

Dear Doctor,

Greetings from Micro Labs limited. We are happy to bring you “ENT BB Connection” which contains latest and interesting news.

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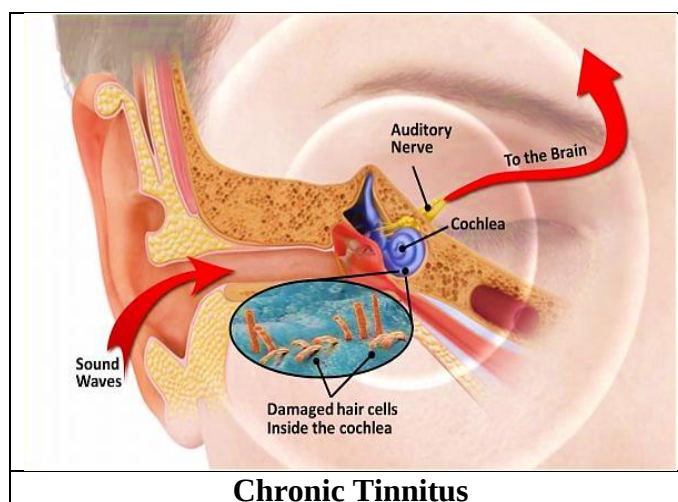
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Best Regards,

Medical Team, Micro Labs

Evaluation of Cognitive Function and Auditory Sensitivity in Chronic Tinnitus Patients

Introduction: Tinnitus is a clinical symptom related to alterations in the auditory and other brain systems, with a similar prevalence across geographical regions. Studies for the general adult population show that the prevalence of any current tinnitus ranges from 11.9% to 30.3%.¹ Tinnitus may manifest as a symptom in conjunction with other prevalent diseases, such as migraine, anxiety, depression, or hearing loss (HL). High-frequency sensorineural hearing loss (SNHL) is the most prevalent type of hearing loss (HL), present in over 90% of tinnitus patients. This kind of hearing loss was usually seen in cases of noise-induced or age-related hearing loss. Furthermore, a number of otological conditions, such as Meniere's disease, vestibular schwannoma, and otosclerosis, have been linked to tinnitus. Based on the link between age-related hearing loss (HL) and tinnitus in older patients experiencing cognitive impairment, as well as the rising incidence of dementia, particularly Alzheimer's disease, in the senior population, it could be beneficial to proactively diagnose middle-aged persons with HL and tinnitus. Additionally, evaluating cognitive impairment has significant clinical implications and may enhance the tinnitus and HL patient profiles.² The purpose of the study was to evaluate the association between hyperacusis, tinnitus, and cognitive impairment as measured by the Montreal Cognitive Assessment (MoCA) tool.



Methods: A total of 380 people who were diagnosed with non-pulsatile chronic tinnitus (lasting more than six months and without signs of significant cognitive impairment, as shown by a MoCA score of greater than 22) were included in the study. The Tinnitus Handicap Inventory (THI), Patient Health Questionnaire (PHQ-9), Hyperacusis Questionnaire (GÜF), MoCA, and the European School for Interdisciplinary Tinnitus Research Screening Questionnaire were the instruments used in the evaluation. The cognitive functions were evaluated using the MoCA test. The MoCA exam assesses visuospatial ability, also known as

time and space orientation, working memory, short-term memory, and language skills. The PHQ-9 was used to evaluate symptoms of depression. The THI was used to measure tinnitus-related irritation.

Results: MoCA scores were evaluated across persons with normal hearing, unilateral hearing loss, or bilateral hearing loss, but no significant differences were detected in either the Mediterranean (MED) group or the German group. Age, education level, THI, and the hearing threshold at 8 kHz were all strongly correlated with MoCA scores in both cohorts. (Table 1) Additionally, a strong association ($P < 0.01$ for Germans and Mediterranean individuals) was seen between PHQ-9 scores and THI and GÜF. In both groups, the XGBoost algorithm proved to be the most accurate predictor of cognitive decline.

