ENT_BB CONNECTION

Vol 3| Issue 18| 2024

Dear Doctor,

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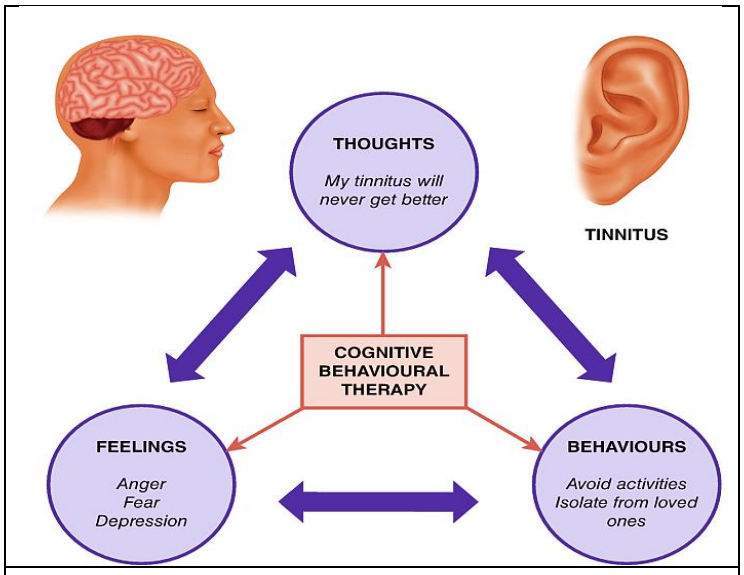
Comparison of the effect of cognitive behavioral therapy and notched sound therapy in the management of chronic subjective tinnitus

Introduction: Tinnitus is the most prevalent of the three primary difficulties in otolaryngology, falling under the category of otoneurological symptoms together with hearing loss and vertigo. Tinnitus can be divided into objective and subjective. Objective tinnitus has definable causes, such as tumors, vascular problems, or myogenic sounds. However, even after careful inspection, subjective tinnitus is perceived as a sound inside the head or ear that has no known cause.[1] According to the National Center for Health Statistics, the prevalence rates of tinnitus range from 7.1 to 14.6%, which may indicate the condition's significance. Furthermore, tinnitus develops negative emotional responses like worry and depression, which have a significant impact on quality of life. Several approaches to tinnitus management have emerged during the last few decades. Treatments widely used include habituation therapy, antidepressants, hearing aids, transcranial magnetic stimulation, and tinnitus retraining therapy. Furthermore, there is currently a lot of interest in the notched sound therapy (NST) and cognitive behavioral therapy (CBT) techniques. However, there is no prior studies done on the effectiveness of CBT versus NST or when to use each in individuals with persistent subjective tinnitus.[2] Therefore, this study was conducted to compare the outcomes of CBT and NST in the treatment of persistent subjective tinnitus.



Cognitive behavioral therapy

Methods: In this prospective cohort study, 64 patients with chronic subjective tinnitus and normal hearing were involved. They underwent history taking, basic audiological examination, and extended high-frequency audiometry at 10 and 12.5 kHz. The participants were separated into two equal groups, with the first receiving CBT and the second receiving NST. The Arabic

Questionnaire for Tinnitus Reaction (Arabic-QTR) and psychoacoustic measures of tinnitus were utilized for monitoring the results of both treatments. The psychoacoustic measures of tinnitus extended high-frequency audiometry, speech audiometry, and pure-tone audiometry (PTA) assessments of tinnitus were all performed using a two-channel audiometer. Additionally, immittancemetry was performed using a middle ear analyzer.

Results: Bilateral pitch matching in both groups varied between 0.125 and 12.500 kHz. In the CBT group, the median values were 3 kHz (right ear) and 4 kHz (left ear), while in the NST group, they were 1.5 kHz (right ear) and 4 kHz (left ear). The Arabic-QTR and tinnitus loudness matching revealed a significant decrease in tinnitus severity in both groups. The CBT group showed higher Arabic-QTR improvement, while the NST group showed superior tinnitus loudness improvement. Additionally, the two study groups' outcome indicators were compared before and after the therapy. Prior to the start of therapy, the loudness matching between the two study groups was comparable, as seen in Figure 1. However, the independent samples t-test showed a significant decrease in posttherapy loudness matching compared to CBT after sound treatment.

