International Session

IS-001 Clinical Study of Radicular Cyst Treatment Using Endoscopic Sinus Surgery (ESS)

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Radicular cysts can develop as a result of advanced dental caries progressing to apical periodontitis. Traditionally, treatment for radicular cysts involved tooth extraction and cyst enucleation if conservative treatment failed. However, recent advancements in medical devices, such as navigation systems and drills, along with improved surgical techniques, have enabled the enucleation of cysts and apical root resection via endoscopic sinus surgery (ESS). Consequently, tooth preservation has become a viable option even in cases of radicular cysts. This study investigated the clinical outcomes of ESS for the treatment of radicular cysts at our institution. Thirteen patients who underwent ESS for radicular cysts between 2019 and 2024 were included. In all cases, the cyst was identified using a navigation system, followed by cyst enucleation and, if necessary, apical root resection. Postoperatively, tooth preservation was achieved in 11 cases, while 2 cases required tooth extraction. The characteristics and clinical courses of these cases are reported with a review of the relevant literature.

IS-002 Hemitransfixion approach using Modified Cutting and Suture Technique and Swing Door Technique

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Caudal septal deviations are often inadequately corrected with standard septoplasty using a Killian incision. The Hemitransfixion approach (HTF), routinely used in our department, has proven effective for these cases. To correct caudal septal deviations, we use either the Modified Cutting and Suture Technique (MCAST) or the Swing Door Technique (SDT). MCAST allows correction of the caudal septal deviation without exposing the anterior nasal spine (ANS). This technique is simpler but may be less effective for severe deviations near the ANS or caudal septum dislocations. In such cases, SDT provides better results. MCAST can be converted to SDT intraoperatively. Therefore, MCAST is performed first, and if insufficient correction is observed, the procedure is seamlessly transitioned to SDT. This study retrospectively analyzed 15 patients treated with HTF at our institution from January 2021 to November 2024. Outcomes were assessed based on improvements in nasal obstruction and nasal cavity area using CT imaging. We also provide detailed insights into MCAST and SDT, highlighting their advantages and technical considerations.

IS-003 Objective evaluation of caudal septal deviation and selection of the appropriate septoplasty

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Objective: The purpose is revealing the effects in caudal septal deviation among Open septorhinoplasty (OSRP), septoplasty with Hemitransfixion (HTF), Killian incision (KI) respectively.

Methods: We retrospectively analyzed 58 patients who underwent OSRP, 17 in HTF, and 43 in KI between 2008 and 2024. Caudal deviation was defined by the "Anterior-posterior Position of the most deviated point of the nasal septum (AP)," which was measured on CT. The deformation rate (DR) of the nasal septum was also calculated. Nasal airway resistance and VAS score for nasal obstruction were examined.

Results: The DR in patients with caudal septal deviation was significantly decreased by OSRP (0.16 ± 0.09 to 0.03 ± 0.02, $p < 0.01$) and HTF (0.14 ± 0.12 to 0.03 ± 0.01, $p < 0.01$), but not by KI (0.06 ± 0.04 to 0.05 ± 0.02, $p = 0.43$). OSRP and HTF also improved nasal airway resistance (2.01 ± 1.97 to 0.57 ± 0.24, 1.58 ± 1.36 to 0.37 ± 0.18, $p < 0.01$), the VAS score (71.03 ± 18.76 to 10.95 ± 12.74, 75.07 ± 12.29 to 8.86 ± 7.69, $p < 0.01$).

Conclusion: It was objectively proved OSRP and HTF corrects caudal septal deviation. The AP and DR could be useful for the evaluation of caudal deviation and help in selecting of the appropriate septoplasty.

IS-004 Anatomical differences between GHoma and PitNET cases

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Background: Endoscopic endonasal skull base surgery requires precise maneuvers in the deep nasal cavity. Collaborative surgeries with Neurosurgery revealed greater physical constraints in GHoma cases compared to PitNET cases. Objective: To compare nasal cavity structures in GHoma and PitNET cases and identify anatomical features impacting surgical maneuverability in GHoma. Methods: CT images from 28 GHoma and 104 PitNET cases undergoing endoscopic surgery were analyzed between August 2018 and April 2024. Measurements included distances between key nasal and skull base structures. Statistical analysis was conducted using t-tests. Results: GHoma cases showed longer distances from the nasolacrimal duct openings, piriform aperture edges, and anterior nasal spine to the sella turcica. Intercarotid artery distances were narrower in GHoma cases, with no significant differences in vertical-to-horizontal ratios. Conclusion: Longer nasal distances and narrower intercarotid arteries in GHoma cases may contribute to reduced surgical maneuverability compared to PitNET cases.

IS-005 Withdrawn

IS-006 Progressive Late-onset Hearing Loss Associated with a *GSDME* Variant: A Case Report of DFNA5

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GSDME is a causative gene for autosomal dominant nonsyndromic hearing loss, DFNA5. It is characterized by progressive, late-onset, high-frequency sensorineural hearing loss (SNHL). Here, we report a 24-year-old male with bilateral high-frequency SNHL, first identified at age 9. Initial pure-tone averages of 17.5 dBHL (right) and 20.0 dBHL (left) progressed to 60.0 dBHL (right) and 61.3 dBHL (left) by 2024. A family history of autosomal dominant hearing loss was noted, involving multiple maternal relatives. While social insurance-based genetic testing of late-onset SNHL failed to identify a cause, research-based analysis identified a heterozygous *GSDME* variant (NM_004403: exon8: c. 991-2A>G), which is identical to the previously reported variant in a Chinese family. To date, 14 *GSDME* variants have been reported from Europe, China and Japan. All variants were located in exon 8, intron 7, or intron 8, and skipped exon8, leading to premature protein production. Human temporal bone pathology revealed degeneration in hair cells, stria vascularis, spiral ligament, and spiral ganglion cells. *GSDME* is considered a potential causative gene for late-onset bilateral SNHL.

IS-007 Status and issues of hearing aid implementation at Nihonkai General Hospital, Shonai, Yamagata

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Nihonkai General Hospital is the only hospital specializing in otolaryngology and head and neck surgery in Shonai, Yamagata, serving a medical district of less than 300, 000 people. The hospital does not have an outpatient hearing aid clinic. The subjects were 98 patients who were newly fitted with hearing aids between January 2020 and December 2023. Forty-eight (49%) were older than 75 years and 10 (10%) were younger than 14 years. Hearing aids were implanted binaurally in 44 (45%) and unilaterally in 54 (55%). Binaural use was 10/10 (100%) in those aged 14 years and younger and 16/48 (33%) in those aged 75 years and older. The number of patients who were eligible for the Act on Comprehensive Support for Persons with Disabilities was 44/98 (45%). The number of binaural hearing aid users under this law was lower. Next, we examined the number of hearing aid purchases from certified hearing aid dispensers in a local government in Shonai before and after the start of a hearing aid purchase subsidy program. The number of hearing aid purchases increased after the hearing aid subsidy project was started. However, there are various problems, such as differences in subsidy methods.

IS-008 Clinical analysis of 50 cases with the symptom of difficulty in listening

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Introduction: Sakamoto, et al defined the medical term "Listening difficulties/auditory processing disorder (LiD/APD)" as a dysfunction of a central neural system that fulfills the criteria of (1) subjective symptoms of difficulty in listening comprehension and (2) no peripheral hearing impairment. To diagnose Lid/APD in cases with difficulty in listening, we should rule out hidden hearing loss, a disorder of the synapses between the inner hair cells and the cochlear nerve. Thus, we evaluated peripheral hearing function in cases with difficulty in listening. Methods: Between 2020 to 2024, 50 patients (16 males and 34 females, mean age: 26. 8 yrs) with difficulty in listening were included in this study. Age, past history including developmental disabilities, history of noise exposure, ABR, high-frequency audiometry (HFA), and Auditory processing test were evaluated in these cases. Results: HFA results showed three cases of suspected presbycusis. In addition, inner ear hearing loss was suspected in four patients based on the results of ABR. Discussion: The factors of age, ABR, and high-frequency audiometry were considered necessary to make a comprehensive diagnosis of LiD/APD.

IS-009 COVID-19 Infection, Vaccination, and Idiopathic Sudden Sensorineural Hearing Loss in Malaysia

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Purpose: To examine the association of ISSNHL with COVID-19 infection and COVID-19 vaccination.

Methods: This retrospective, multicenter case-control study analyzed data from 32 government hospitals in Malaysia, focusing on adults who visited the otorhinolaryngology department for pure tone audiometry (PTA) between January 25, 2020, and June 30, 2022. Cases were ISSNHL patients; controls had normal PTA results with other otorhinolaryngology-related symptoms. Patients with known causes of hearing loss were excluded. Cases and controls were matched 1: 5 by age (±5 years) and index date (±10 days). Associations were assessed using conditional logistic regression.

Results and Discussion: Among 1122 patients (187 cases, 935 controls), those with COVID-19 had a higher likelihood of developing ISSNHL compared to those without COVID-19 infection (aOR: 2. 49; 95% CI: 1. 176-5. 260; P=.017), while vaccination showed no significant association with ISSNHL.

Conclusion: Providing evidence on the links between ISSNHL, COVID-19 infection, and vaccination, this study highlights a notable infection-related risk, reinforcing the need for auditory health surveillance in COVID-19 patients.

IS-010 Working behaviors and the risk of sensorineural hearing loss: A large cohort study

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[Purpose] To explore the link between working behaviors and sensorineural hearing loss (SNHL).
[Methods] A cross-sectional (n = 90286) and a prospective analysis (n = 8, 341) were conducted to assess the association between working behaviors (including shift work, night shift work and physical work) and the occurrence, laterality, and severity of SNHL. Multivariable logistic regression and Cox regression models were applied. Subgroup analyses were conducted by age, sex, and chronotype. A polygenic risk score (PRS) was calculated to assess genetic susceptibility's impact.
[Results and Discussion] Cross-sectional and prospective analysis revealed that shift work, night shift work, and physical work correlated with a higher risk of SNHL. Increased frequencies of these behaviors were linked to more severe SNHL and bilateral involvement (all $p < 0.05$). The link between night shift work and SNHL was stronger in morning chronotype individuals (P-interaction = 0.003). Despite the genetic risk, there remained a positive association between working behaviors with SNHL.
[Conclusions] Shift work, night shift work, and physical work increase the risk of SNHL occurrence, laterality, and severity.

IS-011 Hearing Assesments in Translabyrinthine Vestibular Schwannoma Removal and Cochlear Implantation

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Objective: Simultaneous translabyrinthine vestibular schwannoma and cochlear implantation allow for preserving hearing and improving postoperative hearing outcomes. We aim to evaluate hearing and surgical outcomes using a more objective wireless connection speech test to ensure accurate auditory performance.

Methods: We describe six patients with simultaneous TLA and CI surgery from 2020 to 2024. All patients presented with single-sided deafness or asymmetric hearing loss due to vestibular schwannomas classified as Koos grade I or II. Preoperative and postoperative hearing outcomes were assessed through pure-tone audiometry threshold, word recognition score. Postoperative speech tests were also compared.

Results: The PTA thresholds and word recognition scores improved from preoperative to postoperative assessments, consistent with improvements in all hearing assessments. The iPad speech test demonstrated comparatively less improvement than PTA thresholds.

Conclusion: Simultaneous TLA and CI is an effective procedure for restoring hearing in patients with small vestibular schwannomas, allowing the recovery of binaural hearing. I-Pad test is fast and efficacious.

IS-012 Effectiveness of a Wearable Vestibular Model in Teaching BPPV and Canalith Repositioning Maneuvers

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Background: Benign paroxysmal positional vertigo (BPPV) is prevalent across medical disciplines, with canalith repositioning maneuvers (CRM) offering effective symptom relief. However, CRM remains underused due to gaps in clinicians' knowledge and confidence. This study evaluates a wearable vestibular model as an educational tool for CRM proficiency.

Methods: In a nationwide program, doctors across five specialties used a 3D-printed vestibular headset featuring transparent, mineral oil-filled tubes to simulate canalith movement. Participants practiced Dix-Hallpike, supine roll, Epley's, and Lempert maneuvers with real-time visual feedback. A post-program survey assessed the model's effectiveness.

Results: 90% agreed the model enhanced BPPV and CRM visualization and was superior to traditional learning. Confidence in CRM improved from 7.15 to 8.6, and 90% recommended the model to peers.

Conclusion: This wearable vestibular model effectively enhances CRM education, encouraging broader adoption in medical training.

IS-013 The Development of an E-learning Module (SMART-BPPV) as a Learning Platform for BPPV

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Aims: BPPV is often mismanaged due to knowledge gaps among healthcare providers, particularly in emergency and primary care. This study developed and validated the SMART-BPPV (Structured Modular Approach for Real-Time Training for BPPV) E-learning Module to improve diagnostic and treatment skills in these settings.
Materials/Methods: Learning outcomes were developed through a focused group discussion with vestibular medicine and audiology experts. Content validation required feedback from local experts in vestibular medicine to assess the module's accuracy, relevance, and comprehensiveness. Face validity process included Medical Officers in targeted departments.
Results/Discussion: The content validation process by expert panels confirmed the module's accuracy and credibility, while face validity ensured its relevance, clarity, and ease of use for the target audience. Collectively, these steps established a strong foundation for its reliability and user acceptability.
Conclusion: The SMART-BPPV E-learning Module is validated as an effective and sustainable method of learning to enhance both knowledge and skills to its end-users.

IS-014 Comparison Between Furosemide-Loaded VEMP and Gadolinium Enhanced Inner Ear MRI

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Background: Furosemide-Loaded Vestibular Evoked Myogenic Potential (FcVEMP) is a diagnostic tool for estimating endolymphatic hydrops (EH). Gadolinium-enhanced inner ear MRI (ieMRI) allows direct visualization of EH, but the correlation between FcVEMP and ieMRI findings is unclear.

Objective: To compare FcVEMP and ieMRI findings and evaluate their diagnostic significance in Meniere's disease (MD).

Methods: This retrospective study included 73 ears with definite unilateral MD and a control group of 21 individuals (40 normal-hearing ears) excluding suspected/atypical MD. Improvement rates (IR) of FcVEMP amplitudes were calculated, and ROC curves determined the optimal cutoff. Concordance between FcVEMP and EH on ieMRI was assessed in 41 patients.

Results: Mean IR was higher in affected ears (65.2%) vs. controls (28.3%) ($p=0.0189$). An IR cutoff of 34.3% yielded 60.3% sensitivity, 75.0% specificity, and an AUC of 0.655. ieMRI showed EH in 43.9% of cochleae and 68.3% of vestibules. Concordance between FcVEMP positivity and EH was low ($\kappa=0.21$ for cochleae, $\kappa=0.03$ for vestibules).

Conclusion: Low concordance suggests FcVEMP may not reflect the morphological presence of EH.

IS-015 Development of a new maneuver to rapidly restore positional nystagmus in patients with BPPV

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Objective: When the Dix Hallpike test (DHT) is repeated in patients with posterior canal type benign paroxysmal positional vertigo (pBPPV), positional nystagmus disappears. This phenomenon is known as BPPV fatigue. In cases where positional nystagmus cannot be induced by the DHT because of BPPV fatigue, we cannot make a diagnosis of pBPPV. Therefore, the purpose of this study is to develop a new maneuver to rapidly restore positional nystagmus in cases of BPPV fatigue. Method: Twenty patients with pBPPV performed the DHT twice to induce BPPV fatigue, with the new maneuver (while in a sitting position, the patient bent their head and body 90deg forward and rotated the head toward the affected side) being used, and then performed a third DHT. Results: The 95% confidence interval of the ratio between the maximum slow phase eye velocity of positional nystagmus during the third and first DHTs was 0.712 to 1.026, which was larger than the lower limit of efficacy of 0.7 specified in the protocol. Conclusions: The high values of the ratio indicate success in developing new maneuver and the applicability of the maneuver in clinical practice.