Variable	MoCA score	THI score	GÜF score	Average PTA	Average 4 kHz	Average 8 kHz	PHQ-9 score	Education level	Smoking status
THI score	-0.15*								
GÜF score	-0.14	0.61**							
Average PTA	-0.16*	0.11	0.10						
Average 4 kHz	-0.16*	0.11	0.12	0.73**					
Average 8 kHz	-0.15*	0.09	0.15*	0.62**	0.80**				
PHQ-9 score	-0.14	0.67**	0.55**	0	0.06	0.04			
Education level	0.24**	-0.14	-0.11	-0.13	-0.16*	-0.09	-0.20*		
Smoking status	0.04	0.02	0.04	0.05	0.13*	0.14	-0.07	0.03	
Age	-0.19**	-0.08	-0.02	0.34**	0.46**	0.53**	-0.02	-0.10	0.07

MoCA, Montreal Cognitive Assessment; THI, Tinnitus Handicap Inventory; GÜF, Hyperacusis Questionnaire; PTA, pure tone average; PHQ-9, Patient Health Questionnaire.
* $P < 0.05$, ** $P < 0.01$.

Table 1. Correlation matrix between psychometric, sociodemographic, and audiological characteristics of Mediterranean people who have chronic tinnitus

Discussion: A correlation was observed in this study between lower MoCA scores in both groups and high-frequency HL (8 kHz).² Loughrey DG et al. revealed a moderate correlation between memory performance and moderate-to-severe HL.³ PHQ-9 scores and MoCA scores did not significantly correlate in this investigation.² A substantial association between PHQ-9, THI scores, and GÜF scores was discovered in the Cederroth CR et al., indicating that hyperacusis may play a role in severe tinnitus.⁴

Conclusion: The current investigation discovered a correlation between minor cognitive impairment, high-frequency hearing loss, and tinnitus handicap. In addition, regardless of hearing loss thresholds, PHQ-9 scores were linked to tinnitus and hyperacusis scores.

The Montreal Cognitive Assessment (MoCA) questionnaire is a useful screening tool for diagnosing cognitive impairment in tinnitus patients, regardless of hearing loss.

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Assessment of long-term clinical outcomes of patients with chronic rhinosinusitis with nasal polyps associated with expanded types of endoscopic sinus surgery

Introduction: Chronic rhinosinusitis (CRS) is a common and difficult clinical condition. It has several phenotypes and underlying processes that lead to the persistence or recurrence of nasal polyps (NPs). There are two types of CRS: CRS with NP (CRSwNP) and CRS without NP (CRSsNP). It was believed that the prevailing inflammatory patterns affect the clinical presentations and reactions to contemporary medicinal and surgical treatments. Asthma-associated CRSwNP was thought to be the most refractory type of CRS, prone to relapses and challenging to manage.¹ The development of inflammatory endotypes and biomarkers for patient classification has significantly altered traditional surgical methods, particularly in patients with type 2 (T2) inflammatory profiles. There was still disagreement, meanwhile, about the best surgical approach, and polyp recurrence frequently poses a challenge for CRSwNP patients. Expanded functional ESS (E-FESS), which includes treating the mucosa covering the sinus cavity and resectioning bony sinus structures, was previously described with the goal of anatomically restoring mucociliary clearance. However, recent technological advancements have made this possible.² This study aimed to examine these discrepancies by comparing the clinical results of expanded-functional endoscopic sinus surgery (E-FESS) versus more-limited FESS (L-FESS).

Methods: A total of 274 individuals were included in a retrospective analysis to evaluate the surgical results between CRSwNP patients treated with L-FESS and those who underwent E-FESS. Clinical and demographic data were gathered. The information includes the following: age, gender, history of smoking, asthma, N-ERD, prior ESS, allergic sensitization (atopy), and use of systemic corticosteroids (SCS). Additionally, pre-surgery serology was obtained, which included counts of peripheral eosinophils and total immunoglobulin (Ig) E levels. At baseline and two years following surgery, quality of life (QOL), endoscopic, and radiographic results were compared. A minimum clinically significant difference of 12 points in SNOT-22 change was considered to be the respondent's clinical state.

Results: E-FESS was performed on 111 patients (40.5%) and L-FESS on 163 patients (59.5%). At baseline, both surgery groups demonstrate endoscopic, radiological, and QoL results. Although there were notable clinical improvements in both groups, there was a more substantial shift in SNOT-22 (14.8 ± 4.8 , $p = 0.002$) following E-FESS. Lower surgical revision rates and more significant improvements in endoscopic and radiological scores were also observed in the E-FESS group. NPS showed a significant mean improvement, changing by 4.2 ± 2.3 points in the E-FESS group and 3.1 ± 2.6 points in the limited procedures group. MLK scores showed similar results ($p < 0.001$) (Figure 1).

