have excellent long-term clinical efficacy. Equal disease-specific QOL can be attained with TT using a less invasive surgical technique than with TE. There was no evidence linking TT to a higher incidence of tonsil infection issues over a median follow-up period of 12 years.

Tonsillotomy (TT) offers a less invasive alternative to tonsillectomy (TE) while achieving comparable long-term improvements in disease-specific QOL.

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A Rare Case of Tonsillar Hemangioma: Diagnosis and Management

Introduction: Hemangioma, a benign vascular tumor, is the most common tumor in infants, with 60% occurring in the head and neck region. In the oral cavity, common sites include the lips, tongue, buccal mucosa, and palate, though tonsillar involvement is rare.¹ Hemangiomas are classified into three subtypes: (1) cavernous, comprising dilated vascular spaces, typically developing after the sixth decade due to infection, trauma, or hormonal factors; (2) capillary, featuring smaller vascular channels, commonly seen in infancy with spontaneous regression by age 5–6; and (3) mixed, combining both types.² Imaging is crucial for lesion assessment and surgical planning, as vascular lesions pose significant bleeding risks. Although often asymptomatic, lesion size and location may necessitate intervention.¹ This case presents a rare mixed (capillary and venous) hemangioma of the palatine tonsil, highlighting its epidemiology, diagnosis, treatment, and clinical course.

Case presentation: A 28-year-old patient was admitted to the hospital with no notable medical history following an incidental mass detection in the left tonsillar area. The patient exhibited no further symptoms. An examination showed a pink, pedunculated mass that was 2 cm in diameter, non-bleeding when touched, and coming from the left palatine tonsil's superior pole. No cervical lymph nodes were palpable, and the tonsillar area on the other side was normal. Using both contrast and non-contrast, a face computed tomography (CT) scan showed no cervical lymphadenopathy, a tissue mass in the left tonsillar region, and narrowing of the oropharyngeal lumen while maintaining the parapharyngeal fat gaps (Figure 1). Surgery was performed on the patient while under general anesthesia. A firm, non-pulsatile tissue mass was discovered during the intraoperative investigation. It was hanging from the superior pole of the left tonsillar area by a pedicle (Figure 2). The tumor mass was then completely removed following double ligation and pedicle sectioning without any issues, especially hemorrhagic ones. Following surgery, the patient was discharged. The histological analysis revealed a vascular proliferation made up of thick-walled arteries with varying dilatation and thin-walled capillaries in a benign squamous mucosa (Figure 3). It was determined that the patient had a mixed capillary and venous tonsil hemangioma. After a 12-month follow-up, the outcome was advantageous, and the postoperative course was uncomplicated. No radiographic or clinical signs of recurrence were seen.

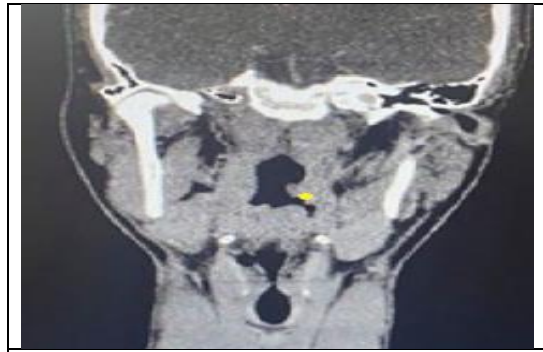


Figure 1. The tumor in the left palatine tonsil seen on the coronal CT scan.

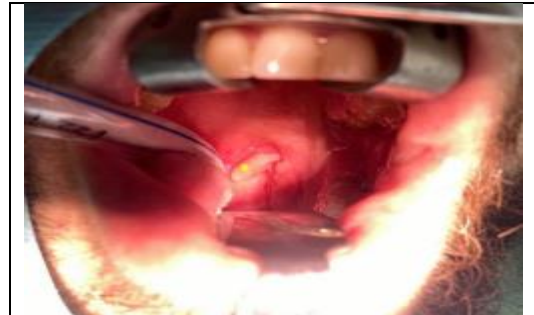


Figure 2: Intraoperative VUE: a solid, non-pulsatile mass of tissue that is hanging from the left tonsillar region's superior pole by a pedicle.

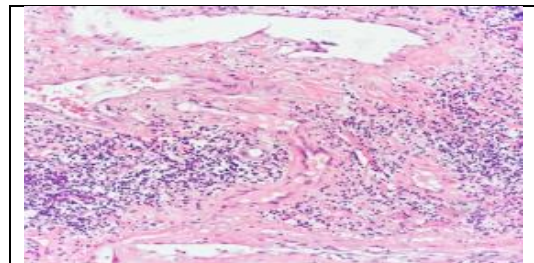


Figure 3: Histopathological VUE: benign squamous mucosa with vascular proliferation made up of thick-walled vessels with varying dilatation and capillaries with thin walls.

Discussion: Hemangiomas of the tympanic membrane (TM) and external auditory canal (EAC) are rare and frequently challenging to distinguish from other abnormalities. A histological examination is required to validate the diagnosis. Early diagnosis and treatment of this uncommon clinical entity can be achieved using clinical and analytical methods, such as audiology testing and high-resolution CT imaging in individuals with persistent ear complaints.² Complete surgical excision is required for symptomatic hemangiomas, and subsequent excision has a

favorable prognosis. Following excision, histopathologic confirmation is required. In adults, capillary hemangiomas can also appear as cavernous hemangiomas in the EAC.³

Conclusion: Tonsillar hemangiomas are an uncommon clinical phenomenon that all ENT surgeons should be aware of in order to make appropriate therapeutic decisions and avoid hemorrhagic consequences and recurrence. Clinicians frequently face difficulties in diagnosing it, as a biopsy of the lesion is necessary to provide a conclusive diagnosis.

Precise diagnosis and comprehensive preoperative assessment are essential for the effective management of vascular tumors.

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