IS-016 GWAS of Disequilibrium-Related Genes Using the Hybrid Mouse Diversity Panel

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Disequilibrium is a common condition among the elderly, however, the genetic basis of vestibular dysfunction remains unclear. This study investigated vestibular function using a genome-wide association study (GWAS) with the Hybrid Mouse Diversity Panel, consisting of 84 recombinant inbred strains and 18 common inbred strains. Female mice (n = 6/strain) underwent vestibular evoked potentials and balance beam tests. Genotypes of ~500, 000 SNPs, derived from the Mouse Diversity Array, were analyzed using FaST-LMM. Candidate loci were visualized with LocusZoom, and gene annotations were performed using the UCSC Genome Browser (GRCm38/mm10). Single-cell RNA sequencing datasets from the gEAR web platform (https://umgear.org/) were used to analyze candidate gene expression in cochlear tissues. While no SNPs reached genome-wide significance, marginally significant SNPs on chromosomes 6, 13, and 14 highlighted candidate genes (*Cntnap2, Atxn1, Xkr6, Ccdc126, Gpnmb, Tmem176a*). These genes showed high expression in cochlear hair cells and the stria vascularis. This study identifies potential genetic contributors to vestibular dysfunction, providing a foundation for future therapeutic research.

IS-017 A pediatric case of external canal cholesteatoma with extensive invasion into the mastoid cavity

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Cholesteatoma in the external auditory canal (EAC) is an uncommon situation, and especially rare in pediatric patients. Pediatric EAC cholesteatoma is reported to have a less aggressive growth pattern compared to adult one, but we describe a pediatric case of EAC cholesteatoma with extensive invasion into mastoid cavity. The 5-year-old female was asymptomatic but was found to have a mass on the posterior wall of the left EAC during a regular earwax cleaning visit to a clinic. One month later, the patient was referred to our hospital and the left EAC was found to be almost filled with a granulation tissue mass and tympanic membrane could barely be seen. Computed tomography revealed a round soft tissue density destructing the EAC wall and mastoid air cells without any extensions into the tympanic membrane or tympanic cavity. After confirming the result of biopsy was benign, we made a diagnosis of EAC cholesteatoma and performed surgery. We performed a canal wall-up mastoidectomy and carried out full removal of the cholesteatoma. Auricular cartilage was used to reconstruct the posterior wall of EAC. After surgery, the patient did well and no recurrence of cholesteatoma has been seen.

IS-018 Characteristics of Calcified Tympanic Membranes in Tympanic Membrane Regeneration Therapy

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In tympanic membrane regeneration therapy, calcification is considered a hindrance to regeneration, and our institution routinely removes calcified areas. To analyze the characteristics of calcified tympanic membranes, we studied 381 ears treated with this therapy, categorizing them into calcification and non-calcification groups. Calcification was observed in 68. 2 % (260/381) of cases. Both groups had the highest prevalence in patients in their 70s, with calcification cases more common in patients aged 60 or older (72. 7%) than in non-calcification cases (55. 4%). Patients under 30 were more frequent in the non-calcification group (17. 4%) than in the calcification group (13. 5%). Chronic otitis media was the primary cause of perforation in both groups. Among patients under 30, ventilation tube placement was more frequent in the calcification group (25. 7%), while trauma was more common in the non-calcification group (47. 6%). Closure rates were high: 98. 1% in the calcification group and 96. 7% in the non-calcification group. Calcification may be associated with prolonged inflammation and ventilation tube placement, but high closure rates were achieved regardless of calcification.

IS-019 Optimization of Decompression Angles in Facial Nerve Decompression Surgery

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Facial nerve decompression surgery is a critical treatment for severe facial nerve paralysis, such as Bell's palsy and Ramsay Hunt syndrome, when conservative approaches fail. This study investigates the relationship between the degree of bone removal around the facial nerve canal and the reduction in nerve compression to determine the most effective and minimally invasive decompression angle. Using a physical model, we simulated various decompression angles (30° to 180°) and measured pressure changes with a custom-built setup. Results indicate that a 150° decompression achieves equivalent pressure reduction as the conventional 180°, while reducing the extent of bone removal and potentially minimizing surgical risks, such as nerve damage. Notably, even at 30°, significant pressure relief was observed, suggesting potential benefits in challenging surgical scenarios where extensive decompression is unfeasible. This study highlights the possibility of refining surgical techniques to balance efficacy and safety. Future work will involve animal models and finer decompression angles to validate these findings and guide clinical applications.

IS-020 Hearing and facial prognosis in facial nerve decompression with preservation of the ossicular chain

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In Japan, transmastoid facial nerve decompression is a common surgical procedure employed for the treatment of severe cases of Bell's palsy and Hunt syndrome. In order to create a working space for the decompression of the horizontal portion and the geniculate facial ganglion, the incus is removed during the decompression procedure. At this medical facility, facial nerve decompression is performed with preserving the posterior incudal ligament, with the intention of maintaining the integrity of the ossicular chain. This retrospective study included patients who underwent facial nerve decompression with or without ossicular chain preservation between January 2006 and December 2024. The ossicular chain preservation group comprised 32 patients, while the conventional method group comprised 11 patients. The objective was to investigate whether there were any differences in hearing before and after surgery and in the facial prognosis between the two groups. Additionally, the facial prognosis with and without nerve sheath incision was examined in the ossicular chain preservation group.

IS-021 Endoscopic Underlay Myringoplasty with Tympanomeatal Flap and Temporalis Fascia Graft

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Objective: To assess the outcomes of endoscopic underlay myringoplasty with a tympanomeatal flap and temporalis fascia graft, emphasizing graft success rates, hearing improvement, and procedural benefits like enhanced visualization and reduced morbidity.

Methods: A prospective, randomized study was conducted with 40 patients undergoing tympanic membrane perforation repair between January 2023 and December 2023 at ORL-HNS Hospital, Naypyidaw. Patient demographics, perforation characteristics, graft success rates, and audiological outcomes were analyzed.

Results: The average patient age was 39.15±11.12 years. Perforation sizes were classified as medium (20.0%), large (77.5%), and subtotal (2.5%). Of the 40 patients, 34 (85.0%) achieved successful perforation closure. The median preoperative air-bone gap (ABG) was 18.0±4.75 dB, which improved significantly to 8.0±5.0 dB postoperatively ($p<0.001$).

Conclusions: Endoscopic underlay myringoplasty with a tympanomeatal flap and temporalis fascia graft is a safe, effective technique with high graft success and significant hearing improvement, making it a valuable option for tympanic membrane repair.

IS-022 Hearing Outcomes of Ossiculoplasty by Double Cartilage Block in Canal Wall Down Mastoidectomy

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Aim: To investigate whether synchronous ossiculoplasty by double cartilage block (DCB) with autologous tragus could improve hearing outcome of canal-wall-down (CWD) mastoidectomy.

Material and Methods: We retrospectively reviewed patients receiving Wullstein type II or III tympanoplasty for CWD mastoidectomy in Kaohsiung Chang Gung Memorial Hospital from 2019 to 2023. We excluded patients with previous middle ear surgery, head and neck malignancy, or middle ear tumor other than cholesteatoma. Ossiculoplasty by commercial prosthesis was also exclude.

Results: Total 45 ears (mean age 52 years old) were included. 23 cases received synchronous ossiculoplasty with DCB, while the other 22 cases did not. In ossiculoplasty group, mean post-operative air-conduction (AC) threshold improved significantly from 57 to 48 dB HL. Mean air-bone gap (ABG) closure is better than non-ossiculoplasty group (11.0 vs. −2.6, p = .001). Complications including perforation, prosthesis extrusion, facial palsy were not note.

Conclusions: Synchronous ossiculoplasty by DCB could improve the hearing outcomes of CWD mastoidecotomy, and the results were sustainable during one year follow-up.

IS-023 Development of Interactive 3D Models for Temporal Bone Surgical Anatomy Using Photogrammetry

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Photogrammetry is a technique for creating 3D models using photographs taken from multiple angles. Initially developed for surveying and terrain analysis, this technology is now widely applied in fields such as creating three-dimensional archives of historical structures and artworks.

In our previous work, we developed digital teaching materials for temporal bone surgery by sequentially dissecting the bone into layers, photographing each with a motion-controlled camera, and enabling observation from multiple perspectives. However, this method had limitations regarding the range of viewing angles.

In this study, we employed photogrammetry to generate 3D models that can be freely observed from any direction. Specifically, we created 3D models for 25 procedural steps, including tympanic membrane removal, transcanal and transmastoid surgeries, facial nerve decompression, and internal auditory canal exposure. Furthermore, the 3D models for each layer were positionally aligned, allowing seamless switching between layers during observation.

These 3D models provide an innovative educational tool that significantly enhances the anatomical understanding of temporal bone surgery.

IS-024 Differences in functional brain imaging between the non-users and long-term users of hearing aids

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Hearing loss can be a risk factor for cognitive decline and a treatment for hearing loss such as using hearing aids may mitigate the risk. However, the changes that occur in the central nervous system as a result of hearing loss remain unclear, and few studies exist that compare the changes using hearing aids or not. We therefore compared hearing loss patients who had never used a hearing aid (non-users) and who had used hearing aids for more than 3 years (long-term users), who were at least 55 years and had bilateral mean hearing level of ≥ 25 dB HL, using cognitive tests (Japanese version of the Montreal cognitive assessment; MoCA-J) and resting-state functional magnetic resonance imaging (fMRI). For the non-user group (n = 15) and the long-term user group (n = 7), the mean ± standard deviation (SD) of the hearing level in the better ear were 40.1 ± 8.7 dB HL and 63.0 ± 14.2 dB HL, the long-term user group was significantly worse (p = 0.005). However, the mean ± SD of the MoCA-J total score was 25.7 ± 2.7 and 25.6 ± 4.5, there was no difference (p = 0.78). We will also report comparative fMRI result for several brain regions.

IS-025 Transcriptomic comparison of avian auditory and vestibular hair cells

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Backgrounds: Birds can regenerate auditory hair cells (HCs) after damage, whereas the avian vestibule undergoes HC turnover as well as regeneration. To explore the clues of HC regeneration, we first compared the transcriptomic profile of auditory and vestibular HCs. Then we examined the differences between regenerating auditory HCs and normal vestibular HCs.

Methods: In post-hatch day seven chickens, we used basilar papilla (BP), an avian cochlea, and the utricle. To obtain the profile of regenerating auditory HCs, we administered sisomicin, an aminoglycoside antibiotic, through the semicircular canal and dissected BP 96 hours after the treatment. Each of the single-cell RNAseq data was analyzed.

Results: Clustering analysis allowed us to select the cluster for auditory and utricle HCs. A comparison between them revealed specifically expressed genes in each organ, and some of them were validated with *in situ* hybridization chain reaction. Notably, the profile of regenerating auditory HCs showed gene expression similarity more with that of utricle HCs.

Conclusions: The genes that both regenerating auditory HCs and normal utricle HCs share could be candidates relevant to HC regeneration.

IS-026 Microbiome analysis of Eosinophilic otitis media using next-generation sequencing

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Background: Eosinophilic otitis media (EOM) is a chronic eosinophilic inflammatory disease linked to bronchial asthma and nasal polyps. Bacteria and their metabolites in the nasal cavity are thought to reach the middle ear via the Eustachian tube, causing EOM. The details regarding the pathogenesis of EOM have not been elucidated. Objective: Our study aimed to characterize the microbiome associated with EOM and explore changes with and without tympanic membrane perforation. Method: We enrolled 27 EOM patients, 25 controls without middle ear infections. Samples were collected by swabbing the middle ear, nasopharynx, and external auditory canal (EAC), followed by 16S rRNA gene sequencing. Diversity indices were compared, and biomarkers were identified using Linear Discriminant Analysis Effect Size (LEfSe) analysis. Results: *Nocardioides* was significantly enriched in the middle ear, nasopharynx, and external auditory canal of EOM patients. Conclusion: Our study identifies *Nocardioides* as a new biomarker for EOM and reveals significant shift in microbial co-occurrence associated with tympanic membrane perforation, suggesting new avenues for understanding and managing EOM.

IS-027 A Review of 10 Accepted Case Reports in International Journals

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Case reports enhance clinical knowledge and contribute to global medical science. Despite their value, acceptance rates for case reports in peer-reviewed international journals are declining. This study reviewed 10 case reports authored by the presenter and accepted in such journals between 2018 and 2024. Of these, 40% were published in otolaryngology journals and 20% in open-access journals. Article types included full case reports (50%) and others, such as clinical conundrum and case image. Categories were classified as otology (1 case), rhinology (1 case), head and neck (4 cases), and head and neck cancer (4 cases). Videos were included in 40% of reports. The median impact factor was 1.6 (Range: 0.5-6.0), the median number of rejections was 1.0 (Range: 0-7), and the median number of citations was 1.5 (Range: 0-8). This analysis provides practical insights and guidance for clinicians aiming to prepare and successfully submit their own case reports.

IS-028 Evaluation and Future Prospects of Hands-On Experience in Pre-Graduate Clinical Training

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Background: Pre-graduate clinical training is vital for medical students, offering essential patient interaction and professional exposure. Standardized assessments stress the need for supervised practice and simulation training. Our department sees this training as a way to build knowledge and attract medical students, focusing on "hands-on" clinical experiences enriched by relevant procedures. We recently conducted a questionnaire to assess the training's effectiveness and potential future developments. Methods: From December 2022 to December 2024, we surveyed students in our clinical training, evaluating overall experience and the curriculum components. Results: 176 students participated, giving a satisfaction score of 4.9 out of 5. "Electrosurgical practice using simulated organs" received the highest rating, followed by "virtual reality training for surgical anatomy" and "knot tying and suturing training." Discussion: The training garnered positive feedback, underscoring the effectiveness of our methodologies. These results guide enhancements to training content and inspire interest in otolaryngology, facilitating improved medical education for future professionals.

IS-029 Machine Learning Predicts Bone-Anchored Hearing Device Outcomes in Single-Sided Deafness

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Purpose: Single-sided deafness (SSD) complicates rehabilitation, but bone-anchored hearing devices (BAHDs) offer solutions. This study applies machine learning (ML) to integrate neural, psychoacoustic, and clinical data for predicting BAHD outcomes. Methods: Neural data from 415 SSD patients (OpenABR and similar repositories) and psychoacoustic data from 624 patients (HLTD) were analyzed. Clinical features like demographics, deafness duration, and device models were extracted from anonymized EHRs. A hybrid ML model with CNNs and RNNs assessed signal-to-noise ratios, ECochG amplitudes, and psychoacoustic metrics. Success was defined as a 50% improvement in speech-in-noise scores within six months, validated with k-fold cross-validation. Results and Discussion: The model achieved 93.4% accuracy, 91.5% sensitivity, and 94.7% specificity. ECochG signal-to-noise ratios >2.5 and localization deviations <12 degrees strongly predicted success. Psychoacoustic metrics contributed 68.5% to predictive power, neural features 31.5%. Conclusions: This ML model offers a precision tool for BAHD rehabilitation, improving outcomes through personalized predictions.