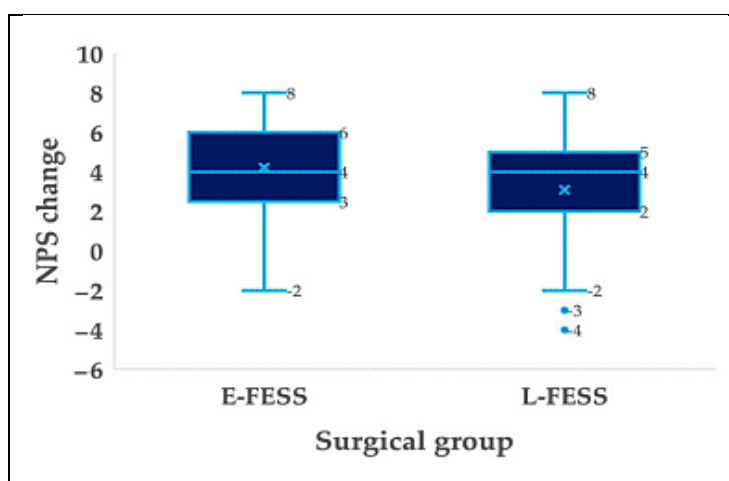


Figure 1. Boxplot distributions of the differences in nasal polyps score (NPS) between the two groups

Discussion: In this study, QoL improved significantly in both surgical groups following surgery, as indicated by the SNOT-22 score.² According to the Smith TL et al., ten-year prospective outcomes of ESS for CRS suggest that the initial clinically substantial improvements in QOL seen six months postoperatively were sustainable over time. Improvements in health utility values (HUV) and long-term QOL were recognized by more than 75% of patients as clinically meaningful.³

Conclusion: The current study concluded that E-FESS improves clinical outcomes and reduces revision surgery rates in CRSwNP patients two years after surgery, regardless of comorbidities.

Expanded-functional endoscopic sinus surgery (E-FESS) also promotes the advancement of radiographic and endoscopic scales, demonstrating better control over oedema and recurrence of nose development and reducing the need for revision procedures.

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Evaluation of Ansa Cervicalis External Branch Anastomosis for the Restoration of High Tone Voice in Thyroid Surgery

Introduction: Recurrent laryngeal nerve (RLN) injury is the most common cause of post-thyroidectomy dysphonia (PTD), prompting numerous studies to focus on preventing it after thyroid surgery.¹ Resection of the RLN results in aspiration, brief phonation, and hoarseness due to paralysis and atrophy of the ipsilateral vocal cord. The ipsilateral vocal cord cannot move again because of misdirected reinnervation of the adductor and abductor muscles, even though the nerve can be repaired by direct anastomosis of the cut ends or free nerve grafting to cover the defect. The cricothyroid muscle is innervated by the external branch of the superior laryngeal nerve (EBSLN). The inability to produce high-pitched voices results from damage to this nerve, which was more common in women and vocal professionals. It also causes paralysis and atrophy of this muscle. Surgeons typically use visual inspection during thyroid surgery in order to prevent nerve damage, although this was not always possible. The RLN was monitored intraoperatively via nerve monitoring. The nerve's identification rate was significantly enhanced when this method was used on the EBSLN. Treatment options for low-pitched voice and voice fatigue, especially in female subjects, were restricted when the external branch of the superior laryngeal nerve (EBSLN) was injured.² The purpose of this study was to evaluate

an innovative surgical technique called ansa cervicalis to EBSLN anastomosis (A-E anastomosis) for the restoration of a high-tone voice.

Methods: In this retrospective analysis, 20 patients (16 females) had EBSLN resection during thyroid surgery, while 13 patients (12 females) had unilateral EBSLN resection with A-E anastomosis. The normal control group consisted of 1025 men and 4494 women who had regular laryngoscopies before thyroid surgery. A flexible fiberscope was used to perform laryngoscopic examinations on all patients, both before and after thyroid surgery. The evaluation was repeated if vocal cord paralysis was found. Preoperatively and intermittently after surgery, phonatory function was assessed using a Phonation Analyzer PA-1000.

