



ENT NEWSBUZZ

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Dear Doctor,

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

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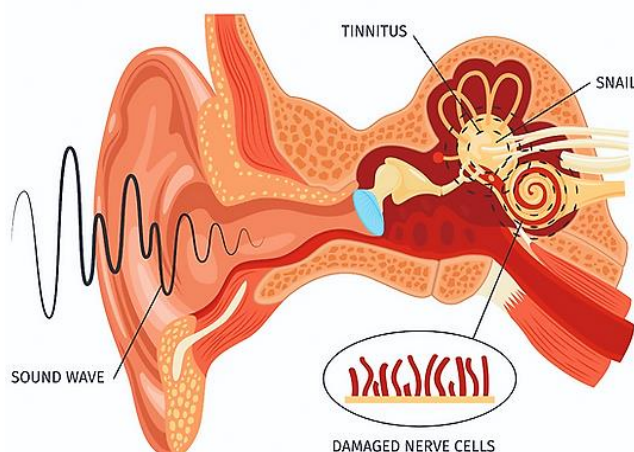
Best Regards,

Medical Team, Micro Labs Ltd



Relationships between tinnitus, dementia, hearing loss and aging

Introduction: Tinnitus, the perception of sound without an external source, often occurs alongside hearing loss, particularly in the elderly. Its incidence and symptoms increase with increasing age and also with hearing loss, making it a particular disorder in elderly people.¹ Around 75–80% of tinnitus patients have hearing loss, although this figure may underestimate the true relationship, as pure-tone audiometry doesn't always detect all types of hearing damage. Interestingly, some individuals with hearing loss do not experience tinnitus, suggesting other factors also influence its development. Recent studies highlighted that aging is a significant risk factor for tinnitus, indicating that age-related changes in the brain may contribute to its onset. Aging is also linked to conditions like dementia, which affects over 55 million people worldwide and is expected to rise significantly. Both tinnitus and dementia are more common with age and understanding how these conditions are interconnected is crucial for prevention and intervention. While it's believed that age-related deterioration in brain and neural functions may underlie both tinnitus and cognitive decline, the exact mechanisms remain unclear.² This study was conducted to understand how aging, tinnitus, hearing loss, and dementia intersect, which could lead to better diagnostic tools and interventions for older adults at risk of these conditions.



Methods: In this case-control study, 502,382 participants data were collected from the UK Biobank. Information includes genetic information, imaging data, physical test results, and questionnaire data. In this first analysis, focus on chronic tinnitus rather than acute or occasional tinnitus to achieve the highest difference between participants with and without tinnitus. Speech-reception thresholds (SRTs), a type of hearing test that measures hearing thresholds at various signal-to-noise ratios were used to assess hearing loss. The outcome was the signal-to-noise ratio (measured in decibels, dB) that enabled participants to correctly comprehend half of the speech that was presented. The second analysis focuses on how hearing



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loss and tinnitus affect an individual's probability of getting dementia. Hazard ratios were compared using logistic regression and Cox proportional hazard models.

Results: The first analysis found that a one-decibel rise in the speech-reception thresholds increased the probabilities of tinnitus by 13% and that the odds of reporting tinnitus were 53.6% higher in the older age group (those over 58) (Figure 1). According to the second analysis of hearing loss, a one-decibel rise in the speech-reception threshold score was associated with a 14% increase in the probability of dementia. In terms of age, each additional year raised the risk by 17.3%. A hazard ratio of 52.1% indicated that tinnitus alone had a significant impact; however, the effect disappeared when age, hearing loss, and other variables were included. The risk of dementia from all causes was positively correlated with both age (HR=1.168) and hearing score (HR=1.080). Men were more likely than women to develop dementia, and conditions like diabetes and high blood pressure made dementia risk even higher.