IS-030 Morphological analysis of EBV-positive nasopharyngeal carcinoma cells

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Epstein-Barr virus (EBV) has two life cycles: latent and lytic cycles. Previously, the latent cycle has been considered more relevant to nasopharyngeal carcinoma (NPC), whereas the lytic cycle has been not, which ultimately leads to host cell's death. However, recent studies have reported an abortive lytic infection, which the lytic cycle is halted midway with escaping host cell death, and that the lytic cycle contributes to tumorigenesis and tumor growth. Nevertheless, the extent to which the lytic cycle progresses in NPC, as well as whether it is accompanied by viral replication, has not been elucidated.

Morphological analyses were performed on the NPC cell lines and clinical NPC biopsy samples using TEM, NanoSuit-CLEM and SICM methods. IHC with VCA antibody, a late lytic gene product indicating EBV replication, were conducted to investigate its correlation with prognosis.

EBV virions were observed in the lytic induced NPC cell lines and clinical NPC samples. The expression of VCA was significantly associated with poor prognosis.

In NPC, the lytic cycle accompanied by EBV replication occurs, and the frequency of EBV replication is significantly associated with poor prognosis.

IS-031 Supraglottic partial laryngectomy with rotation of the hyoid body

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Supraglottic partial laryngectomy (SGPL) is regarded as a laryngeal function-preserving surgery, but it poses a potential risk of dysphagia, resulting from the physical changes induce by the procedure. SGPL without excision of the hyoid bone is expected to better maintain laryngeal elevation by the suprahyoid muscles compared with SGPL with hyoid bone excision. However, the surgical technique has not been adequately validated. We developed the hyoid body-rotation SGPL technique, which preserves the hyoid body while separating it laterally to the lesser horn, through cadaveric studies for the treatment of supraglottic carcinoma. A 67-year-old man with large cell neuroendocrine carcinoma underwent supraglottic laryngectomy with rotation of the hyoid body. At the time of this writing, the patient had been alive without recurrence for 4 years. This technical note describes the procedure, which preserves the hyoid body and suprahyoid muscle complex to maintain laryngeal elevation and provides access to the pharynx. This technique aims to preserve the hyoid body during SGPL and support long-term swallowing function.

IS-032 A novel technique to achieve excellent hypopharyngeal exposure in transoral surgery

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Background: Transoral surgery (TOS) is a common treatment of early-stage hypopharyngeal cancer. We often experience the difficulty of not visualizing the entire hypopharynx during TOS. In this situation, inadequate hypopharyngeal exposure may lead to incomplete tumor resection, or the operation may be abandoned. Thus, we developed the percutaneous laryngeal elevation technique (PLET) to resolve this problem. Methods: Total thirteen patients underwent TOS with PLET for hypopharyngeal cancer at our university from February to December in 2024. We retrospectively assessed whether PLET improved hypopharyngeal exposure and its safety. Results: Improved hypopharyngeal exposure was observed in all patients by using PLET. Twelve of 13 patients completed TOS as planned. No intra- and postoperative PLET-related complications were observed. Conclusions: We developed a novel surgical technique, called PLET, to improve hypopharyngeal exposure during TOS for hypopharyngeal cancer. PLET could dramatically improve hypopharynx exposure and allow us to perform TOS on a patient with difficulty of visualizing entire hypopharyngeal cancer.

IS-033 Transoral videolaryngoscopic surgery for older patients with laryngopharyngeal cancer

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The incidence of head and neck cancers in older patients is increasing. This study evaluated the treatment outcomes and risks of swallowing dysfunction for transoral videolaryngoscopic surgery (TOVS) in older patients. This case series included patients who underwent TOVS for supraglottic or hypopharyngeal cancer between 2010 and 2021, with a follow-up of >2 years. Patients were divided into older (age≥75) and control groups (age<75). 110 patients underwent TOVS (33 older, 77 control). No significant differences were observed in the 5-year OS, DSS, LCR, and LPR between groups. Postoperative complications were similar between groups. In the older group, G8 score ≤14, extensive resection, and arytenoid resection associated with delayed soft diet initiation. For all patients, pT classification, arytenoid resection, extensive resection, history of radiation therapy, and tracheotomy were also associated with delayed soft diet initiation. TOVS is a safe and effective treatment in older patients. Patients without a history of radiation therapy, tracheotomy, arytenoid resection, or extensive resection and with a G8 score of ≥15 can avoid postoperative swallowing dysfunction.

IS-034 Distress and quality of life in post-treatment nasopharyngeal carcinoma: Two-center study

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A) Aim: This study assesses distress and the Quality of life (QoL) prevalence, severity, and relationship among post-treatment nasopharyngeal carcinoma (NPC) patients.

B) Material and Methods: A cross-sectional study at Hospital Melaka and Hospital Canselor Tuanku Muhriz involved post-treatment NPC patients with at least six months of follow-up. Distress was assessed using the Distress Thermometer. QoL and symptomatology were assessed with the European Organisation for Research and Treatment of Cancer (EORTC) Quality of Life Questionnaire (QLQ-C30) and EORTC Head and Neck Module (QLQ-H&N 35).

C) Results: One hundred forty-four patients with a median age of 60.5 years (range 18-92). The median NPC surveillance follow-up time was seven years (6 months to 36 years), the Median distress score was 4 (range, 1-8), and the Median HRQOL score was 75 (range of 50-100). A significant negative correlation was found between distress and the HRQOL score. ($r = -0.53$, $p < 0.01$).

D) Conclusion: Overall distress and HRQOL scores among post-treatment NPC patients were good. Factors such as sticky saliva, dry mouth, fatigue, and decreased sexuality substantially impacted distress and QoL.

IS-035 A review of parathyroid surgery cases in our department

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Parathyroid tumors are relatively rare diseases. However, recently, the patients have been increasing in cases of asymptomatic primary hyperparathyroidism detected through elevated serum calcium levels, as well as parathyroid tumors incidentally discovered via ultrasonography during health checkups. In this study, we reviewed 41 cases of parathyroid surgeries performed at our department from 2009 to 2024. The cases comprised 11 males and 30 females, with a mean age of 65.3 years. Pathological diagnoses included 39 cases of adenoma and 2 cases of carcinoma. We analyzed the preoperative tumor location, maximum tumor diameter, surgical procedures, changes in intact parathyroid hormone (iPTH), calcium, and phosphorus levels before and after surgery, as well as predictive factors for the postoperative complication of hungry bone syndrome (HBS). The results suggested that elevated preoperative iPTH levels and larger tumor diameters were predictive factors for postoperative complications, such as HBS. Furthermore, in cases where the tumor invades the thyroid gland, careful attention is warranted, as they are more likely to be malignant and associated with sever clinical complications.

IS-036 Intraoperative identification of parathyroid with 4K 3D ORBEYE exoscope in thyroid surgery

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In thyroid surgery, the detection and preservation of the parathyroid glands are important for preserving postoperative parathyroid function. However, macroscopic identification of the parathyroid glands in the surgical field is difficult because normal parathyroid glands are small and resemble lymph nodes or fat tissues apparently. Recently, parathyroid glands autofluorescence detection using near-infrared imaging was reported. ORBEYE (OLYMPUS) is a 4 K-3D surgical exoscope that enables heads-up surgery and presents the fine structures of tissues and blood vessels using high-resolution digital images. Because ORBEYE has the near-infrared mode, we examined whether the near-infrared mode of ORBEYE is useful for intraoperative identification of parathyroid glands during thyroid surgery. We demonstrated that the ORBEYE was effective surgical instrument that enables identification of parathyroid glands with the same and expanded surgical field in thyroid surgery, and it is necessary to accumulate more cases and examine the optimal method in the future.

IS-037 An unusual case of recurrent laryngeal nerve palsy caused by chronic inflammation in nodular goiter

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Background: Recurrent laryngeal nerve (RLN) palsy in benign thyroid disease (BTD) is rare, with most cases attributed to nerve compression or stretching. We present an unusual case of nodular goiter where chronic inflammation caused ipsilateral RLN palsy. Case presentation: A 59-year-old female presented with hoarseness and pharyngeal discomfort. Endoscopy revealed right vocal cord fixation, apparently due to right RLN palsy. Imaging showed an ill-defined thyroid mass in the right lobe, raising suspicion of malignancy, however, repeated cytology did not confirm malignancy. During surgery, since the right RLN was embedded within the mass and completely unresponsive to nerve monitoring, the nerve had to be excised. Histopathology confirmed a nodular goiter, with the excised RLN showing severe degeneration and disruption due to intense chronic inflammation and perineural fibrosis. Conclusions: Although RLN palsy associated with thyroid masses is typically linked to malignancy as confirmed in our preliminary meta-analysis, the possibility of BTD should still not be ruled out. Other than compression and stretching, severe chronic inflammation may be a primary cause of RLN palsy in BTD.

IS-038 Crystal clear: unusual presentation of gouty tophi mimicking thyroid malignancy in a 42-year old man

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Gout is a metabolic inflammatory disease caused by monosodium urate (MSU) crystal accumulation in joints, leading to pain, especially in the first metatarsophalangeal joint, and possible nodules in various organs. A 42-year-old Filipino male presented with a 2-week history of a painless, and progressively enlarging anterior neck mass. He reported no associated symptoms like dyspnea or dysphagia and no history of thyroid disorders or radiation exposure. Physical examination revealed a firm, non-tender nodular mass, approximately 4 cm in diameter, with normal overlying skin. Initial investigations suggested a neoplastic etiology, with normal thyroid function tests and CT imaging showing a calcified mass between the hyoid bone and thyroid cartilage. The mass was excised, revealing irregular, chalky deposits. Histopathology confirmed MSU crystals, diagnosing gouty tophi. He had a history of recurrent gout managed with Colchicine and Febuxostat, with no post-operative recurrence. This case underscores the importance of considering uncommon etiologies in the differential diagnosis of neck masses, particularly when clinical presentations diverge from typical patterns.

IS-039 Stratification of pediatric thyroid nodules utilizing molecular information

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Pediatric thyroid cancer is the second most common malignancy in adolescent females in the United States. Thyroid nodules in children are associated with a higher risk of malignancy than adults. It has become evident that there is a difference in the molecular landscape of pediatric thyroid nodules and malignancies compared to adults. By utilizing molecular information from preoperative fine-needle aspirations, it may be possible to stratify the risk that a particular nodule may be benign or malignant.

IS-040 Deltopectoral flap reconstruction for esophageal fistula caused by lenvatinib in thyroid cancer

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We report a 47-year-old female patient who underwent total thyroidectomy for poorly-differentiated thyroid cancer. Preoperative MRI and upper endoscopy revealed that the cancer deeply invaded the esophageal muscle but not to the mucosa. Intraoperatively, we repaired the defect of esophagus mucosa which occurred with tumor resection. Oral intake started 1 month after surgery and progressed smoothly. Despite prophylactic radiotherapy started postoperatively, locoregional and lung metastases developed 8 months after surgery. Although lenvatinib was initiated thereafter and tumors were reduced 1 month later, we found fistula formation from the esophagus to the neck skin. Two weeks after discontinuing the lenvatinib, we performed reconstruction for esophageal fistula using deltopectoral flap in two-staged surgery. Oral intake and lenvatinib started again 1 and 2 months after the second stage of reconstruction. The patient presently survives with adequate oral intake and no recurrence for approximately 3 years after the diagnosis. Deltopectoral flap reconstruction is a useful procedure not only to close esophageal fistula caused by lenvatinib but to keep the potential of oral intake.

IS-041 Clinical Features of Coexisting Thyroid Cancer in Patients with Graves' Disease

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Objective: Rates of thyroid cancer in Graves' disease (GD) vary, with controversial associations. This study examines clinicopathologic differences in GD patients undergoing thyroidectomy with or without papillary thyroid carcinoma (PTC) and assesses incidental PTC.

Methods: Data from 70 GD patients undergoing thyroidectomy at Sapporo Medical University Hospital (2017-2024) were analyzed. Clinicodemographic factors, surgical details, and histopathologic findings were compared based on cancer status. Incidental and preoperatively suspected PTC were evaluated.

Results: Among 70 patients (mean age 42, 52% female, mean BMI 23), 12 (17%) had malignancy, and 5 (42%) were incidental. Patients with PTC had less large goiter surgery ($p=0.004$), higher tumor comorbidity ($p<0.001$), lower elevated TRAb levels ($p<0.001$), smaller thyroids ($p=0.001$), shorter operative times ($p=0.006$), less blood loss ($p=0.019$), and more preoperative nodule detection ($p<0.001$). Tumor characteristics were similar in incidental and pre-diagnosed PTC.

Conclusion: Approximately 17% of GD patients had PTC. Careful preoperative ultrasound screening is essential, as incidental cancers are common.

IS-042 Analysis of pluripotency-related proteins for establishing an anaplastic thyroid carcinoma model

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Despite the advent of multi-kinase inhibitors and molecular targeted therapies, anaplastic thyroid carcinoma (ATCs) is still one of the extremely poor prognosticators among head and neck cancers, not only of the thyroid gland. A reanalysis of public data showed that ATCs had intermediate properties between papillary thyroid carcinomas (PTCs) and pluripotent stem cells. We evaluated and analyzed pluripotency-related proteins in (1) human ATC cases and (2) genetically engineered PTC mouse models. (1) In the study of human ATCs, 31 patients expressed pERK (74%), LIN28B (68%), and SALL4 (55%), all of which showed shorter median survival in the pluripotency-related protein expression group compared to the non-expression group. (2) Compared to mice with only the Braf V600E mutation, mice with both the Braf V600E and p53 mutations had significantly higher expression of Lin28A and Sall4, indicating a lower expression of TTF-1. These results suggest that pluripotency-related genes could be involved in the development of ATCs. We report our research and introduce our efforts to induce ATCs through artificial dedifferentiation.

IS-043 Correlation between gene mutations and clinical characteristics in papillary thyroid cancer

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Activation of the MAPK pathway by genetic mutations initiates and accelerates the growth of papillary thyroid carcinoma (PTC). This study aimed to retrospectively analyze major genetic mutations, specifically BRAF mutations and RET rearrangementsand develop a treatment algorithm by comparing background and clinical characteristics. 80 patients with primary PTC were included in this study. The patients were categorized into two groups based on the presence of BRAF mutations and RET rearrangements and their clinical characteristics were compared subsequently. RET rearrangements were positive in 10%, and BRAF mutation was positive in 78. 6%. The RET rearrangement group was significantly associated with younger age, multifocal lesion, distant metastasis and decreased 18F-FDG. The BRAF mutation group was significantly associated with unifocal lesions and increased 18F-FDG uptake. In this study, an increase in M classification cases was found in the RET rearrangements group. However, genetic mutations were not associated with the clinical stage, and no factors that could be incorporated into the treatment algorithm were identified.

IS-044 Tumor emboli of thyroid papillary carcinoma into right brachiocephalic vein: A case report

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Introduction: Papillary thyroid carcinoma has a good prognosis, and complete surgical resection is a standard treatment. Tumor emboli into large vessels is relatively rare and shows worse prognosis. Here, we report a case of tumor emboli of thyroid papillary carcinoma into right brachiocephalic vein. Case: A 59-year-old male underwent a right thyroid lobectomy for differentiated thyroid tumor in a municipal hospital. During surgery, the tumor invaded the inferior thyroid vein and was close to the brachiocephalic vein. After surgery, the patient was diagnosed as papillary thyroid carcinoma and was referred to our hospital. Using a transmanubrial approach, head and neck surgeons and cardiovascular surgeons found the tumor invasion to the brachiocephalic vein. After vascular clamping of the brachiocephalic vein, the invading tumor and the vascular wall were removed. After tumor resection, the brachiocephalic vein was sutured. Final pathology reveled the tumor emboli into the brachiocephalic vein and safety surgical margins. Conclusion: For thyroid papillary carcinoma with emboli into large vessels, adequate surgical procedure should be considered within a multidisciplinary team.