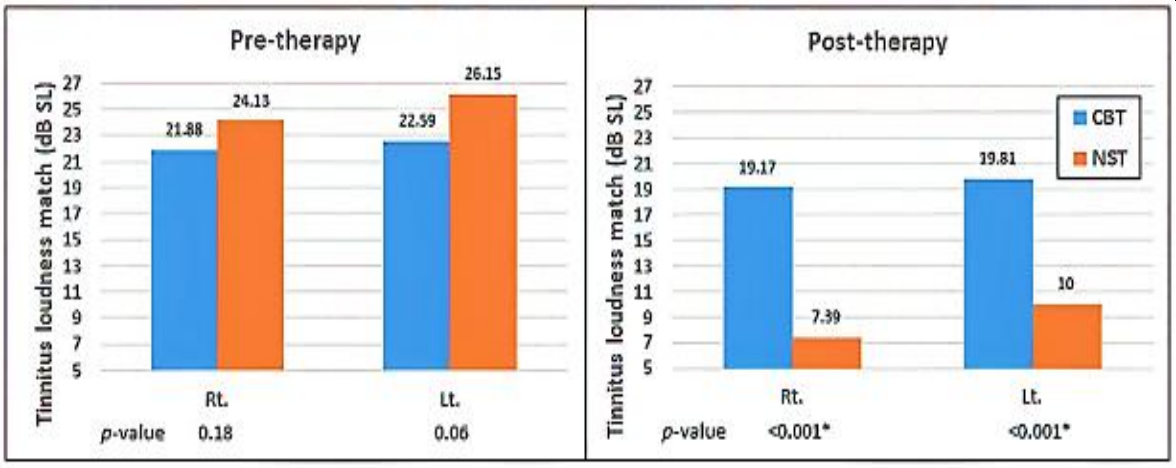


Figure 1. Comparison of the two therapies' (CBT and NST) tinnitus loudness match in both ears

Discussion: The adult participants in the current study reported normal hearing sensitivity at frequencies between 0.25 and 8 kHz, while 65% of them experienced hearing loss at extended high frequencies between 10 and 12.5 kHz, ranging from mild to profound.[2] Likewise, Song et al. found that the majority of young patients (18-35 years old) with normal hearing and tinnitus experienced hearing loss in the extended high-frequency range of 10, 12.5, 14, and 16 kHz.[3] Ibraheem et al. highlighted that adults with tinnitus and normal hearing had higher mean extended high-frequency threshold averages at 10, 12.5, and 16 kHz.[4]

Conclusion: Both NST and CBT are useful in treating persistent subjective tinnitus. When comparing the effects of the two therapies, it was discovered that NST was more beneficial in

lowering tinnitus loudness, while CBT was more useful in reducing tinnitus-related distress. To achieve the best outcomes, combining these two therapy modalities should be taken into consideration.

In chronic subjective tinnitus, a tinnitus management program combining cognitive behavioral therapy (CBT) and notched sound therapy (NST) can produce favorable physical and psychological effects.

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Evaluation of Endoscopic Sinus Surgery Outcome in Chronic Rhino Sinusitis with Nasal Polyps Management

Introduction: Chronic rhinosinusitis with nasal polyps (CRSwNP) is defined by continuous inflammation of the nasal and paranasal sinus mucosa, that significantly reduces quality of life (QoL).[1] It is recognized that nasal polyps (NP) are linked to several illnesses, such as aspirin hypersensitivity and asthma. Endoscopic sinus surgery (ESS) is typically recommended for individuals with CRSwNP who are not responding to the maximal medication treatment. Further, it has been widely accepted as a safe and effective procedure. However, with an overall polyp recurrence rate ranging from 4% to 60% regardless of surgical approach and a wide range of recurrence rates within the CRSwNP group, it is obvious that not all clinical and immunologic factors influencing recurrence are recognized.[2] So, this study was conducted to determine independent predictors of recurrence and evaluate ESS outcomes in CRSwNP therapy.