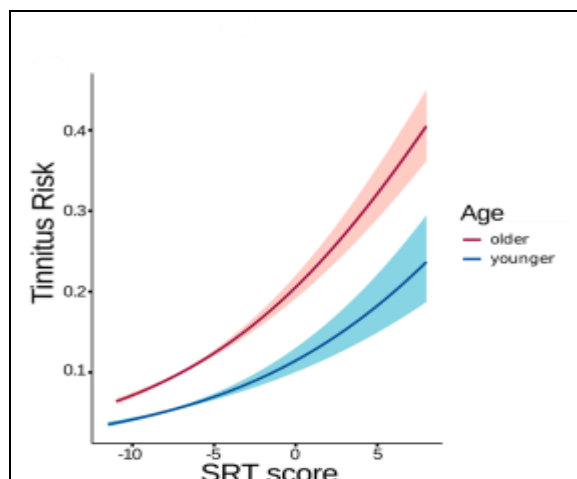


Figure 1: The logistic regression model. The median age of 58 years was used to characterize age groups.

Discussion: The study found that tinnitus increased 53.6% in the older age group and that the probability of developing tinnitus increased by 13% for every decibel increase in speech-reception thresholds. The incidence of dementia increased by 14% for every one decibel increase in speech-reception threshold score. The risk of dementia from all causes increases with age and higher hearing scores.² Tinnitus was found to be significantly predicted by aging. Odds ratio analyses indicate that older adults are more likely to report tinnitus for every unit increase in hearing loss.³ Tinnitus, typically linked to age-related hearing loss, may have a detrimental impact on older adults' emotional health and cognitive abilities.⁴

Conclusion: Tinnitus is associated with aging, but it is most likely independent of the aging processes that accompany dementia development. This emphasizes the need to explore the impact of aging on brain processes that are relevant for alterations in the auditory systems as well as increased vulnerability in terms of neurodegenerative disorders.

Men were more likely than women to develop dementia, and conditions like diabetes and high blood pressure made dementia risk even higher.



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Comparison of High-Intensity Focused Ultrasound and Diode Laser for the Treatment of Inferior Turbinate Hypertrophy

Introduction: Nasal obstruction, often caused by hypertrophy of the turbinates, is a common complaint in otolaryngology, especially in conditions like vasomotor and allergic rhinitis, and affects up to 20% of people globally. While conservative treatments are first-line, surgery is recommended for cases unresponsive to these treatments.¹ The diode laser has become popular for its effectiveness in reducing turbinate size, offering advantages like portability, low cost, and deep tissue penetration. It works by inducing controlled coagulation and ablation, leading to symptom relief with minimal side effects. A newer alternative, high-intensity focused ultrasound (HIFU) turbinoplasty, uses an ultrasonic probe to reduce turbinate size by creating submucosal tissue damage. This technique is minimally invasive, reduces bleeding risks, and can be done on an outpatient basis, offering a promising approach with no significant scarring or side effects. Both diode laser and HIFU provide effective, less invasive options for treating turbinate hypertrophy, with choices depending on individual patient factors and surgeon preference.² This study was carried out to assess the safety and side effects of diode laser turbinoplasty versus high-intensity focused ultrasound turbinoplasty in the treatment of hypertrophied inferior turbinate.



Methods: In this prospective randomized comparative study, 74 adult patients who complained of nasal obstruction from bilateral inferior hypertrophy were ultimately and randomly assigned to one of two groups: group (A) included 37 patients who received high-intensity focused ultrasound turbinoplasty, and group (B) included 37 patients who received diode laser treatment. Clinical parameters included postoperative pain score, intra- and postoperative hemorrhage, postoperative crusting and synechiae, and healing speed process were studied and compared between the two groups. The Visual Analog Scale (VAS) and the Nasal Obstruction Symptom Evaluation (NOSE) Scale were used to assess nasal obstruction alleviation in both groups. Patients' responses were graded on a 0–4 scale as follows: 0 (no pain with no need for analgesic), 1 (mild pain; needed simple analgesic), 2 (mild pain; needed strong analgesic), and 3 (severe pain; needed narcotic analgesic). Pain scores were evaluated using a questionnaire method for 5 days from postoperative days 0-5.