IS-045 Transoral endoscopic thyroidectomy vestibular approach (TOETVA) our experiences in Bangladesh

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Aim: To avoid the scarring of the neck with conventional thyroidectomy, endoscopic techniques have been developed over the years. TOETVA is the latest innovation of scarless thyroid surgery. We shared our first time experiences of TOETVA to evaluate its safety and efficacy.

Methods: Under GA, supine position with extended neck, use of a 10-mm 30° scope, 5-mm forceps and ultrasonic device. One midline and two lateral ports were made in lower lip. An anterior cervical subplatysmal space was created from the oral vestibule down to the sternal notch. CO2 pressure of 6mmHg, flow 15L/min.

Results: Total 70 cases, 65 female, 5 male, ages ranged from 16 to 50 years, we did 65 hemithyroidectomy for noduar goiter, 3 hemithyroidectomy for PTC, 2 total thyroidectomy for MNG. Regarding complications, 3 cases seroma, 2 cases infection, 1 case temporary paresis of RLN, 2 cases converted to open approach due to hemorrhage. Operating time initial 30 cases 3 to 4 hrs and last 40 cases 1. 5 to 2 hours.

Conclusion: TOETVA is shown to be a safe & feasible technique, with no significant differences in the rate of complications compared to the open approach.

IS-046 Animal Study: Role of Prenatal Stress in Accelerating Age-Related Hearing Loss

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Background: Age-related hearing loss (ARHL) is an age-related and progressive hearing loss. Prenatal stress (PS), such as psychiatric stresses and a poor nutrition of pregnant female, is related to age-related diseases in adult offspring. Recently, there are many studies about the association between the COVID-19 pandemic and PS. An association between PS and hearing loss has been reported, however, it is not known whether PS impacts susceptibility to ARHL. Methods: Pregnant female C57BL/6 mice were assigned to the PS and control group. The PS group were given restraint stress during their pregnancy. One male and one female offspring were assigned from each litter. ABRs were recorded from 1 to 6 months old. Phalloidin labeled hair cells were manually counted in cochlear whole mounts at 1 and 6 months old. Results: The ABR thresholds and the incidence of hair cell loss were not significantly different in young mice. However, in middle-aged mice, the ABR thresholds and the incidence of outer hair cell loss were significantly higher in the PS group. Conclusions: This study provides evidence that ARHL is accelerated by PS in a mouse model.

IS-047 Transient ischemia at mouse embryonic day causes congenital hearing loss with cochlear degeneration

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Low birth weight is a risk factor of congenital hearing loss, however, its pathogenesis is still unclear. We previously established low birth-weight children's model mice with transient ischemia caused by maternal mouse uterine artery occlusion at embryonic day 16.5 (E16.5) (Kubo et al. JCI Insight, 2017). To examine whether low birth-weight children's model mice have hearing loss and developmental disorder of the cochlea, we investigated hearing response and cochlear histology. Using acoustic reflex test, Postnatal day 56 (P56) low birth weight-children's models mice showed less response to sounds compared with controls. By analyzing whole mount cochlear sensory epithelia, the cochlear lengths of low birth-weight children's model were significantly shorter than controls at P1. Furthermore, we elucidated that the number of Myo7a+ ectopic hair cells in low birth-weight children's model cochleae significantly increased along with Sox2+ ectopic supporting cells and Tuj1+ ectopic nerve fibers at P1 compared to E18.5. These results suggest that developmental disorder of the cochlea occurs congenital hearing loss of low birth-weight children caused by transient fetal ischemia.

IS-048 ABR and cochlear microphonics elicited by ultrasound beyond the hearing range in guinea pigs

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The human hearing range typically extends below 20 kHz, yet perception of ultrasound through bone conduction has been observed. This phenomenon, known as ultrasonic hearing, remains physiologically unclear. In our study, we measured auditory brainstem responses (ABR) and cochlear microphonics (CM) in guinea pigs to explore the mechanism of ultrasonic hearing in the cochlea. With air-conducted stimuli, ABR was recorded up to 40 kHz, within the hearing range of guinea pigs. However, with bone-conducted stimuli, ABR was detected at frequencies up to 201 kHz above the hearing range. To analyze CM, we performed frequency analysis on local field potentials induced by ultrasonic stimulation, revealing voltage peaks synchronized with the stimulus frequency and suggesting CM generated by ultrasound. CM amplitude exhibited nonlinear amplification with increasing sound pressure. These values were significantly reduced under postmortem conditions, indicating that CM was actively amplified. Hypothesizing that the tympanic membrane might hinder ultrasound transmission, we directly stimulated the ossicles. This approach yielded responses similar to those observed in bone-conducted stimulation.

IS-049 Delivery of a Neuron-Specific Adeno-Associated Virus Vector into the Mouse Inner Ear

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Gene therapy for hereditary sensorineural hearing loss using adeno-associated virus (AAV) vectors carrying the OTOF transgene has been reported in humans, but off-target transgene expression remains insufficiently studied. To investigate targeted transduction, a neuron-specific AAV vector (AAV9-hSyn-ChETA-YFP) was injected into the inner ear of neonatal or adult C57B/6N mice via the round window. Histological analysis four weeks post-injection revealed robust gene expression in the soma and axons of type 1 spiral ganglion neurons (SGNs) on both injected and non-injected sides when injected in neonates, but no expression was observed in adults. Transduction efficiency did not differ among type 1 SGN subtypes, and no expression was observed in type 2 SGNs. Gene expression was also seen in the central nervous system (CNS), particularly in the hippocampus, likely via the cochlear aqueduct. No elevation in auditory brainstem response (ABR) thresholds was detected, indicating minimal invasiveness. This study highlights the effectiveness of neuron-specific AAV vectors in transducing type 1 SGNs during the neonatal stage, offering insights into gene therapy for auditory neuron regeneration.

IS-050 The effects of bFGF and gelatin sponge on blast-induced tympanic membrane perforation in mice

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Tympanic membrane perforation (TMP) is a common auditory complication of blast injuries. We developed a mouse model of blast-induced TMP using a shock tube and investigated the therapeutic effects of basic fibroblast growth factor (bFGF) applied with a gelatin sponge (gel) scaffold. Male CBA/J mice (8-12 weeks old) were divided into five groups: (1) control (non-blast-exposed), (2) untreated blast-exposed ears, (3) blast-exposed ears treated with bFGF alone, (4) gel alone, and (5) bFGF + gel. TMP size was measured over time, auditory function was assessed using auditory brainstem response (ABR) and distortion product otoacoustic emissions (DPOAEs), and cochlear damage was evaluated via hair cell survival. Combination treatment with bFGF and gel promoted better TMP healing, with thinner, structurally improved tympanic membranes compared to other groups. These findings suggest that bFGF with a gelatin scaffold may effectively enhance TMP repair following blast injuries. This study provides new insights into potential therapeutic strategies for blast-related auditory injuries, which we will discuss alongside detailed auditory and histological assessments.

IS-051 From Hyperglycemia to Hearing Loss: Investigating Cochlear mRNA Expression Changes in Diabetic Models

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Diabetes-related hearing impairment has emerged as a significant research topic. The aim of this study is to investigate the molecular basis of hearing loss induced by type 1 diabetes mellitus via RNA sequencing (RNA-Seq) in a mouse model with/without noise exposure. Specifically, we examined mRNA expression alterations in type 1 diabetes animal models induced by streptozotocin injection. RNA sequencing was used to compare changes in mRNA expression between diabetic and normal mice with and without noise exposure. Even without noise exposure, the mRNA expression in type 1 diabetic mice was highly similar to that in noise-exposed non-diabetic mice, particularly in pathways related to olfactory transduction, calcium signaling, MAPK signaling, oxidative phosphorylation, and genes associated with oxidative damage.

IS-052 Effects of polyamines on mitochondrial metabolism in the cochlear cell line HEI-OC1

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Background: Polyamines play multiple roles in cell growth, survival, and proliferation. Changes in polyamine levels are associated with aging and disease, but their functions in the inner ear remain unclear. We analyzed their cytotoxicity and effect on mitochondrial functions in the inner ear cell line.

Methods: Spermine (sp), spermidine (spd), and putrescine (pt) are treated for 48 hours before assays. Cytotoxicity was evaluated using WST-8. Oxygen consumption rate (OCR) and maximum OCR (MOCR) were measured under substrate addition using a flux analyzer and statistical analysis was performed using analysis of variance (ANOVA).

Results: Half-maximal inhibitory concentrations (IC50) values for sp, spd, and pt were 5 μM, 25 μM, and 10 mM, respectively. OCR did not increase under polyamines treatment. MOCR decreased significantly under 20 μM sp and 100 μM spd treatment compared to control.

Conclusions: The cytotoxicity of sp was higher than the other polyamines in HEI-OC1 cells. Sp has the highest cytotoxicity for HEI-OC1 cells and decreased mitochondrial function at low concentrations. These results indicate that sp followed by spd has a negative effect on inner ear cells.

IS-053 EDNRB2 is a Novel Marker for Precursor Cells in the Avian Auditory Epithelium

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In contrast to mammals, the avian auditory epithelium, basilar papilla (BP), can regenerate hair cells (HCs) from supporting cells (SCs). Previously, we performed single-cell RNA sequencing using an explant culture model in which streptomycin exposure induced complete HC loss, followed by HC regeneration via direct conversion of SCs. The findings suggested that SC was differentiated into HC through a precursor stage, and endothelin receptor beta 2 (EDNRB2) was the most differentially expressed gene in the precursor stage. The aim of this study is to clarify the functional role of EDNRB2 during HC regeneration.

We first confirmed the expression patterns of EDNRB2 in the developing chick BP and found that EDNRB2 expression was restricted to precursors during cell fate determination. We then assessed the roles of EDNRB signaling in regenerating chick BP explants using an inhibitor for EDNRB signaling. Inhibition of EDNRB signaling significantly reduced the number of regenerated HCs, indicating that EDNRB signaling may play a role in the differentiation of precursors into HCs. Additionally, RNA sequencing was performed to identify the critical molecules downstream of EDNRB signaling.

IS-054 Hair bundle stiffness of inner ear hair cells is regulated by myosin II activity

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Inner ear hair cell is the receptor organ which detects mechanical stimuli such as sound and gravity. The site of mechanical sensitivity is the hair bundle: an erect cluster of actin-filled rods, the stereocilia, protruding from the apical cellular surface. Hair cells have an active process to amplify the stimuli by various molecular interactions. To elucidate the detail of active process, we employed the two-compartment experimental chamber, in which the upper chamber is filled with artificial endolymph, and lower chamber is filled with artificial perilymph to reproduce the physiological condition of hair cells. First, we observed spontaneous oscillation of frog saccular hair bundle, which is the origin of force production of active process. Second, we measured that hair bundle stiffness, which is maintained by tension of tip link and stereociliary pivots, reduced by breaking tip link with EDTA treatment. Moreover, myosin II inhibitors reduced stiffness with intact as well as disrupted tip link. Our results supposed that inhibition of myosin activity affected the stereociliary pivots by loosening the tightness of the insertion of stereociliary rootlets into the cuticular plate.

IS-055 The roles of TRPV4 in aminoglycoside-induced cochlear ototoxicity

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Aminoglycoside remain widely used for urgent clinical treatment of life-threatening infections, despite the well-recognized risk of permanent hearing loss. However, the exact pathogenesis of aminoglycoside-induced hearing loss and its treatment have not yet been established. Systemically administered aminoglycoside considered to migrate into the cochlea through the various channels located in cochlear stria vascularis, resulted in the cochlear degeneration. Transient receptor potential vanilloid 4 (TRPV4), the Ca2+-permeable non-selective cation channel, is expressed at key locations along the stria vascularis trafficking route into endolymph and cochlear hair cells. However, it is not clear how TRPV4 is involved in the aminoglycoside-induced cochlear pathogenesis. We would like to investigate the auditory function and cochlear histological analysis of pharmacological TRPV4 up/down regulation in aminoglycoside-induced ototoxicity. The results will be shown in detail in the presentation. Our results indicates TRPV4 might have a roles in aminoglycoside-induced cochlear pathology.

IS-056 N^1-methylnicotinamide accelerates cochlear aging through SIRT1 overexpression

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Age-related hearing loss (ARHL) is influenced by genetic, aging, and environmental factors. SIRT1, regulated by nicotinamide N-methyltransferase (NNMT) and N^1-methylnicotinamide (MNAM), plays dual roles in aging and stress responses. While moderate SIRT1 levels protect against ARHL, overexpression worsens it. This study investigated MNAM supplementation in B6 mice, revealing accelerated ARHL with elevated auditory thresholds, outer hair cell dysfunction, spiral ganglion cell loss, and disrupted cochlear function. MNAM increased cochlear SIRT1 protein levels, disrupting mitochondrial and oxidative pathways and causing TCA cycle dysregulation. These findings highlight MNAM's detrimental effects on ARHL and the need for targeted SIRT1 modulation.

IS-057 Suppression of TGF-β exacerbates degeneration of auditory neurons in kanamycin induced ototoxicity

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Transforming growth factor-β (TGF-β) is crucial for inflammation, immunity, and cell death. We investigated the effects of TGF-β suppression on auditory function and cochlear pathology in kanamycin-induced ototoxicity. Methods: Kanamycin and furosemide were administered to C57/BL6 mice, followed by the topical application of a TGF-β receptor inhibitor (TGF-βRI) on the round window membrane. Auditory brainstem responses were measured before and after administration. TGF-β and TGF-β receptor expression in the cochleae, hair cell survival, spiral ganglion neuron (SGNs) survival, and macrophage infiltration in SGNs were evaluated. Results: Significant upregulation of TGF-β receptors in SGNs was observed after ototoxicity, whereas TGF-βRI led to significant downregulation. No significant change in cochlear TGF-β expression was detected after ototoxicity; however, TGF-βRI significantly decreased signaling. TGF-βRI does not affect hearing thresholds or hair cell survival after ototoxicity. However, it significantly increased SGN loss and macrophage infiltration. Conclusion: Inhibition of TGF-β signalling post-ototoxicity promotes cochlear inflammation and SGN degeneration.

IS-058 Skull Vibration-Induced Nystagmus Test as Rapid Screening Tool for Peripheral Vestibular Disorders

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This study evaluated the reliability, diagnostic accuracy, and normative values of Skull Vibration-Induced Nystagmus Test (SVINT) in Malay adults for diagnosing peripheral vestibular disorders. This cross-sectional study involved adults (36 healthy and 30 patients) with suspected PVD. SVINT was performed with a multifrequency vibrator (30, 60, 100 Hz) applied to the mastoid and vertex, with SPV recorded by videonystagmography (VNG). Diagnostic accuracy was assessed by ROC analysis. Normative SPV values in healthy adults were ≤2.5°/s, with 94.5% showing no nystagmus. SVINT at 60 Hz demonstrated excellent reliability (ICC: 0.98, Pearson's r: 0.98, $p<0.001$) and good diagnostic accuracy (AUC: 0.835, sensitivity: 77.8%, specificity: 80.0%), outperforming 100 Hz (AUC: 0.767). Correlation analysis revealed significant relationships between SVINT and VHIT outcomes, particularly strong correlation between VHIT lateral VOR gain and SVINT SPV at 60 Hz ($r=-0.93$, $p<0.001$). Significant correlations between SVINT variables and VHIT proved SVINT is a reliable and rapid first-line screening tool in the diagnosis of PVD, with strong clinical utility when combined with VHIT.