Methods: In this retrospective study, the patients with a minimum follow-up period of 12 months who received ESS for recalcitrant CRSwNP and their medical records were reviewed retrospectively. Previous sinus operations, comorbidities (asthma, aspirin-exacerbated respiratory disease (AERD), and allergic rhinitis), age, sex, smoking status, occupational exposure, and other variables were examined. Patients were categorized based on their medical history and concomitant conditions, such as asthma, allergic rhinitis, and AERD. The Jankowski classification was used to endoscopically classify NP. The Lund-Mackay (LM) grading system (range 0–24) was used to categorize preoperative CT scans. All patients received endotracheal intubation and ESS under general anesthesia, which included at least a polypectomy. CT scan results and surgical observations were used to approach the frontal and sphenoid sinuses. Following surgery, the patients began taking antibiotics for seven days and receiving daily saline douching. After surgery, patients received a follow-up appointment for debridement and began using intranasal corticosteroid sprays. The univariate study's variables were subjected to multivariate logistic regression analysis in order to determine their relative importance and determine an independent prognostic predictor of recurrence.

Results: The study involved 280 patients, with a mean age of 41.44±14.25 years and a male gender predominance (male-to-female ratio of 1:11). The majority of patients were nonsmokers (n = 206, 73.6%). Out of 65 respondents, 23.2% had a history of exposure to dust inhalants at work. The most frequent comorbidity was asthma (36.4%), and 16.8% of the study participants had aspirin-exacerbated respiratory illness. Every patient had a CT scan before surgery. The average LM score was 19.9±4.6, with significant paranasal sinus obliteration in 73.2% of the

study group (scoring 17-24). The LM score was highest in patients with AERD (21.5/24) (Figure 1). The CRSwNP diagnosis was validated by routine histopathologic assessment, which also found that 152 patients (54.3%) had increased tissue eosinophilia. Following surgery, all patients were prescribed topical steroids, and 81.4% of them took their medications as directed. It was also discovered that 8.9% of patients needed revision surgery and that the recurrence rate was 20.7%. Multivariate analysis revealed that noncompliance with post-operative topical steroid therapy was an independent variable of recurrence (OR=16.056; 95% CI: 7.887-32.684; P<0.001).