Results: Following surgery, there were no significant differences in the VAS or NOSE scores between the two groups under study. On the second postoperative day, the mean pain score was substantially higher in group (B) than in group (A). Furthermore, a substantial difference between the ultrasound group (A) and the diode group (B) was noted in terms of the reduction in pain score from postoperative day 0 to day 5 (Figure 1). Group (B) had a greater mean intraoperative bleeding score (2.9 ± 0.7) than group (A) (1.3 ± 0.5). However, there was no significant difference in postoperative bleeding between groups (A) and (B) (P value = 0.521). The mean rate of healing and crusting formation was faster in group (B) than in group (A). During the three-month follow-up, neither group showed any synechiae (0%) at all.

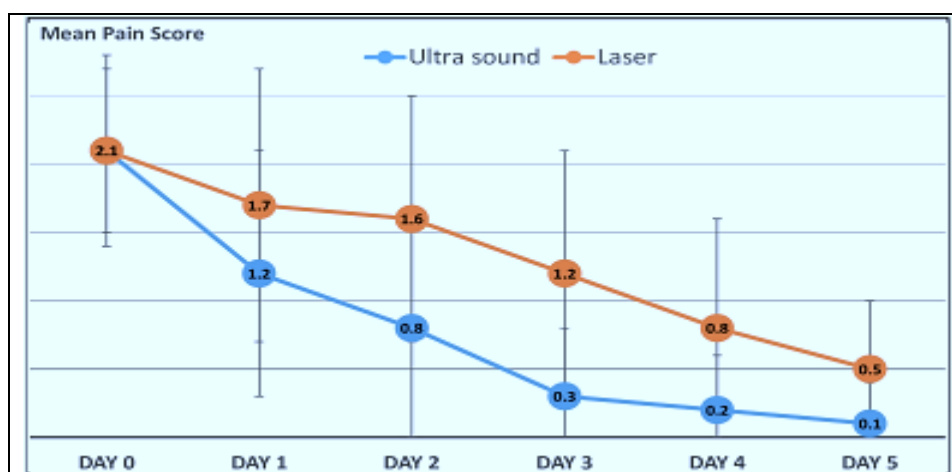


Figure 1. Comparison of the pain scores of the diode laser and ultrasound groups at various treatment intervals from day 0 to day 5 following surgery.



Discussion: In this study, the laser group (B) had a considerably higher mean pain score than the ultrasound group (A). The laser group (B) had a higher mean score for intraoperative bleeding than the ultrasound group (A).² Al-Hilali A et al. conducted a clinical study that used high-intensity ultrasound to treat inferior turbinate hypertrophy and found that 9.3% of patients experienced mild postoperative hemorrhage and 46.5% of patients experienced mild pain. Impaired turbinate hypertrophy-induced short-term nasal blockage can be improved by high-intensity focused ultrasound (HIFU), a dependable and efficient cure.¹ High-intensity focused ultrasound (HIFU) produced benefits comparable to coblation therapy for patients with nasal obstruction caused by inferior turbinate hypertrophy, however, HIFU caused less discomfort during the procedure. For inferior turbinate hypertrophy, HIFU therapy promises to be a good non-invasive substitute for the available surgical techniques.³

Conclusion: High-intensity-focused ultrasound technique was associated with fewer adverse effects than the diode laser technique. However, both methods worked well to relieve nasal blockage brought on by inferior turbinate hypertrophy.

High-intensity focused ultrasonography was found to have fewer side effects and to be an effective treatment for nasal blockage brought on by inferior turbinate hypertrophy.

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Clinical benefit of hyperbaric oxygen therapy in Laryngeal Chondroradionecrosis

Introduction: Laryngeal chondroradionecrosis (LCRN) is a rare but serious complication of radiation therapy for laryngeal cancer, occurring months to years after treatment. It leads to severe morbidity, including aspiration and airway collapse, and can be fatal.¹ Diagnosing LCRN is challenging due to its symptoms such as discomfort, dysphagia, dyspnea, and hoarseness overlapping with those of recurrent malignancy. Radiological imaging and biopsies to exclude cancer are key for diagnosis, though no standardized diagnostic algorithm exists. LCRN severity is categorized using Chandler's classification: Grades I–II: Mild to moderate cases treated conservatively. Grades III–IV: Severe cases requiring intravenous antibiotics, steroids, and potentially a tracheostomy. Although studies on hyperbaric oxygen therapy (HBOT) for LCRN are limited, they may offer benefits in improving tissue oxygenation and healing, warranting further study. Early diagnosis and appropriate management are essential to reduce complications and improve outcomes.² This study was conducted to assess the management of LCRN, including HBOT as a secondary modality, using the experience of a tertiary cancer care facility and relevant literature.