IS-059 Biomaterial-Assisted Cell Delivery for Regenerating Swallowing-Related Muscles

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Oropharyngeal dysphagia, a swallowing disorder caused by neuromuscular dysfunction, is linked to aging, neurological diseases, and head and neck cancer. Although mesenchymal stem cell (MSC) therapy holds potential for muscle regeneration, its efficacy is hindered by poor cell survival and engraftment. While 3D cell spheroids improve cellular functions, they face issues like necrotic cores and limited oxygen/nutrient diffusion. To overcome this, we developed nanogel microfiber fragments (NG-MF) to form hybrid 3D spheroids with adipose-derived MSCs (ADSCs). NG-MF incorporation enhanced cell survival, reduced apoptosis, and boosted the secretion of regenerative factors. In vivo studies using a rat model of mylohyoid muscle injury showed that hybrid spheroids with NG-MF had higher engraftment rates and superior muscle regeneration. Key outcomes included enhanced muscle fiber regeneration, increased myogenic differentiation, reduced fibrosis, and improved electromyography (EMG) amplitudes during swallowing-related contractions. These findings highlight NG-MF's role in supporting ADSC engraftment and muscle repair, presenting a promising strategy for treating oropharyngeal dysphagia.

IS-060 A pathophysiological study of dysphagia in myotonic dystrophy using mouse models

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Myotonic dystrophy (MyD) is known to cause dysphagia. However, the underlying swallowing mechanisms remain unclear. This study aimed to elucidate the pathophysiology of dysphagia in MyD using a videofluoroscopic swallow study (VFSS) protocol adapted for mice and histological and immunofluorescence analyses. This study included 12-month-old mice in the MyD and control groups. VFSS revealed increased pharyngeal residue area, prolonged pharyngeal transit time, and shortened inter swallow interval in the MyD group. Notably, 66.7% of the MyD mice exhibited incomplete upper esophageal sphincter closure. Histological and immunofluorescence analyses showed greater muscle variation, central nuclei prominence, and decreased ClC-1 expression in the MyD group. These findings indicate mild dystrophic changes across various muscles with variable pathological severity. The MyD group compensated for reduced pharyngeal contraction by swallowing smaller boluses. This raises questions regarding the potential roles of cricopharyngeal myotomy and botulinum toxin therapy in managing dysphagia in MyD patients.

IS-061 Prediction of oral intake after esophagectomy using fiberoptic endoscopic evaluation of swallowing

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[Objective] We investigated the relationship between the findings of fiberoptic endoscopic evaluation of swallowing (FEES) and oral intake after esophageal cancer surgery.

[Methods] The study included 76 patients who underwent esophageal cancer surgery at the Department of Gastroenterology, the University of Osaka Hospital between April 2022 and September 2024, and were referred to the Eating and Swallowing Center during their hospitalization and undergo a FEES. Hyodo score was calculated at the time of first visit to the center. Patients who achieved a Functional Oral Intake Scale (FOIS) score of 5 or higher at the time of discharge were classified as the achievement group, and other cases were classified as the non-achievement group.

[Results] Comparing the 22 patients (28.9%) in the achievement group and the 54 patients (71.1%) in the non-achievement group, Hyodo score was significantly higher in the non-achievement group. The ROC analysis gave relatively good prediction accuracy.

[Conclusion] It was demonstrated that evaluation by FEES is effective in predicting oral intake after esophageal cancer surgery.

IS-062 Reduction in Pneumonia Incidence Following Laryngoplasty for Unilateral Vocal Fold Paralysis

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Background: Unilateral vocal fold paralysis (UVFP) causes voice and swallowing dysfunction. While surgeries improving vocal function may enhance swallowing, their impact on preventing aspiration pneumonia remains unclear. This study evaluated whether laryngoplasty reduces pneumonia incidence using a claims database of Japanese employees under 75 and their families. Methods: UVFP patients from January 2013 to December 2022 were identified in the database. Clinical data such as age, sex, surgery, comorbidities, and UVFP causes were collected. The primary outcome was pneumonia episodes pre- and post-surgery. The secondary outcome was cumulative pneumonia incidence. Results: Among 7,646 UVFP patients, 239 underwent laryngoplasty (treatment group), and 7,407 did not (non-treatment group). Cumulative pneumonia incidence was higher in the treatment group (HR 1.74; 95% CI 1.25-2.42; p=0.001), reflecting a higher baseline risk. However, pneumonia episodes decreased by 0.98 per year after surgery (p=0.005). Conclusions: Laryngoplasty reduced pneumonia incidence in high-risk patients, suggesting its potential to prevent aspiration pneumonia.

IS-063 Accumulated Oropharyngeal Secretions in Adult Patients with Oropharyngeal Dysphagia

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The presence of accumulated oropharyngeal secretions in patients with Oropharyngeal Dysphagia (OD) is a strong predictor of aspiration. At-risk populations include patients with head and neck and neurological disorders. An ambispective, observational cohort study was utilized to determine the prevalence, characteristics, and management of OD, and accumulated oropharyngeal secretions in OD. Fifty four consecutive patients were included. Prevalence of OD (0.33%) and accumulated oropharyngeal secretions in OD (0.25%) are lower compared to previous studies. Patients with higher secretion ratings had head and neck diseases. Key factors associated with severe accumulated secretions include impaired mobility of the vocal folds, and disease onset/ surgical procedure within the past 3 months. Management involved compensatory techniques and rehabilitation exercises including the Filipino pre-swallow maneuvers (singhot-singa-dahak-ubo-dura). An individualized approach resulted in better Penetration-Aspiration Scale scores and reduced secretions. The study posed institutional limitations, identified areas to be explored, and highlighted the importance of multidisciplinary dysphagia care.

IS-064 Prognostic association of postoperative complications after free-flap reconstruction for HNSCC

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Introduction: Radical surgery with free-flap reconstruction is critical for advanced head and neck squamous cell carcinoma (HNSCC), but it carries high complication rates. The specific complications most affecting prognosis remain unclear. This study aimed to identify the one with the greatest prognostic impact.

Methods: We retrospectively analyzed 346 HNSCC patients who underwent radical surgery with free-flap reconstruction at Shizuoka Cancer Center (2013-2022). Complications were graded using the Clavien-Dindo (C-D) classification. We evaluated overall survival (OS), recurrence-free survival (RFS), hospital stay length, and the interval from surgery to postoperative radiation therapy (S-PORT).

Results: Surgical site infection (SSI) was the most common complication (n=56), followed by pneumonia (n=24), flap failure (n=19), and lymph leakage (n=9). Patients with C-D Grade≥IIIa SSI had worse OS (HR: 3.300) and RFS (HR: 2.116). Multivariate analysis confirmed C-D≥IIIa SSI as an independent risk factor for poor 5-year OS (HR: 4.260) and RFS (HR: 2.313).

Conclusions: SSI, especially C-D≥IIIa, worsens prognosis in HNSCC, highlighting the need for prompt management and follow-up.

IS-065 Predictors of QOL Survey pre-CRT for HNC on Type of Meal at Discharge and Length of Hospital Stay

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Some reports show the quality of life (QOL) before chemoradiotherapy (CRT) for head and neck squamous cell carcinoma (HNC) is related to survival-related outcomes. To predict other practical issues, we investigated the relationship between the type of meal, the length of hospital stay, and pre-CRT QOL. We evaluated QOL outcomes in patients who underwent initial radical CRT for HNC at Kitasato University Hospital from 2019 to 2022. We used the Cancer Fatigue Scale (CFS) and the combined EORTC QLQ-C30 and QLQ-H&N35 questionnaires at pre-CRT. We retrospectively collected clinical information. We obtained 90 responses from those questionnaires. “Pain” and “Weight loss” were related to the type of meal at discharge. “Role functioning”, “Dry mouth”, and “Sticky saliva” were associated with the length of hospital stay. The pre-CRT EORTC QLQ-C30/H&N35 may be useful to provide tailor-made supportive care for CRT. If patients have high “Pain” or “Weight loss” scores, enteral nutrition should be introduced early on instead of adhering to oral intake. In the case of low “Role function”, physical training and psychosocial rehabilitation should be considered.

IS-066 A rapid multiplex immunohistochemical platform for immune-precision medicine of head and neck cancer

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Clinically applicable method for evaluating tumor immune-microenvironment (TiME) has been required, for proceeding personalized cancer treatment based on biomarkers. Multiplex immunohistochemistry (IHC) was previously developed in our department, which enabled quantification of TiME and tissue categorization according to composition of immune cells by staining maximum 14 markers. Based on this technique, we developed 6-marker rapid multiplex IHC via the reduction of the number of labels and speeding up the staining procedure, by optimizing reaction temperature, chromogen, and washing time, completing in 5 hours and 49 minutes instead of several days. Validation in benign tonsil and head and neck cancer tissues showed significant correlation between rapid and standard multiplex IHC in staining intensities, densities of T cells, macrophages, lymphoid/myeloid immune cell ratios, and spatial profiles of intratumoral immune infiltrates. Currently, we are using this technology retrospectively to examine the TiME and evaluate it in conjunction with clinical data, prospecting for immune-precision medicine of head and neck cancer.

IS-067 Role of hyperbaric oxygen therapy (HBOT) in skull base osteoradionecrosis: A systematic review

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Aim: To determine if HBOT as an adjunctive therapy is superior to monotherapy in skull base osteoradionecrosis (ORN) following nasopharyngeal carcinoma (NPC) treatment.

Methods: Search through literature databases provided 553 relevant studies of which, 31 studies were assessed and 17 studies were eventually included.

Results: There is reduced wound progression (pooled mean of 63%) and increased complete wound re-epithelisation (pooled mean of 46%) in patients who had HBOT. Symptom control also showed improvement e.g. swallowing ($p=0.011$), oral pain ($p<0.0001$) and sticky saliva ($p=0.01$). As adjuvant therapy, there is significantly increased wound healing incidence compared to monotherapy (84.8 vs 56.7%, $p<0.0001$). Despite there being no significant difference in wound healing incidence between central and lateral skull base ORN (60.7% vs 62.8%, $p=0.0842$), there appears to have higher rates of success in long term coverage of exposed bone (56-80%).

Conclusion: NPC patients with skull base ORN secondary to radiation therapy benefit from HBOT, especially when HBOT is adopted as an adjunctive therapy with slightly better outcomes in lateral skull base ORN.

IS-068 The multiple roles of p63 in human salivary duct adenocarcinoma cells

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Salivary gland cancer is a rare malignancy that has complex histopathological patterns. The standard treatment is surgery; however, further research is essential for developing new therapies. In head and neck squamous cell carcinoma, the p53 family member p63, playing a key role in the cancer progression, is positive and bicellular tight junction protein cingulin (CGN) is negative. We investigated the roles of p63 in the cancer malignancy by using overexpression of δNp63 in p63-negative salivary duct adenocarcinoma cells PGC2E derived from parotid gland adenocarcinoma. By transfection with δNp 63, the PGC2E cells exhibited increased nuclear p63 expression and reduced CGN levels at the membrane. Overexpression of δNp63 disrupted epithelial permeability barriers, promoted cell proliferation and migration, and enhanced cellular metabolism. Treatment with HDAC inhibitors and NF-κB, and antibodies of TNFα and tricellular tight junction protein LSR induced apoptosis. However, overexpression of δNp63 prevented the induced apoptosis. These findings suggest that p63 contributes to cancer malignancy and complex phenotype, and it may lead to the development of novel treatment via p63.

IS-069 Exploration of therapeutic targets using growth inhibitors for Head and Neck mucosal melanoma

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Mucosal melanoma (MM) is a very rare disease. The primary treatment for head and neck MM is surgery, but due to anatomic constraints, heavy ion radiotherapy is often used in recent years. MM frequently presents with distant metastases. Additionally, treatments effective for cutaneous melanoma have been reported to have lower response rates in MM, resulting in a poor prognosis.

Recent studies have shown that BRAF mutations, which account for approximately 50% of cutaneous melanoma, are only present in 5% of MM. Furthermore, abnormal activation of the CDK4 signaling pathway have been reported. Dysregulation of CDK plays a central role in tumor formation, and CDK4/6 inhibitors have been clinically applied to various malignancies. Exploring the role of CDK4/6 and signaling pathways in MM is important for the development of new treatments.

In this study, we conducted cell proliferation assay using cell lines derived from MM. To evaluate cell proliferation markers and the CDK4/6 signaling pathway, we performed immunohistochemical analysis and Western blotting. We report on the potential of CDK4/6 inhibitors as promising targets for molecular targeted therapies.

IS-070 A Case of Sweat Gland Carcinoma with Subclavian Lymph Node Metastasis

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Sweat gland carcinoma is a rare, malignant tumor from cutaneous sweat glands. It has a poor prognosis and, as of yet, there is no established treatment. We report a case of metastatic sweat gland carcinoma in the subclavian lymph node of a 45-year-old, male patient who three years earlier had undergone the excision of a right axillary mass which was diagnosed as clear cell hidradenoma. One year before the current presentation, a rapidly growing, recurrent mass developed in the right axilla. Pathological analysis diagnosed sweat gland carcinoma. Complete axillary tumor resection and lymph node dissection were performed ; however, the subclavian lymph node metastasis was considered unresectable. Postoperative chemotherapy failed to control the lesion, and further surgery was required. The patient underwent a cervical tumor resection, right partial claviculectomy, right subclavian vein reconstruction, and pedicled flap reconstruction. Postoperative therapy consisting of radiation and immune checkpoint inhibitors was administered. At the one-year follow-up, no residual tumor or recurrence was detected. This case describes successful tumor control using surgery and multimodal therapy.

IS-071 Withdrawn

IS-072 Canalicular Adenoma in the Parotid Gland: A Rare Case Study

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Canalicular adenoma (CA) is a rare benign tumor of the salivary glands, predominantly affecting elderly females, with a strong predilection for the upper lip. Several distinctive features concerning size, location, race, and comprehensive management documentation were revealed. The tumor, measuring 60×39×25mm, was located in the anterior deep lobe of the parotid gland, necessitating a superficial parotidectomy for adequate exposure. The patient, a white Asian male, adds a unique demographic context. Notably, the surgical depictions and biopsies lacked immunohistochemistry, providing a detailed illustration of the management stages without reliance on advanced staining techniques. A 57-year-old Asian male, presented with a painless swelling in the left parotid gland that had been persisting for 8 years. Clinical examination and imaging studies identified a lobulated mass, with no signs of malignancy. This case illustrates the diagnostic and management challenges associated with CA. Moreover it underscores the need for heightened awareness of CA's unique presentations, particularly within the Asian population. Given the potential for recurrence, long-term follow-up is essential.

IS-073 A rare case of Metastatic Amelanotic Malignant Melanoma of parotid gland: A diagnosis dilemma

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Background: Amelanotic malignant melanoma is rare and involvement of parotid gland is scarce and difficult to diagnose. This report highlights the importance of consideration of diagnosis of amelanotic melanoma in parotid gland malignancies. We discuss the challenges faced in diagnosing amelanotic melanoma and relevant examination and investigation. Case: We report a rare case of metastatic malignancy of parotid gland in a 74 years old gentleman presented with a parotid mass and overlying skin changes. Initial histopathology reports pointed towards sarcoma and lymphoma which caused delay in diagnosis. However, a thorough examination and PET CT which shows hypermetabolic peri and intra parotid lymph nodes prompted early surgical intervention of total parotidectomy. Immunochemistry staining including vimentin, HMB45 and CD 56 revealed metastatic amelanotic malignant melanoma of parotid gland. Patient then underwent oncological treatment. Conclusion: Although rare, metastasis to the parotid gland from a primary amelanotic melanoma should be considered as a differential in parotid gland tumours, leading to investigations for early detection, diagnosis and treatment to ensure better prognosis.