Results: High-tone voice pitch was considerably lowered (673.9–471.5 Hz, $p = 0.047$) in patients undergoing A-E anastomosis after surgery, and restoration was accomplished in 5 months. In female patients undergoing A-E anastomosis, the high-tone voice pitch trend up to 25 months' post-surgery as elucidated in Figure 1. The mean voice pitch of female patients undergoing EBSLN resection was significantly lower than that of controls ($p = 0.002$), with mean values of 580.4, 522.8, and 682.0 Hz for A-E anastomosis, EBSLN resection, and controls, respectively. A high-tone voice may have recovered if the female controls' high-tone voice pitch exceeded 497 Hz (mean $\pm$ 1SD). 73% of A-E anastomosis patients overall exceeded this threshold; this was slightly higher than the 43% of individuals who had EBSLN resection.

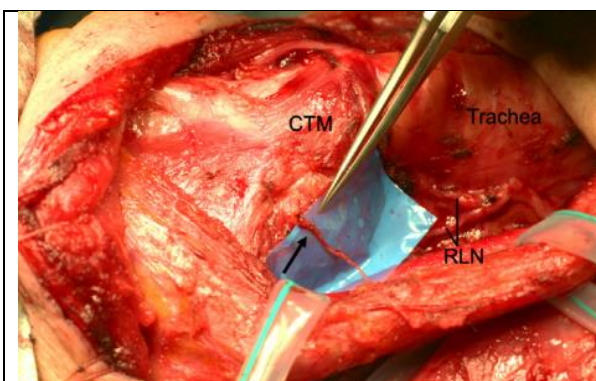


Figure 1: Ansa cervicalis to external branch anastomosis performed on female patient undergoing a complete thyroidectomy for branch-related papillary thyroid cancer.

Discussion: Overall, 73% of the patients in this study who had the A-E anastomosis operation were able to attain a high-tone voice that was within normal limits.² According to Iwata AJ et al., patients had worse voice results when at least one EBSLN response amplitude was reduced by more than 50% following dissection when measured using cricothyroid intramuscular (CTM) needle electrodes.³

Conclusion: The current study concluded that A-E anastomosis, a straightforward and new surgery following EBSLN resection, resulted in some recovery of high-tone voice, but not to normal levels. After undergoing this surgery, 73% of patients were able to acquire a high-tone voice that was within the normal range.

Ansa Cervicalis External Branch Anastomosis is a simple, flexible treatment that can be performed alongside thyroid surgery without causing any complications.

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Case report on choanal polyps with osseous metaplasia from the nasal septum

Introduction: Choanal polyps are soft tissue lesions that develop from the nasal or paranasal sinus mucosa and spread via the choana to the nasopharynx. Approximately 4–6% of all nasal polyps are choanal polyps. The precise etiology of choanal polyps remains unclear, despite the fact that the majority of them have an inflammatory origin. It was believed that venous blockage, allergies, atopy, and infections contribute to the etiopathogenesis of choanal polyps.¹ Though osseous metaplasia in choanal polyps is a rare occurrence, it exhibits a variety of properties. Its pathophysiology was unknown, although recent research has suggested that inflammation plays a key role in its pathology. The most common symptom was continuous or intermittent unilateral or bilateral nasal blockage. Runny noses, anosmia, and snoring were further symptoms. Currently, the recommended course of treatment was surgical resection.² This case presented choanal polyps with osseous metaplasia arising from the nasal septum.

Case presentation: A 61-year-old man who had been complaining of right nasal blockage for over three years was taken to the hospital. Three years ago, the patient experienced a continuous right nasal obstruction for which there was no apparent cause. The patient also experienced runny nose, snoring, blood-stained nasal discharge, dizziness, tinnitus, loss of smell, hearing loss, nasal itching, and sneezing. Following a computed tomography (CT) scan, the patient had an endoscopically guided nasopharyngeal biopsy, which revealed heterogeneous cell nests in the stroma, possibly indicating a tumor, and mucositis in the nasopharynx. An additional investigation was required because subsequent immunohistochemistry revealed no tumor evidence. In the nasopharyngeal mucosa, the results of the histological investigation revealed many gland hyperplasias, lymphocyte infiltration, and tissue extrusion; these morphological changes were consistent with mucosal chronic inflammation. After undergoing a nasal endoscopy, the patient's middle turbinate appeared pale and edematous; there were lumps in