Methods: A total of 678 individuals with irradiated laryngeal carcinoma who were diagnosed with LCRN were included in this retrospective analysis. Every patient with a clinical diagnosis of LCRN had a laryngoscopy every three months and a follow-up PET-CT every 3 to 6 months until their symptoms subsided, and their imaging improved. Information on demographics, clinical characteristics, endoscopic examination results of the larynx, imaging studies, histological reports, original tumor characteristics, radiation doses, management, and LCRN outcomes were collected. Comorbidity was assessed using the Charlson Comorbidity Index (CCI), which generates a summary score by compiling the patient's most serious conditions. The improvement in the final Chandler's grade with HBOT as compared to the initial Chandler's grade upon diagnosis served as the study's main outcome measure.



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Results: In this investigation, 29 patients (4.3%) were identified with LCRN. Tracheostomy combined with intravenous steroids and antibiotics was the most often used primary care (59%). Laryngeal examination revealed vocal cord fixation in 14 patients (48%), laryngeal ulceration in 6 patients (21%), laryngeal blockage in 17 patients (59%), and substantial laryngeal edema in 22 patients (76%). There was no sign of recurrence or residual cancer in any of the pathology findings, which only showed laryngeal necrosis, ulceration, subepithelial fibrosis, inflammatory alterations, and edema. Six patients had total laryngectomy (21%), while 10 patients received HBOT (34.5%). Patients receiving HBOT were more likely than those not receiving HBOT to see an improvement in Chandler's grade (90% vs. 29%; $p = 0.005$). Figure 1 displays the improvement in Chandler's grade for patients with and without HBOT. Chandler's grade improved considerably from a median of 4 (range 2–4) to 2.5 (range 1–4; $p = 0.005$) in patients treated with HBOT.

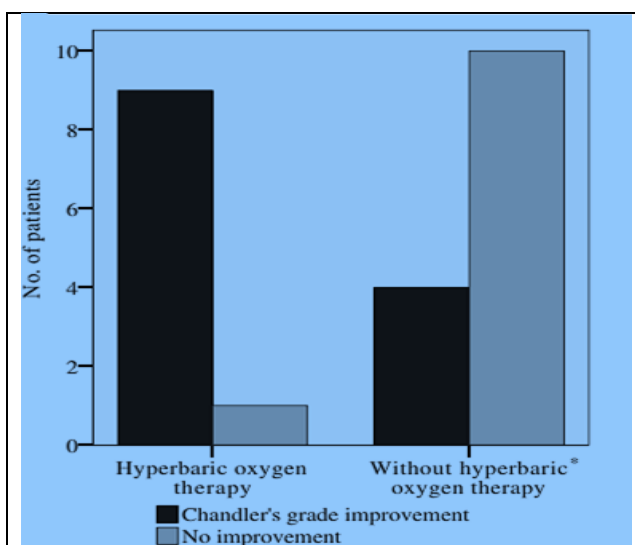


Figure 1. Improvement in Chandler's grade for patients with and without HBOT. (*) Prior to surgery, patients who had a total laryngectomy without HBOT were excluded.

Discussion: Gessert TG et al. identified that LCRN is a rare complication of radiation to the larynx, although it can have serious implications. The diagnosis is complicated and should involve a combination of clinical examination, PET imaging, and pathologic diagnosis. Patients with persistent alcohol or tobacco use or those whose original tumor has invaded cartilage should raise suspicions of LCRN. It is important to get the diagnosis as soon as feasible and to use treatment and constant monitoring to assist in maintaining laryngeal function.¹ According to this study, patients with LCRN who do not respond to steroids and antibiotics may benefit from HBOT, which may also enable decannulation in tracheostomy-dependent patients.² According to Ahmadi A et al., chondroradionecrosis is a consequence of chemoradiation therapy that might be difficult for ENT surgeons to address in patients with laryngeal cancer. Myocutaneous flap transposition combined with a cartilage graft from the nasal septum may be regarded as an appropriate surgical treatment for thyroid cartilage defects.³



Conclusion: LCRN is a rare radiation consequence that presents difficulty for both diagnosis and treatment. Initial Chandler's grade IV is more likely to occur in patients whose laryngeal tumor has invaded their cartilage. HBOT can be a helpful treatment for LCRN patients who do not react to antibiotics or steroids, and it may enable decannulation in tracheostomy-dependent patients.