IS-074 A specific clinical study to evaluate the efficacy and safety of intracordal trafermin injection

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The efficacy of intracordal trafermin injection for diseases such as age-related vocal fold atrophy and paralysis has been reported from various previous studies. However, intracordal trafermin injection is currently not indicated in Japan. We aimed to expand the indication for a new route of trafermin administration into the vocal folds, and proved its safety and efficacy. As a result, a protocol and SOP (Standard Operating Procedures) were developed, and a specific clinical study of intracordal trafermin injection is planned. In this report, we describe the history and future prospects of this study.

IS-075 The 10 cases of corrosive pharyngeal laryngoesophagitis at our hospital

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Objective: This study aimed to report the case of corrosive pharyngeal laryngoesophagitis with literature review.

Method: The patient backgrounds, drugs taken or accidentally swallowed, and contents and courses of treatments for cases of corrosive pharyngeal laryngoesophagitis experienced at our hospital in the last ten years are to be examined and compared with previous literatures.

Result: In the last ten years, there were a total of 11 patients (one child, ten adults), including those two reported cases, who were hospitalized for treatment of corrosive pharyngeal laryngoesophagitis. For adult patients, eight out of ten had the purpose of suicide attempt, eight were discharged after receiving conservative treatments, and one resulted in an unfortunate outcome due to chemical pneumonitis.

Conclusion: There was no difference compared to previous literatures since the most common cause of corrosive pharyngeal laryngoesophagitis experienced at our hospital was suicide attempt. Since various treatment courses are followed depending on the extent of injury and the degree of damage, a long-term treatment observation with endoscopy is necessary.

IS-076 HPV6-induced inflammatory and oncogenic gene expression in recurrent respiratory papillomatosis

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Objective: Recurrent respiratory papillomatosis (RRP) is caused by the human papillomavirus (HPV) types 6 and 11. However, the cellular and molecular mechanisms underlying its pathogenesis remain to be elucidated. Here, we investigated the relationship between viral and host gene expression in cultured cells using the conditional reprogramming (CR) method and explored the molecular pathogenesis of RRP. Methods: We evaluated the passage capacity and growth rate of CR cells from fresh RRP tissues and adjacent normal tissues from patients with RRP. Furthermore, we performed bulk RNA-seq analysis of CR cells across multiple passages to characterize the gene expression profile associated with RRP. Results: RRP-derived CR cells exhibited greater passage capacity and proliferation rate. HPV6 gene was expressed in all RRP-derived CR cells and its expression decreased with each passage. Notably, several neutrophil chemotaxis-related genes, as well as stemness- and oncogenesis-associated genes, displayed expression patterns that were correlated with HPV6. Conclusion: HPV6-induced expression of inflammatory and oncogenic genes in infected epithelial cells may play a role in RRP pathogenesis.

IS-077 Effect of cigarette smoke on the laryngeal epithelium of C57BL/6 mice

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Cigarette smoking (CS) is a significant risk factor for laryngeal carcinoma, but the mechanisms behind subregional differences in incidence and pathogenesis remain unclear. In this study, we examined the effects of smoking on the laryngeal epithelium in different subregions using an in vivo mouse model. Wild-type C57BL/6 male mice (8 weeks old) were divided into a CS-exposed group (15 cigarettes/day, 5 days/week) and a nonsmoking group. Laryngeal samples were collected after 1 or 3 months of CS exposure, followed by histological analysis and RNA-seq. No morphological changes were observed, but increased mucopolysaccharides and higher levels of 4-HNE, a marker of lipid peroxidation, were detected in the vocal folds compared to other subregions. GO analysis revealed that smoking significantly increased terms related to toxic metabolism (CYP1A1) and antioxidant responses (Nrf2 and its downstream genes) in all subregions. These results suggest that the laryngeal epithelium in C57BL/6 mice may adapt to CS exposure by activating antioxidant stress response factors such as Nrf2.

IS-078 rTMS Effects in Adductor Spasmodic Dysphonia

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Purpose: This pilot study explored the safety, feasibility, and effects of 1 Hz rTMS over the laryngeal motor cortex in adductor spasmodic dysphonia (AdSD), a disorder with involuntary laryngeal muscle contractions and reduced intracortical inhibition.

Method: Individualized stimulation sites were identified via TMS-evoked responses in thyroarytenoid muscles using fine-wire electrodes. rTMS targeted the left LMC in Control (n = 10) and AdSD (n = 10) groups. Tolerance, adverse effects, intracortical inhibition, and voice quality (via acoustic and perceptual measures) were evaluated pre- and post-rTMS.

Results: The procedure was well-tolerated with no adverse events or symptom worsening. While intracortical inhibition showed no significant changes, rTMS produced a large effect on vocal perturbation and a small effect on reducing phonatory breaks in the AdSD group.

Conclusions: A single rTMS session over the LMC is safe, feasible, and shows potential benefits for voice quality and phonatory function in AdSD. Further studies with randomized controlled trials are warranted.

IS-079 An Approach for Tracheal Defect Restoration by Enhancing Feasibility of Epithelial Cell Sheets

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Aims: Reconstruction of tracheal defects to maintain durable lumen patency and restore ciliary motility remains challenging. This study aimed to enhance epithelial cell sheet processing by incorporating biocompatible materials as carriers. Materials and Methods: Porcine small intestine submucosa (SIS) was selected as a biocompatible carrier. SIS was pretreated using a negative vacuum system (degassing), with epithelial growth factor (EGF) incorporated to improve function. In vitro, degassed SIS was compared to non-degassed controls using a cell sheet reattachment model, MTT assay, and surface attachment analysis. In vivo, a rabbit trachea patch model assessed healing, fibrosis, and luminal stenosis. H&E staining evaluated tissue regeneration. Results: Degassed SIS showed significantly improved cell sheet reattachment and viability in vitro. In vivo, degassed SIS and EGF enhanced tracheal healing, reduced fibrosis, and promoted epithelial restoration, achieving pseudostratified ciliated columnar epithelium with goblet cells. Conclusion: SIS degassed with EGF enhanced epithelial cell sheet integration and tracheal regeneration, offering potential for clinical tracheal reconstruction.

IS-080 CRISPR screening reveals that mTOR inhibition initiates ferroptotic regulated cancer cell death

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Genomic alterations converging in persistent activation of the PI3K/mTOR pathway represent one of the most frequently altered signaling circuitries in cancer. This abnormal activation is observed in about 80% of Head and neck squamous cell carcinoma (HNSCC) cases. This overreliance on PI3K/mTOR signaling for tumor growth may expose a cancer vulnerability that can be exploited therapeutically. However, the clinical efficacy of mTOR inhibitors (mTORi) for HNSCC treatment has been limited. Here, we took advantage of a whole-genome CRISPR screening approach to search for mechanisms making cells resistant to mTORi, and autophagy and ferrroptosis was identified. Ferroptosis is iron-dependent regulated cell death process caused by the peroxidation of polyunsaturated fatty acids. Indeed, mTORi was demonstrated to induce ferroptosis in HNSCC cells, and inhibition of ferroptosis reduced the effect of mTORi. This study provides direct and detailed mechanisms linking mTORi-triggered autophagy and ferroptosis. Our studies uncovered how mTORi act in HNSCC, thereby revealing new multimodal precision therapies for HNSCC and many human malignancies displaying overactive PI3K/mTOR signaling.

IS-081 Efficacy of mTOR inhibitors in human papillomavirus related squamous cell carcinoma of head and neck

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Background: Head and neck carcinoma carries PI3K/Akt/mTOR activation. Two mTORs, mTORC1 and mTORC2, are involved in tumor growth through different pathways. Among mTOR inhibitors, the most commonly used is rapamycin and inhibits mTORC1 but fails to inhibit mTORC2. Torin, an mTOR inhibitor, inhibits not only mTORC1 but also mTORC2 in a different way from rapamycin. This study aims to elucidate the possibility of combining rapalogs and Torin on tumor growth inhibition.

Method: HPV-related and not-related cell lines were used to determine the efficacy of the drug combination by WST-1 assay and Western blotting. A tumor mouse model was used to evaluate the drug combination on the tumor growth in vivo.

Results: In the WST-1 assay, Torin 2 suppressed tumor growth more effectively than rapalog in both cell lines. In UM-SCC47, the combination of everolimus and Torin 2 showed the best tumor inhibition effect, and also suppressed Akt, S6K, and 4E-BP1 phosphorylation in Western blotting. In vivo experiments, the combination of everolimus and Torin 2 induced tumor suppression.

Conclusions: The combination of Torin 2 and rapalog might be a new drug treatment for head and neck carcinomas.

IS-082 Lymph Node-Mediated Immune Differences in Orthotopic vs. Heterotopic Head and Neck Cancer Models

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Head and neck tissue-specific immune responses are critical for understanding immunotherapy resistance in HNSCC. This study investigated immune response differences between oral and subcutaneous flank tumor transplantation in preclinical models. Using the syngeneic mouse oral carcinoma cell line MOC1, we compared immune cell kinetics in tumors and tumor-draining lymph nodes (TDLNs) and evaluated the anti-PD1 response. Orthotopic oral MOC1OVA tumors induced higher numbers of OVA-specific T cells and activated T cells in both primary tumors and TDLNs compared to subcutaneous flank tumors. Tumors were larger in the flank site, but CD8 depletion eliminated size differences between the two sites. Notably, oral TDLNs showed enhanced antigen uptake and co-stimulatory marker expression in cDC1, leading to a stronger antigen-specific T cell response. Anti-PD1 blockade effectively rejected oral parental MOC1 tumors but not subcutaneous flank MOC1. These findings highlight distinct immune responses between orthotopic and heterotopic models, emphasizing the role of TDLN priming by cDC1 and its implications for head and neck cancer studies.

IS-083 Building a PDX Library for Head and Neck Cancer: Unveiling Mechanisms of Chemotherapy Resistance

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We established a comprehensive library of Patient-Derived Xenograft (PDX) models from diverse head and neck cancers, including rare subtypes, with a high success rate (80%). PDX models faithfully recapitulated patient tumor characteristics, including histology and genetic alterations. Importantly, we observed varying responses to cisplatin, mirroring clinical outcomes. Gene expression analysis in resistant models revealed upregulation of genes involved in cell motility and extracellular matrix remodeling, suggesting potential mechanisms of acquired resistance. This valuable resource will facilitate preclinical research and the development of novel therapies or the overcome of treatment resistance for head and neck cancers.

IS-084 NRF2 Activation and Targeted Therapy in Cisplatin-Resistant Head and Neck Squamous Cell Carcinoma

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Cisplatin (CDDP) resistance in head and neck squamous cell carcinoma (HNSCC) represents a major clinical challenge. The KEAP1-NRF2 system plays a critical role in regulating the expression of genes involved in antioxidation and drug metabolism. We hypothesized that NRF2 is involved in CDDP resistance in HNSCC. To test this hypothesis, we investigated the expression of NRF2 and its target genes in seven parental cell lines and their CDDP-resistant (CR) derivatives, which were developed through chronic exposure to CDDP. Three of the CR lines exhibited increased NRF2 activity compared to their parental counterparts. These CR lines acquired alterations in the NRF2 or KEAP1 gene during the course of prolonged CDDP exposure. Mitomycin C is a potent drug for cancers with high-level expression of NQO1, which is a representative target gene of NRF2. Mitomycin C treatment of NRF2-activated CR lines resulted in significant therapeutic efficacy. These findings indicate that NRF2 contributes, at least in part, to CDDP resistance in HNSCC and suggest that targeting NRF2 may be a promising strategy to overcome CDDP resistance in HNSCC.

IS-085 Bispecific ADC Targeting PD-L1 and B7-H3 Enhances Antitumor Efficacy and Immune Responses

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Aim: Antibody drug conjugate (ADC) offer a promising approach, combining monoclonal antibodies with chemotherapeutic drugs to target cancer cells effectively while minimizing toxicity. This study evaluated the efficacy and mechanism of bispecific ADC (BsADC) targeting PD-L1 and B7-H3 in laryngeal squamous cell carcinoma (LSCC), focusing on immune checkpoint inhibition and delivery of MMAE.

Methods: We assessed the BsADC's efficacy in vitro and in vivo LSCC models, comparing it to bispecific antibody (BsAb) and single-target ADC. Tumor-specific immune responses, immunogenic cell death (ICD), and endoplasmic reticulum stress were also examined.

Results: The BsADC demonstrated superior efficacy compared to BsAb and single-target ADC, showing enhanced tumor cytotoxicity and immune activation. It significantly induced tumor-specific immunity, ICD markers, and endoplasmic reticulum stress, indicating its ability to trigger multiple anti-tumor pathways.

Conclusion: The BsADC enhances tumor immune cytotoxicity by targeting PD-L1 and B7-H3, promoting ICD, and inducing tumor-specific immune responses, offering promising avenues for overcoming resistance and advancing cancer therapy.

IS-086 Enhancement of photodynamic effect by implantable hydrogel lens-microneedles optical waveguide

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Purpose: Limited penetration depth of light in biological tissues is a key challenge in light-based therapies, such as photothermal therapy and photodynamic therapy.

Methods: This study demonstrates a biocompatible, implantable device for deep tissue light delivery. The prototype is fabricated using polyethylene glycol diacrylate polymers, combining planar waveguides with lens-microneedle. The optical beam pass through the microneedles to optimize light intensity in the tissue.

Result and Discussion: The hydrogel waveguide with five lens-microneedles extends treatment depth to 24 mm and treatment area to 3.1 cm^2. Photoswitchable chemotherapy against colorectal cancer cells is activated using various hydrogel waveguides. Hydrogel-waveguide enabled photoswitching is evaluated through optical microscopy, crystal violet staining, and MTT assays. The anticancer drug activated by the hydrogel device is twice as effective in inducing cancer cell death compared to other waveguides.

Conclusions: The biodegradable waveguide offers optimal light delivery and does not require removal, as it is resorbed by tissue. This approach holds potential for widespread use in photomedicine.

IS-087 Additional study of clinical data on the two pathogenesis of peritonsillar abscesses

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At last year's meeting, we reported on the pathogenesis of peritonsillar abscess (PTA) by examining the presence or absence of intratonsillar calculi. In this study, we examined these differences using bacterial test and inflammatory responses.

The study included 89 PTA patients. Bacterial test results of pus samples and blood data on white blood cell count (WBC) and CRP levels were compared between groups classified by the presence or absence of intratonsillar calculi.

Of the 60 cases in which bacterial strains were detected, 151 strains were identified, with the *Streptococcal* group being the most common. Notably, *Prevotella* species were more prevalent in the group with calculi, although no other significant differences were found between the groups. WBC and CRP values were not significantly different between the two groups; however, patients with calculi were more likely to develop abscesses extending beyond the peritonsillar area, often requiring tracheostomy.

While there were no differences in the clinical data between the two groups, the findings suggest the severity of the disease may vary depending on the presence or absence of intratonsillar calculi.

IS-088 Search for RSV therapeutic targets through phenotypic screening from repurposed pediatric drugs

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Respiratory syncytial virus (RSV) is a major cause of lower respiratory infections in infants under six months. Despite progress in diagnostics and vaccine development, there are no specific antiviral drugs against RSV. In this study, we try to screen antiviral drug seeds and clarify the action points. To screen antiviral drug seeds, we measured EC50, CC50, and viral titer using MTT and plaque assay. In vitro polymerase assay, ELISA, docking simulation, animal experiments and RNA sequence were performed. Primary pediatric adenoid epithelial cells are obtained with permission from the Institutional Review Board. Fluoroquinolones showed potent anti-RSV effects. Animal experiments showed that intra-nasal administration significantly reduced Luc-5 RSV signal intensity. RI-based 3′ primer extension assay showed that the action site is in RNA-dependent RNA polymerase. RNA-seq revealed the involvement of host factors in the RSV replication cycle. The involvement of host and viral factors suggested that fluoroquinolones have multiple action points to suppress RSV replication. The detailed elucidation of the action points led to the discovery of anti-RSV drugs.