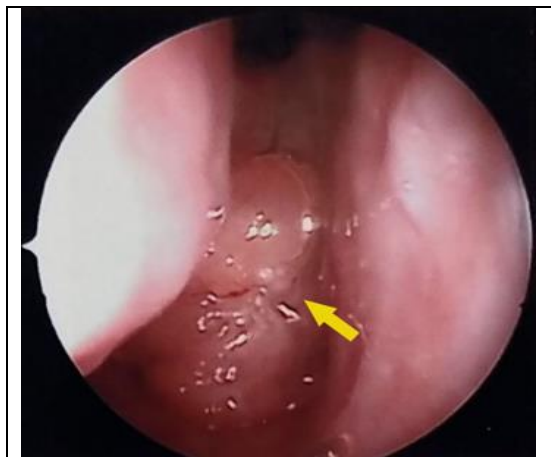


Figure 1. Nasal endoscopy revealed firm contact and tumor growth at the posterior margin of the nasopharynx, the posterior nostril (yellow arrow)

the nasopharynx and posterior edge of the posterior choanae that were difficult to touch, and both of the patient's inferior turbinates were slightly larger (Figure 1). A CT scan revealed a nasopharynx, left maxillary sinusitis, uneven soft tissue filling in the right nasal cavity, and bilateral ethmoid sinusitis (Figure 2). The patient has been diagnosed with "nasopharyngeal lesions" based on the results above. Physical examination revealed pale and edematous middle turbinates, slightly larger bilateral inferior turbinates, and a clear bilateral tympanic membrane mark without congestion, tympanic membrane invagination, or fluid. Additionally, there were hard, light-colored masses in the middle meatus and nasopharynx, but no deflection in the nasal septum.

Under general anesthesia, the patient had functional endoscopic sinus surgery (FESS) to remove the masses from the left maxillary sinus, right sphenoid sinus, and ethmoid sinus after pertinent preoperative exams and assessments were completed. The right nasal septum was discovered to be the source of masses in the nasopharynx, and the posterior choanae were totally obstructed. Using forceps, a portion of the lump was removed, and the fast, frozen pathological analysis that followed revealed the absence of malignant tissue. Subsequently, due to its size, the residual mass was eliminated little by bit. Examining the mass revealed that it originated from the tip of the right nasal septum and that there was bone deterioration close to the ostium of the sphenoid sinus. As a result, the ostium of the sphenoid sinus was expanded, and a portion of the sphenoid ethmoidal plate was excised. The posterior nasal septum's mucosa was partially removed. Clear lesions were visible in the left maxillary sinus and ethmoid sinus. Following surgery, the patient had typical standard care and was discharged on the physician's recommendation.

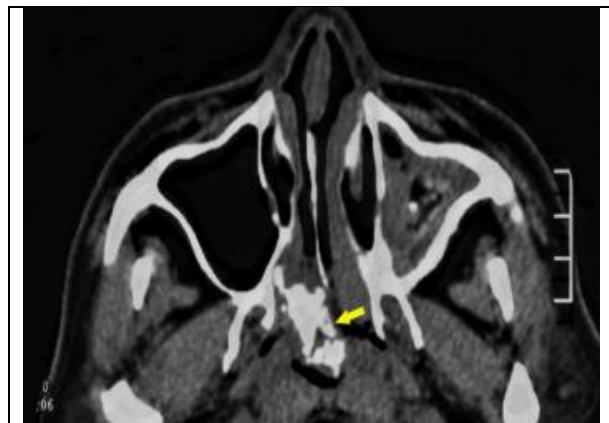


Figure 2. CT axial scan of the soft tissue window revealed that osseous trabeculae (yellow arrows) in polyps accessed the nasopharynx from the nasal cavity via the choana.

Discussion: A very rare occurrence in nasal polyposis was osseous metaplasia. In preoperative staging, radiological examination is the only technique for identifying ossifications within polyps.³ Surgical excision using an endoscopic technique is the treatment for metaplastic ossification of septochoanal polyps. In order to prevent recurrence, a small portion of the healthy mucosa surrounding the pedicle's origin must be excised during endoscopic surgery to remove the septochoanal polyp completely.⁴

Conclusion: Even though osseous metaplasia in choanal polyps was rare, people should be aware that it could occur and be able to distinguish it from other illnesses. Large osseous metaplasia in polyps may complicate surgery and prolong the time needed to remove the tumor, raising the risk of problems after surgery. Hence, choosing the best surgical strategy, completing the procedure without a hitch, and improving the patient's prognosis were all facilitated by sufficient preoperative planning.

Functional endoscopic sinus surgery (FESS) is the first-line treatment for polyps with osseous metaplasia.

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