Hyperbaric oxygen therapy (HBOT) can be recommended to laryngeal chondroradionecrosis (LCRN) patients as a second line of treatment that could enhance their quality of life.

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Case report on laryngeal schwannoma

Introduction: Schwannomas are benign tumors arising from Schwann cells in the peripheral nervous system. While 25% to 45% occur in the head and neck, laryngeal schwannomas are rare, making up 0.1% to 1.5% of benign laryngeal tumors. They can cause hoarseness and airway issues, with treatment typically involving surgical removal and a good prognosis if fully excised.¹ Early identification of laryngeal schwannoma is challenging due to its lack of symptoms. Patients frequently feel coughing, hoarseness, a sore throat, a pharyngeal foreign body sensation, and trouble swallowing as the tumor grows. Additional tumor growth may obstruct the glottis, resulting in dyspnoea and laryngeal stridor.² This case describes the diagnostic and treatment method for laryngeal schwannoma.

Case presentation:

A 24-year-old male patient was admitted to the hospital with a history of hoarseness for 3 years and a sore throat for six months. This patient had no recent respiratory tract infection, fever, cough, or dyspnea. There was no family history of genetic illnesses or laryngeal malignancies. Fiber laryngoscopy revealed submucosal enlargement of the laryngeal ventricle and right ventricular fold. Poor glottic closure resulted from the bulging, which pushed the right vocal fold to the glottis and restricted the right vocal cord's range of motion (Figure 1). Cervical enhanced computed tomography (CT) showed a mass in the right paraglottic gap with a clean margin free of cartilage erosion and a solid cystic appearance. The cervical lymph nodes did not exhibit any abnormal enlargement. The patient underwent exterior surgery based on the size of the tumor. Tracheotomy was performed first, followed by a laryngotomy.



Figure 1: Preoperative fiber laryngoscopy



During the procedure, the vocal cord mucosa and the larynx's regular structure were preserved. A hard tumor was discovered in the paraglottic gap of the right thyroid cartilage plate, which started from a branch of the superior laryngeal nerve. Figure 2 shows that the tumor had a distinct border and was covered by a smooth membrane. A schwannoma was identified by postoperative pathology. On the third day following surgery, the patient's laryngeal mucosa had edema. The bilateral vocal cords moved normally on the tenth day following surgery, indicating a significant reduction in edema (Figure 3). At the time of discharge, the tracheal tube was successfully removed. After 1 month following surgery, the hoarseness symptoms disappeared.



Figure 2: Intraoperative discovery

Discussion: Laryngeal schwannomas typically appear as a single, round, oval, or lobulated tumor. The medical history could extend several years or even decades because they may be asymptomatic in their early stages and develop slowly. CT and magnetic resonance imaging (MRI) are the recommended techniques for identifying laryngeal schwannomas.² Laryngeal schwannomas most typically arise in the false vocal fold and are associated with dysphonia and/or dysphagia. The preferred course of treatment is surgical excision.³



Figure 3. Fiber laryngoscopy on the tenth day following surgery

Conclusion: In this case, the tumor is massive and positioned in the right paraglottic gap. Therefore, a laryngotomy was carried out to remove the tumor entirely. Laryngotomy is useful for examining and excising malignancies in the laryngeal cavity, but it also causes some structural damage to the larynx, which may impair its ability to operate. During surgery, the extent of resection must be carefully managed to prevent damage to the laryngeal mucosa and structures.

The indication for surgery should be strictly controlled to avoid damage to the laryngeal mucosa and structures.



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