IS-089 Role of ILC2 in Middle Ear Mucosa: A Study Using a Papain-Induced Eosinophilic Otitis Media Model

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Background: Eosinophilic otitis media (EOM) is an intractable middle ear disease associated with type 2 inflammation. In the present study, we established a new EOM model with daily intratympanic injection of papain, a plant protease, for 12 consecutive days. We also investigated the localization of type 2 innate lymphoid cells (ILC2).

Methods: Papain was injected into the tympanic cavity for 12 consecutive days. After deep anesthesia, the temporal bone was removed after the final injection within 24 hours, and serial sections were prepared. The specimens were examined using HE staining, Alcian blue staining, and immunohistochemistry.

Results: Marked eosinophil infiltration was observed in the submucosa of stimulated group, along with mucin hyperproduction containing eosinophils. ILC2 (ST2R+/CRTH2+/CD25+) cells were significantly increased in the stimulated group compared to controls.

Conclusion: This papain-induced EOM model newly established demonstrates key pathological features of type 2 inflammation with ILC2 activation, eosinophilic infiltration, and mucin hyperproduction. This model is expected to lead to further studies on the pathology and treatment of EOM.

IS-090 Loss of peptidylarginine deiminase 4 in T follicular helper cells dysregulates humoral responses

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T follicular helper (Tfh) cells, a subset of $CD4^+$ T cells, are essential for the formation of germinal centers in lymphoid organs, which shape humoral immunity. Our recent research identified that peptidylarginine deiminase 4 (Pad4), an enzyme responsible for converting protein arginine residues to citrulline residues, is highly expressed in Tfh cells. However, the functional role of Pad4 in regulating Tfh cells remains unclear. To address this, we generated CD4-specific Pad4-deficient ($CD4^{Cre/+}Pad4^{fl/fl}$) mice and examined their Tfh-related immune responses. Following immunization with sheep red blood cells (SRBCs), these mice exhibited significantly lower levels of SRBC-specific antibodies compared to control ($CD4^{+/+}Pad4^{fl/fl}$) mice. Consistent with this, $CD4^{Cre/+}Pad4^{fl/fl}$ mice also showed reduced numbers of total Tfh cells, $ICOS^+$ Tfh cells, germinal center B cells, and plasma cells. Proteomic analysis further revealed a citrullinated protein modification in human tonsil Tfh cells. These findings indicate that Pad4 plays a critical role in regulating Tfh cells and promoting antigen-specific humoral immunity.

IS-091 Differential RPS26 gene expression and the role of RPS26 gene in sublingual immunotherapy patients.

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Sublingual immunotherapy is an effective treatment, there are currently no predictive factors to determine its success. We analyzed mRNA expression using single cell RNA sequences. The RPS26 gene was found to be higher in cases where the treatment was effective. Using RT-PCR, RPS26 gene expression was still higher in the responder. Further examination using Flow Cytometry and EISA confirmed changes in immune cells and cytokine levels. The percentage of regulatory cells, Tr1 (type 1 regulatory) cells and follicular regulatory T (Tfr) 2 cells, was increased in responder. IL-10 production was increase before and after treatment. When the RPS26 gene was knocked down using siRNA, the percentage of dead cells in response to antigen stimulation increased and IL-10 production after antigen stimulation was decreased, suggesting that the RPS26 gene may be involved in regulatory cell stability. We found a strong correlation between TET2 gene expression and RPS26 gene expression. TET2 gene is involved in the stability of Foxp3+ Treg cells. I hope that the RPS26 gene can be used as a biomarker to predict the success of sublingual immunotherapy before treatment begins.

IS-092 Up-regulation of CXCR3 on tonsillar T-cells in patients with IgA nephropathy

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IgA nephropathy (IgAN), the most common primary glomerulonephritis, is associated with the tonsils, although direct evidence linking them as a focal point remains limited. Recent studies have implicated CXCR3-positive T cells in IgAN pathogenesis. This study investigated CXCR3 expression in tonsillar T cells in patients with IgAN. Immunohistochemistry showed a higher CXCR3-positive cell presence in the interfollicular tonsillar areas of IgAN patients than in non-IgAN controls. These cells and the CXCR3 ligand IP-10 were also detected in the affected renal glomeruli. Flowcytometry confirmed significantly higher proportions of CXCR3 CD3-double positive cells in the tonsils of patients with IgAN, particularly in those who achieved clinical remission after tonsillectomy. Additionally, these cells demonstrate increased chemotactic responses to IP-10 in patients with IgAN. Tonsillectomy reduced CXCR3 CD3-double positive peripheral mononuclear cells in IgAN patients but not in controls. These findings suggest that CXCR3 CD3-double positive tonsillar cells migrate to renal lesions via the bloodstream and contribute to glomerulonephritis development.

IS-093 Deep Learning Predicts Recovery in Post-Viral Olfactory Dysfunction Using fMRI and Microbiome Data

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Purpose: Post-viral olfactory dysfunction (PVOD) impacts quality of life. This study developed a deep learning model integrating fMRI and microbiome data to predict recovery. Methods: We analyzed 732 PVOD patients' fMRI data (OpenNeuro) and 16S rRNA microbiome profiles (Qiita). fMRI features included olfactory bulb activation and connectivity metrics, while microbiome features encompassed diversity indices and bacterial abundances. A hybrid neural network combined convolutional layers for fMRI data with a transformer-based model for microbiome profiling. Data were split into 70% training, 15% validation, and 15% testing with five-fold cross-validation. Results and Discussion: The model achieved 88.2% accuracy (95% CI: 86.5%-89.9%) and an AUC of 0.87 (95% CI: 0.85-0.89). Recovery of normosmia within 12 months was predicted in 75.6% of cases. Increased alpha diversity and Lactobacillus abundance were associated with recovery ($p = 0.04$). fMRI data showed olfactory bulb activation strongly predicted recovery (OR = 2.45, 95% CI: 1.96-3.12). Conclusions: This model offers a novel tool for predicting PVOD recovery, enabling personalized management strategies.

IS-094 mRNA-LNP Vaccination Induces Systemic Immunity Against HPV-positive Head and Neck Cancer

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Messenger RNA (mRNA) vaccines show promise in cancer immunotherapy by activating innate and adaptive immunity, yet the cellular and molecular dynamics remain poorly understood. Using single-cell RNA sequencing (scRNA-seq), we characterized the systemic immune response to HPV-targeted mRNA-lipid nanoparticle (LNP) vaccination in a murine model of HPV-positive head and neck squamous cell carcinoma (HNSCC). Our study revealed coordinated immune remodeling across the tumor microenvironment (TME), tumor-draining lymph nodes (TDLNs), spleen, and blood. A distinct interferon-stimulated gene (ISG) signature was identified in TDLNs, driven by the LNP component, triggering rapid immune activation. Additionally, vaccination induced an antigen-specific burst of immune cell cycling, leading to tumor control through systemic coordination of anti-tumor cell differentiation. These findings deepen our understanding of mRNA-LNP vaccine-mediated immune responses and suggest potential strategies to enhance vaccine efficacy in HPV-related cancers.

IS-095 Improvement of respiratory symptoms in patients with rare diseases treated with RAMPA therapy

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We report the expansion of respiratory tracts in children with rare diseases such as Down syndrome, Chiari malformation, and Antley-Bixler syndrome after treating RAMPA therapy (RT). RT is a craniomaxillofacial growth guidance method using an extraoral appliance for anterosuperior protraction and an intraoral expansion appliance. This treatment aims to restore the sphenoid bone and correct the secretion of various hormones within the pituitary gland. A patient with DS was suffering from sleep apnea, but experienced the opening of the airways as the sinus volume increased, allowing the nose to pass through, relaxing the curved external auditory canal that is characteristic of DS, and allowing earwax to be released naturally. A girl, suspected of having Antley-Bixler syndrome, was complaining of nasal congestion, snoring, otitis. The airway volume increased significantly. Symptoms such as nasal congestion, snoring, otitis were significantly improved. An 11-year-old boy who was diagnosed with Chiari malformation due to cerebellar damage at birth and cerebellar descent into the spinal canal. It increases the volume of the nasal cavity and paranasal sinuses and improves nasal diseases.

IS-096 Congenital Nasal Pyriform Aperture Stenosis: An Endeavor for Improved Respiratory Health

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Congenital Nasal Pyriform Aperture Stenosis (CNPAS) is a rare condition caused by bony overgrowth of the maxillary nasal process, leading to neonatal respiratory distress. This case series presents three cases managed at our center, emphasizing surgical approaches and post-operative care. Case 1, a term neonate with severe nasal obstruction, underwent combined sublabial and endoscopic repair with stent placement, achieving airway patency despite minor synechia during follow-up. Case 2 featured a late preterm infant with craniofacial anomalies and hypopituitarism, requiring multiple revisions to manage restenosis and synechia, eventually stabilized with silicone stents. Case 3, a child with Apert syndrome and diencephalic abnormalities, demonstrated persistent stenosis post-secondary care, necessitating surgical dilatation and synechia release over multiple procedures. Multimodal surgical techniques, coupled with careful stent management and follow-up, led to improved respiratory outcomes. This series highlights the complexities of CNPAS management and underscores the need for tailored, multidisciplinary strategies to optimize patient outcomes.

IS-097 Acute drooling & aphonia of antrochoanal polyp and literature review

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Introduction: Acute drooling is a debilitating oondition which are due to swallowing incoordination. Drooling with aphonia can arise from obstruction commonly by pathology in aerodigestive tract.

Antrochoanal polyp (AC) polyp classically cause unilateral nasal obstruction with rhinitis. It has scarcely reported to cause significant swallowing-voice dysfunction. It is necessary to perform a nasoendoscopy to locate the origin.

Case Report: A 19 year-old lady with acute drooling, dysphagia and aphonia for 2 days. She has no breathing difficulties or fever. She has infrequent minimal left sided epistaxis and nasal blockage for 1 year. Throat examination showed a huge mass sitting on the tongue. The origin was from the left maxillary sinus. Immediate steroid and antibiotic were commenced in acute monitoring unit and her symptoms resolved after the second dose of the medication. An interval polypectomy was done with histopathologically confirmed inflammatory polyp.

Conclusion: Acute drooling and aphonia can cause significant psychosocial distress. This rare and complex sequelae of antrochoanal polyp needs to be recognized urgently as it can also cause obstructed airway.

IS-098 The rare entity of sinonasal Glomangiopericytomas

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Glomangiopericytoma (GPC) represent 0.5% of sinonasal neoplasms. It is a highly vascular soft tissue tumor arising from pericytes-modified smooth muscle cells that surround capillaries in the sinonasal region. It is a clinically and histologically distinct from haemangiopericytomas. GPCs have borderline-low malignant potential. Despite recommendations for complete surgical excision of tumor, the local recurrence rate is 17%.

A 68-year-old lady presented with recurrent left epistaxis. Nasoendoscopy and imaging revealed a soft tissue lesion at the sphenoethmoidal recess. The tumor was excised endoscopically. As submucoperiosteal dissection was carried out from the septal mucosa towards the anterior face of the sphenoid, the tumor was found to be pedicled on the posterior septal branch of sphenopalatine artery. Despite adequate intraoperative haemostasis, massive epistaxis ensued a few hours after the operation, requiring repeat examination under anaesthesia and haemostasis.

We discuss the anatomy and histology of glomangiopericytomas, therapeutic principles, the challenges of resection, and the current literature on pre-operative angioembolisation.

IS-099 Steroids or Scalpel? Treatment Challenges in IgG4-Related Sinonasal Tumors

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Background: Sinonasal Immunoglobulin G4-related disease (IgG4-RD) is an extremely rare entity, which can lead to both bony and soft tissue invasion. It is characterized by widespread inflammation and fibrosis due to an unknown autoimmune component. In this article, we discuss a complex case of sinonasal IgG4-RD and the difficulties encountered in managing this patient.

Case: A 38-year-old Siamese man presented with episodes of right sided epistaxis for a year. His symptoms worsened with progressive swelling of the right cheek and nasal blockage. He underwent two surgeries, after which the diagnosis was established as an IgG4-related sinonasal tumor. The patient was referred to medical team for treatment. However, despite high-dose corticosteroids and immunosuppressants, the swelling and bleeding worsened. Considering the poor response to therapy, surgical tumor debulking was performed.

Conclusions: Sinonasal IgG4-RD is exceedingly rare among other IgG4-RD and varied in its clinical presentation, making it a difficult disease to diagnose and manage. Variable options of treatment should be considered if the patient does not respond to the initial management plan.

IS-100 Combined approach and transfrontonasal mopping of frontal sinusitis with Rochon-Duvigneaud Syndrome

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[Background] Sinusitis with orbital abscesses often requires urgent surgical intervention commonly endoscopic sinus surgery with orbital decompression. We present a case of frontal sinusitis with superior orbital wall dehiscence and subperiosteal abscess complicated with Rochon-Duvigneaud Syndrome where combined external and endoscopic approach with transfronto-nasal mopping method was used to drain the abscess.

[Case] A 56 years old lady presented with 2 days history of left eye drooping and proptosis following 1 week of running nose and cough. Examinations noted patient had left eye swelling with iii, iv and vi cranial nerve palsy. Urgent CT scan showed left frontal sinusitis with left superior orbital wall dehiscence and adjacent subperiosteal abscess. In view of the location of dehiscence and abscess, combined external approach with brow incision and endoscopic Draf iia sinus surgery had to be done, the thick secretion was further removed using transfronto-nasal mopping. All symptoms and cranial nerve palsies resolved 1 day after surgery.

[Conclusions] For complicated sinusitis, combined approach with transfrontonasal mopping can be a good surgical option.

IS-101 Olfactory recovery after endoscopic endonasal transsphenoidal surgery for pituitary lesions

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Objective: Evaluate olfactory outcome in pituitary lesions after endoscopic endonasal transsphenoidal surgery. Methods: Olfactory function assessed subjectively with Visual Analogue Scale (VAS) & objectively with "Smell and Scratch" kit prior surgery, 6 weeks & 6 months post surgery. Results: 14 patients included in study, 57% females & 43% males. 13 cases were pituitary adenoma & 1 case of pituicytoma, while 64.3% were non-secreting tumours & 35.7% secreting type. Average tumour diameter operated is 33.8mm with 70% of suprasellar extension. 9 cases had intraoperative CSF leak & repaired with nasoseptal flap. Smell test kit resulted no changes in smell test pre-surgery ($p=.29$), but patient's perception on olfaction significantly reduced by VAS score pre-surgery (mean = 8.79) & 6-weeks post-surgery (mean = 6.43, $p=.006$) while improved significantly 6-weeks post-surgery to 6-months post-surgery (mean = 7.5, $p=.01$). No other significant changes seen between age, gender, tumour location & flap usage intraoperatively. Conclusion: Olfactory outcome post-surgery showed no significant changes objectively but subjectively, patient's olfaction evaluated with VAS had shown notably affected.

IS-102 Evaluate The Outcomes Of Modified Endoscopic Medial Maxillectomy At ENT Hospital HCMc

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Purpose: Evaluate The Outcomes Of Modified Endoscopic Medial Maxillectomy (MEMM).

Methods: A retrospective and prospective study describing a series of cases with 96 maxillary sinuses of 90 patients who underwent MEMM from 2019 to 2022 at ENT Hospital HCMC.