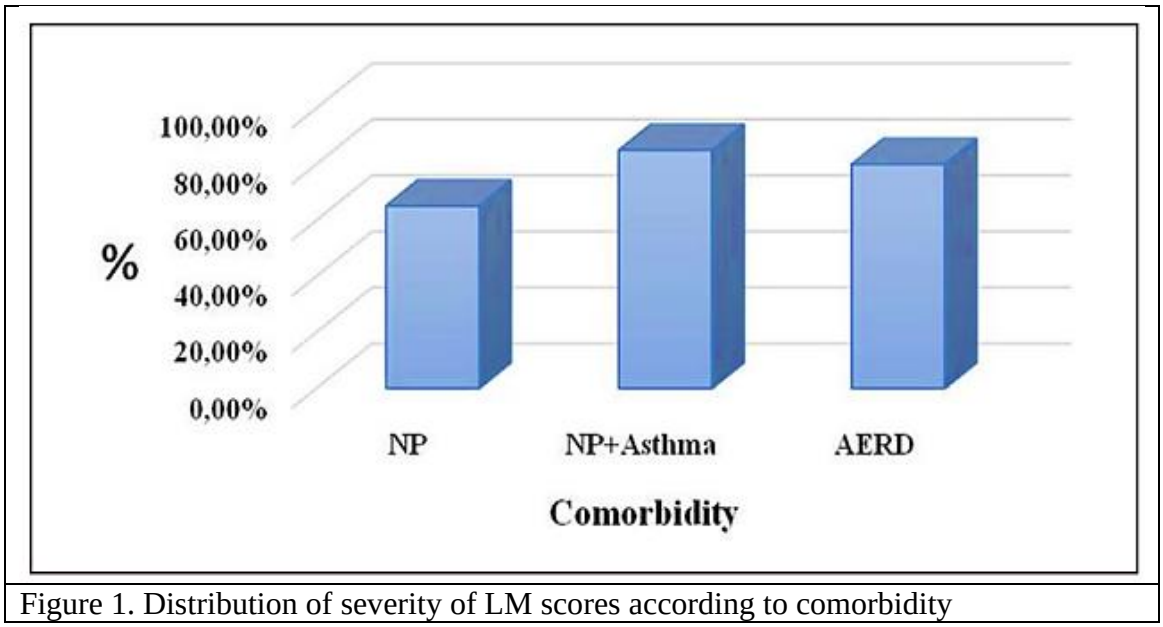

Figure 1. Distribution of severity of LM scores according to comorbidity

Discussion: According to this study, the most prevalent comorbidity was asthma, and 16.8% of participants had a respiratory condition that was made worse by aspirin. It was also discovered that 8.9% of patients needed revision surgery and that the recurrence rate was 20.7%. Multivariate analysis revealed that noncompliance with post-operative topical steroid therapy was an independent predictor of recurrence (P<0.001).[2] According to Velo-Teles R et al., all rhinology symptoms subsided following surgery. The incidence of moderate problems was 15.3%, and serious complications were 1.2%. Only 7% of patients needed surgical reintervention, despite 31% of patients experiencing a disease recurrence. Multivariate logistic regression analysis revealed that in contrast to the other variables examined—age, sex, IgE-mediated asthma, allergic rhinitis, smoking habits, nasal polyps' endoscopic grade, Lund-Mackay score, and postoperative topical corticoid use occupational dust exposure and non-immunoglobulin E (IgE)-mediated asthma were independent predictive factors in CRSwNP recurrence.[3]

Conclusion: Endoscopic sinus surgery was demonstrated to be a successful treatment for CRSwNP, although with a high recurrence rate. These findings showed a significant relationship between disease recurrence and postoperative topical steroid compliance.

The diagnosis of chronic rhinosinusitis with nasal polyps (CRSwNP) was confirmed by a routine histopathologic investigation that revealed elevated tissue eosinophilia levels.

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Evaluation of vocal impairment after thyroid surgery using different subjective and objective modalities

Introduction: Thyroid surgery is a precise procedure that necessitates, to the greatest extent possible, the preservation of neighboring nerve function when eliminating thyroid abnormalities. Routine thyroid surgery has made extensive use of intraoperative neural monitoring (IONM), an additional technique for locating and identifying the external branch of the superior laryngeal nerve (EBSLN) and the recurrent laryngeal nerve (RLN).[1] Laryngeal nerve injury is not the only reason for voice changes. Damage to the cricothyroid and pyrethroid strap muscles, as well as decreased laryngotracheal mobility due to wound contracture after soft tissue surgery, are other possible causes. Although it is yet unknown if voice changes can occur after thyroidectomy without laryngeal nerve damage, a cautious surgical technique may prevent these problems. Post-thyroidectomy dysphonia may result from endotracheal

intubation, cervical muscle stretching and stabilization, laryngeal nerve injuries, cricothyroid muscle injuries, or manipulation. Even in the absence of laryngeal nerve injury, functional dysphonia can occur. Vocal abnormalities following thyroid surgery are a common and well-known side effect that can be linked to both neuronal and non-neuronal voice breakdown. However, their effects on many voice features are not entirely known, and their underlying mechanisms remain poorly understood.[2] So, this study was conducted to assess post-thyroidectomy voice impairment using several subjective and objective methods.

Methods: A total of 100 adult patients who had thyroid surgery were included in this prospective cohort study. The voice handicap index (VHI-30), video laryngoscopy, auditory perceptual assessment (APA) of the voice, and computerized speech lab (CSL) acoustic analysis were used to subjectively evaluate voice complaints in all subjects prior to surgery, as well as 15 days, 1 month, and 2 months after surgery. Comparing multi-parameter voice assessment instruments at various assessment time points was done statistically.

Results: After 15 days postoperatively, the voice changes were 51%, but after two months of follow-up, they had significantly decreased to 33%. Table 1 displayed the clinical information and demographics of individuals with vocal fold immobility. Total thyroidectomy was the most common surgery, conducted on 30 patients (85.7%), whereas partial thyroidectomy was performed on the remaining patients. Malignant thyroid disease affected 74% of the patients, whereas benign lesions affected the remaining individuals. Among these cases, 35% had vocal fold paralysis and reported a breathy voice (27% developed unilateral vocal fold paralysis and 8% acquired bilateral focal fold lesions), while the remaining 16% had no paralytic signs. In addition, only one patient acquired the gross lesion "bilateral vocal fold nodules." Significant improvement was observed in the VHI subscales and overall score from 15 days postoperatively to 2 months of follow-up, according to the subjective assessment of voice outcome following thyroidectomy ($P<0.001$).

Variables	$N=35$	
Age (years)		
• Range	20–73	
Sex, *n* (%)		
• Male	5	(14.3)
• Female	30	(85.7)
Pathology, *n* (%)		
• Malignant	25	(71.4)
• Benign	10	(28.6)
Types of surgery, *n* (%)		
• Total thyroidectomy	30	(85.7)
• Partial thyroidectomy	5	(14.3)
Follow-up assessment up to 1 year		
• Recovered	5	(14.3)
• Unrecovered	20	(57.1)
• Missed	10	(28.6)

Data are presented as range or number (percentage)

Table 1. Clinical characteristics of patients who have focal fold immobility.

Discussion: Significant progress was observed in the VHI subscales (emotional, physical, and social domains) and overall score between 15 days postoperatively and 2 months of follow-up.[2] Tabibzadeh-Hagh et al. found that individuals with paralysis or paresis after

thyroidectomy had higher postoperative questionnaire scores and a larger difference between the preoperative and postoperative tests compared to those with normal vocal fold mobility.[3] The Voice Handicap Index (VHI) score was substantially linked with the grade, roughness, breathiness, asthenia, and strain (GRBAS score) preoperatively and postoperatively at 1- and 8-week intervals. Additionally, a week after surgery, there was a strong correlation between pitch and VHI.[1] After thyroidectomy, voice alterations can happen even if there is no visible damage to the laryngeal nerve. Patients should be informed that even after simple thyroid surgery, they may experience slight voice alterations.[4]

Conclusion: After a thyroidectomy, voice quality deterioration is a regular observation. In addition, it is important to let patients and caregivers know about the particular subjective discomforts that often accompany thyroid surgery. Further, clinicians should inform patients that transient vocal issues are common after a full thyroidectomy, even if there is no laryngeal nerve injury.

Clinicians should inform patients that, even in the absence of laryngeal nerve damage, temporary vocal problems are common after a full thyroidectomy.

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Case report on cochlear implantation in a patient with intractable tinnitus

Introduction: Cochlear implantation (CI) is essential for maintaining vestibular function and residual hearing, particularly in patients who still have low-frequency hearing thresholds. A bone cochleostomy or round window (RW) can be used to introduce the electrode. However, bone dust does not reach the scala tympani and direct cochlear drilling is not necessary, the RW technique is recommended.[1] In addition, the use of innovative electrode array designs, such as slender perimodiolar or lateral wall electrodes, has improved the RW approach when using 2-handed surgery procedures. In order to preserve residual hearing function and improve postoperative speech results, it is crucial to reduce cochlear damage utilizing the RW method, as intracochlear trauma is linked to postoperative loss of residual hearing.[2] Following mastoidectomy, the RW is typically visualized within the surgical field of vision by posterior tympanotomy. However, in posterior tympanotomy, anatomical variations like a significant posterosuperior bony overhanging may make it difficult to adequately expose the RW membrane (RWM) through the facial recess. An increase in the RWM's visibility of 1.5 to 3 times as compared to traditional posterior tympanotomy indicates that drilling the overhangs is a viable substitute. However, the risk of harming the chorda tympani nerve, facial nerve, and bony annulus is increased by extensive bone drilling.[1] This case discusses a patient who had unilateral endoscope-assisted CI with a difficult surgical view after a thorough posterior tympanotomy.

Case presentation: A 53-year-old male patient admitted to the hospital with chief complaints of left-sided hearing loss due to sudden sensorineural hearing loss (SSNHL). Patient had previous 10 years history of severe left-sided tinnitus. A left-sided hearing aid was used in an attempt at auditory rehabilitation, but the symptoms persisted. The initial audiogram showed a speech discrimination score of 0% and an average threshold of 80 dB HL; however, the low-frequency thresholds (20 dB HL and 40 dB HL at 250 and 500 Hz, respectively) were retained. There were no further significant abnormalities on the preoperative temporal bone computed tomography (TBCT). Following the protocol, a cortical mastoidectomy was carried out under general anesthesia. However, even after a posterior tympanotomy, the RW could not

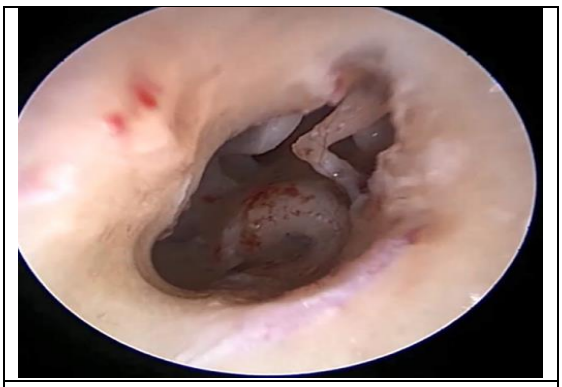

Figure 1: After inserting a 3mm, 0°, and 14cm ear endoscope into the posterior tympanotomy site, the RW was discovered to be positioned further posteriorly and inferiorly than typical.

be seen, even changing the microscopic view, tilting the surgical table, and drilling the facial nerve canal to the greatest level. In order to identify the RW, a 3 mm, 0°, 14 cm ear endoscope was placed into the posterior tympanotomy site in order to avoid bone cochleostomy and preserve low-frequency hearing.

In particular, it demonstrated that the RW was situated significantly more inferiorly and posteriorly than normal (Figure 1). Once the RW niche was drilled, a sharp pick was used to see and puncture the membrane. A straight electrode array was then successfully implanted utilizing the endoscope-assisted RW technique (Figure 2). Soft tissue was used to seal off the RW hole. Additionally, the procedure was finished once it was confirmed that each electrode channel's auditory nerve response telemetry produced electrically evoked compound action potentials that were satisfactory. Postoperative problems, such as dizziness or paralysis of the facial nerve, were absent. Through the RW and cochlear twists, the electrode was successfully placed, according to the postoperative cochlear view (Figure 3). Three months after surgery, pure-tone audiometry showed acceptable hearing thresholds. The Tinnitus Handicap Inventory Scale (THI) and a visual analog scale (VAS) were used to measure subjective tinnitus loudness before and after surgery. Three months after implantation, the patient's subjective VAS loudness and THI scores significantly decreased (from 8 to 2 and from 74 to 0, respectively), indicating relief of left-sided tinnitus.

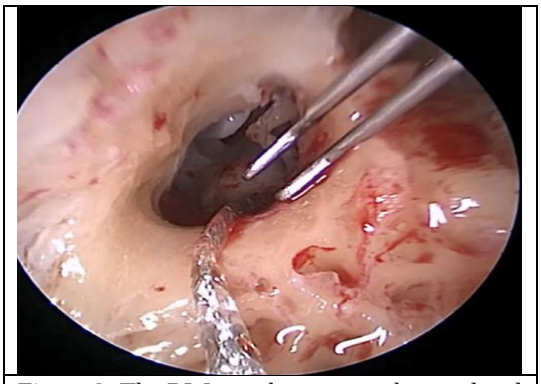

Figure 2: The RW membrane was observed and punctured with a sharp pick following the drilling of the RW niche. Using the endoscope-assisted RW technique, a straight electrode array (MED-EL FLEX 24) was successfully and trouble-freely placed.

Discussion: EES has a significant advantage over microscopy in terms of greater visibility and higher magnification, allowing for the observation of complicated regions of the middle ear anatomy at high resolution. In this case, a straight or angled endoscope at different angles might provide a clearer visual representation of things that are challenging to see with a traditional microscope.[1] Endoscopic aid may be useful in situations with challenging anatomic variances, and assumed it could be a useful tool in the surgeon's toolbox. The endoscopic-assisted technique should only be used in specific situations and should not be regarded as a primary modality.[3]

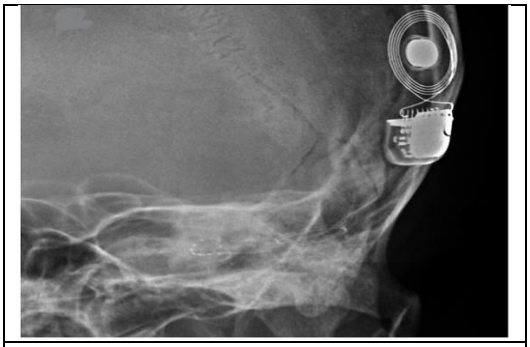

Figure 3: An electrode that was properly placed through the RW and cochlea turns was visible in a postoperative cochlear image.

Conclusion: After posterior tympanotomy, the RW cannot be adequately visible; hence, the RW method with endoscopic assistance is preferred over traditional bone cochleostomy to preserve low-frequency hearing thresholds.

Endoscopic ear surgery (EES) is a minimally invasive operation used to treat a variety of middle ear problems.

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