Result: In 90 cases, 60 patients had previous maxillary sinus surgery. The most common causes for MEMM are mucoceles (42.2%), recalcitrant maxillary sinusitis (33.3%). The mean follow-up time was 12.58 months. Preoperative and postoperative SNOT-22 scores of patients who underwent MEMM are 9.91 and 4.99. There was a statistically significant reduction of Lund Kenedy scores for all durations of follow-up. 67.7 % reported complete or significant improvement, 33.3% reported partial improvement, and 0% reported worsening. Two cases had nasolacrimal duct injury and postoperative bleeding. All patients had good disease control with no clinical evidence of recurrences.

Conclusion: The goals of surgery: complete extirpation of all allergic mucin and fungal debris, permanent drainage and ventilation for the affected sinuses while maintaining intact mucosa, and postoperative access to the previously diseased areas.

IS-103 A systematic review and network meta-analysis of analgesic modalities in sinonasal surgery

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Aim: We aim to determine the most effective analgesic modality after sinonasal surgery.

Methods: We included randomised controlled trials of patients with endoscopic sinonasal surgery who received oral, topical, nerve block, intravenous (IV) or combination analgesia. Frequentist network meta-analysis and pair-wise meta-analysis were used to compare the post-op pain scales (e.g., visual analogue scale (VAS)) of different oral drugs.

Results: 29 studies with 2217 participants were included for analysis. At 0 minutes and 2 hours post-op, based on SUCRA values, nerve blocks (0.625) had the highest probability of having the lowest VAS score. At 4 hours and post-op day 1 (POD 1), oral analgesia (0.535) and IV analgesia (0.576) had the highest probability respectively. On POD 2 and 3, NSAID group had a significantly lower VAS score than the APAP group (POD 2 (CI −1.33, −0.54), POD 3 (CI −1.26 to −0.51)).

Conclusion: Peripheral nerve blocks are the most effective for pain relief up to 4 hours post-op. From 4 to 6 hours post-op, oral analgesia is most effective. At POD 1, IV analgesia provided lasting analgesia. Oral NSAIDs are better than paracetamol for pain on POD 2 and 3.

IS-104 Effectiveness of modified septal extension graft in nasal tip projection and rotation in Rhinoplasty

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Background: Modified septal extension graft is effective method to address & maintain nasal tip projection.

Aim: Evaluate the effectiveness of modified septal extension graft in nasal tip projection & rotation.

Patients & methods: Prospective non randomized interventional cohort study. 23 patients underwent a primary rhinoplasty using modified septal extension graft. These patients were followed at immediate postoperative & for 6 months later for changing in their results 7complications.

Results: Nearly all the patients had achieved their satisfied nasal tip projection & up rotation with post-operative Goode ratio mean change from (0.57) to (0.67) & nasolabial angle mean change from (91.13) to (112.87), which are statically significant with unremarkable changes over the next 6 months .Except for one case who developed nasal tip deviation with remark reduction in projection.

Conclusion: Modified Septal Extension Graft is a valuable technique to gain a diverse range of nasal tip projection & rotation independently with the ability to preserve those changes postoperatively. With good handling and designing of the Graft, its potential complications can be reduced to a great extent.

IS-105 Using Caudal Batten Grafis in Septoplasty at Cho Ray Hospital, Vietnam 2023-2024

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Purpose: This study assesses the effectiveness of septoplasty with autologous batten grafting at Cho Ray Hospital, Ho Chi Minh City, Vietnam from 2023 to 2024.

Methods: A prospective study of 28 patients undergoing septoplasty with autologous batten grafts at Cho Ray Hospital from 2023 to 2024.

Results and Discussion: The mean age of combined group was 34.55. Most patients were aged 18-40 (71.4%) and female (64.3%). The most common symptoms were nasal congestion (100%), rhinorrhea (75%), headache (35.7%), and olfactory dysfunction (28.6%). Surgeries were approximately 30-40 minutes, using septal cartilage (78.6%) for grafting. Intraoperative complications included unilateral mucosal tear (32.1%), while postoperative complications were minimal, with hematoma and infection each at 3.6%. NOSE scores improved significantly, from 66.22 ± 12.43 preoperatively to 4.43 ± 3.54 one month after surgery. Endoscopic evaluation showed post-op improved nasal mucosa and ostiomeatal complex.

Conclusions: Septoplasty with autologous batten graft is an effective method, especially for caudal septal deviation, with minimal complications.

IS-106 Challenges in Managing Congenital Vallecular Cysts: Diagnosis, Surgery, and Outcomes

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Background: Vallecular cysts are rare but can cause significant airway obstruction and feeding difficulties in neonates and infants. Management is challenging due to potential recurrence after surgery.

Case: We present a case series of three pediatric patients with vallecular cysts. All presented with noisy breathing, feeding difficulties, and failure to thrive. Diagnosis was confirmed by flexible nasopharyngolaryngoscopy (FNPLS) in two cases. Surgery was performed using a transoral endoscopic approach: marsupialization in one case and complete excision in the others. Histopathology confirmed benign epithelial-lined cysts. Postoperatively, all patients improved and transitioned to oral feeding after swallowing evaluation. One patient had recurrence, requiring a second surgery.

Conclusions: Early diagnosis and prompt surgical intervention are essential in managing vallecular cysts in infants. FNPLS is an effective diagnostic tool, and complete excision is the preferred treatment. Recurrence may occur, emphasizing the importance of precise surgery and close follow-up.

IS-107 How We Salvage the Difficult Airway in Laryngeal Atresia/Tracheal Agenesis

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Laryngeal atresia and tracheal agenesis are rare and lethal congenital malformation. The classical signs of congenital high airway obstruction syndrome (CHAOS) may not be detected at prenatal examinations. Hence, we usually encounter tracheal agenesis unexpectedly. We collected three cases of tracheal agenesis neonates. All of them were preterm neonates, who presented with respiratory distress without auditory crying. We failed to intubate the endotracheal tube into the larynx despite the assistance of GlideScope. Laryngeal atresia or tracheal agenesis was suspected according to the clinical presentations, and the diagnosis was subsequently confirmed by fiberbronchoscopy and computed tomography. In these three cases, we attempted to intubate the endotracheal tube into the esophagus during resuscitation. The oxygen saturation measured by pulse oximeter could maintain well surprisingly. The airflow passed through the tracheo-esophageal fistula and ventilated the lungs. Unfortunately, all the cases expired without receiving further surgical correction of tracheal agenesis. Thus, multidisciplinary team cooperation should be considered to optimize the strategy of airway.

IS-108 Clinical assessment of laryngomalacia and the role of laryngeal ultrasound

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Stridor in infants is a common referral to an Otorhinolaryngologist and laryngomalacia is the most common cause of congenital stridor. We conducted a study to evaluate laryngomalacia among stridorous infants and to validate laryngeal ultrasound (LUS) as a diagnostic tool. We conducted a study on infants referred to the ORL department for stridor in Hospital Universiti Sains Malaysia. They were assessed upon referral including FNLPS. Variables were also collected and analysed. Scoring system was used to classify the disease severity, laryngoscopic score and types of laryngomalacia. Within a week, patients were sent to LUS for assessment. Total of 46 patients met the study criteria. The proportion of laryngomalacia was 96.7% (44 patients). LUS in laryngomalacia had sensitivity, specificity, positive predictive value, and negative predictive value of 97.4%, 100%, 100%, and 66.7%, respectively. Laryngomalacia continues to be the most common cause of congenital stridor. FNPLS laryngoscopic score also has association with severity of laryngomalacia. LUS is reproducible, reliable, and non-invasive with a high sensitivity and specificity to be considered as an adjunct diagnostic tool for stridor.

IS-109 Paediatric tracheostomy and its effect on parental mental health status

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Purpose: This study aims to assess parental mental health status when caring for children with tracheostomy.

Methods: This is a cross-sectional study involving 29 parents and 1 guardian of children with tracheostomy. Beck's Anxiety Inventory (BAI) and Beck's Depression Inventory (BDI) questionnaires were used to assess symptoms of anxiety and depression. Perception and understanding of tracheostomy procedure were also explored using a questionnaire (PUQ).

Results and Discussion: Almost half of the respondents' scores (46.7%) were within mild to severe anxiety groups on BAI questionnaire. One-third of respondents' scores (23.3%) were within mild to severe depression on BDI questionnaire. There was no statistically significant difference between respondents' BAI and BDI scores to sociodemographic data and their perception and understanding of tracheostomy procedure.

Conclusions: Parents and guardians of children with tracheostomy can develop mental health illness due to physical and emotional exhaustion. Hence, it is important to consider parents' mental health as part of holistic management of children with tracheostomy.

IS-110 Comparative Evaluation of FNPLS with Laryngeal Ultrasound for Assessment of Pediatric Dysphonia

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Intro: This study evaluates ultrasound's sensitivity and specificity in detecting conditions like laryngomalacia, valleculae cysts, vocal cord nodules, and paralysis.

Objective: To evaluate the diagnostic accuracy of ultrasound (US) in comparison to laryngoscopy for identifying laryngeal disorders in pediatric patients.

Methods: A cohort of 36 participants was assessed using both laryngoscopy and ultrasound. Sensitivity, specificity, and inter-rater reliability were analyzed for each condition.

Results: Ultrasound demonstrated excellent sensitivity and specificity for laryngomalacia (90% and 93.75%, respectively) and valleculae cysts (100%). For vocal cord nodules, sensitivity was 90% and specificity 92.31%, while vocal cord paralysis showed a lower sensitivity of 25%, despite 100% specificity. The inter-rater agreement yielded a substantial Kappa coefficient of 0.770, highlighting strong concordance between diagnostic modalities.

Discussion: Ultrasound is a reliable, non-invasive tool for diagnosing most laryngeal disorders with high sensitivity and specificity.

Conclusion: Ultrasound offers a non-invasive, accurate alternative to laryngoscopy, with potential for further refinement.

IS-111 A case of inoperable HPV-related multiphenotypic sinonasal carcinoma well-responded to radiotherapy

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HPV-related multiphenotypic sinonasal carcinoma (HMSC) is a rare neoplasm, which is histologically similar to adenoid cystic carcinoma. It is characterized by its association with HPV-33, and rarely occurs in the sphenoid sinus.

A 58-year-old man presented with a chief complaint of diplopia. Physical examination revealed right oculomotor nerve and abducens nerve palsy. CT scan showed the tumor developing in the right sphenoid sinus and extending into temporal lobe and cavernous sinus with destruction of clivus. The tumor was inoperable because it surrounded the internal carotid artery. We obtained a specimen under local anesthesia, and we diagnosed the tumor as HMSC. After consulting with radiologists, it was decided to treat the patient with X-ray irradiation alone. The oculomotor nerve palsy showed improvement after 70 Gy of irradiation. Approximately two months after the end of the treatment, PET/CT scan revealed shrinkage of tumor and significant decrease in the concentration. We consider that X-ray irradiation may contribute to the control of inoperable HMSC and improve the functional impairment due to tumor.

IS-112 Study of non-invasive fungal rhinosinusitis in the Japanese population

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The purpose of this study is to investigate clinical features in non-invasive fungal rhinosinusitis in a large sample of Japanese patients. We analyzed 101 cases with non-invasive fungal rhinosinusitis from our facility, and reviewed 1094 cases about the same disease from 31 publications collected from Ichushi-Web provided by NPO Japan Medical Abstracts Society. The mean age of the patients was over 60 years old in both groups. In the male to female ratio, female was dominant. Frequency of immunocompromised host was 21.8% and 22.6% respectively. Pain, nasal obstruction, rhinorrhea and postnasal drip were frequently observed symptoms in both groups. The most common finding of preoperative computed tomography scan was calcification in the affected sinus. Preoperative T2-weighted magnetic resonance imaging showed little or no signal in the fungus area in almost all cases. With regard to treatment, in our cases, 100% underwent surgery. In the 31 publications, 97.4% of the cases had surgery. Recurrence after operation was found in 3.9% and 3.1% respectively. Although the ratio of recurrence was low, it was necessary to detect recurrence in the immunocompromised host.

IS-113 The role of complement component 3 in regeneration of olfactory receptor neurons

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Olfactory receptor neurons (ORNs) are characterized by high regenerative capacity even after birth. Complement component 3 (C3) has been shown to promote tissue regeneration, so we hypothesized that C3 activates innate immunity and also promotes regeneration of ORNs. We used C3 knockout (KO) and wild-type C57BL/6J mice in this study to examine the regeneration process after methimazole-induced olfactory disorder. C3 KO mice showed delayed olfactory recovery with lower olfactory epithelial thickness. In C3 KO mice, ORN maturation was delayed in association with increased accumulation of immature ORNs. In the normal ORN regeneration process, undesirable immature ORNs are produced and eliminated by apoptosis. C3 deficiency reduced neutrophil induction during ORN regeneration, suggesting the involvement of C3 in ORN regeneration through neutrophil-dependent elimination of undesired ORNs. C3 is therefore indicated to promote ORN regeneration by preventing the accumulation of immature ORNs. Our results indicate that C3, which is activated during pathogen infection, also promotes recovery from ORN damage. These findings may lead to new therapeutic strategies for olfactory disorder.

IS-114 Histological analysis of hypertrophied adenoids focusing on the effect of nasal spray steroids

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Hypertrophied adenoids cause upper airway narrowing and eustachian tube dysfunction leading to sleep apnea syndrome and otitis media with effusion. Many clinical studies have reported the effectiveness of medical treatment for hypertrophied adenoids. In particular, nasal spray steroids can be thought to act directly on the adenoid epithelium and exert an anti-inflammatory effect. However, few studies have histologically investigated the changes nasal steroids bring to the adenoids using collected adenoid tissue.

Herein, using specimens collected from patients with adenoid hypertrophy, we analyzed and compared the expression of steroid receptors and the number of eosinophils in the adenoid mucosal epithelium and lymphoid follicles between the patients who received nasal steroids before surgery and those who did not.

In addition to the results of this study, literature reviews of effective medical treatments for hypertrophied adenoids and the pharmacological effects of these drugs will be reported in our presentation.

IS-115 Human umbilical mesenchymal stem cells improve olfactory dysfunction after chronic rhinosinusitis

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[Purpose] Chronic rhinosinusitis (CRS) is defined as sinonasal mucosal inflammation lasting at least 12 weeks. Some patients with CRS also have olfactory dysfunction, and neuronal olfactory dysfunction will not necessarily recover. We aimed to investigate whether human umbilical cord mesenchymal stem cells (HUMSC) can improve olfactory dysfunction after CRS.

[Methods] We used ovalbumin and Aspergillus protease in the nasal cavities of mice to establish a model of eosinophilic infiltration-type CRS with olfactory dysfunction. We then observed whether sinus inflammation, olfactory function, and olfactory bulb inflammation could be improved by administering HUMSC.

[Results and Discussion] The results confirmed that HUMSC reduced eosinophilic and neutrophilic infiltration in the sinonasal mucosa, improved olfactory function, reduced damage to olfactory sensory neurons, and decreased the expression of inflammatory genes in the olfactory bulb.

[Conclusions] HUMSC show potential as a therapeutic approach for treating CRS with olfactory dysfunction.

IS-116 Clinical utility of Th2-related biomarkers for local allergic rhinitis: A meta-analysis

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Aim: Th2-related biomarkers may replace nasal provocation test (NPT) as the diagnostic tool for local allergic rhinitis (LAR). This study seeks to assess the clinical utility of these markers and rank their diagnostic accuracy for LAR.

Methods: Systematic searches were conducted across five electronic databases. Pooled outcomes, including sensitivity, specificity, positive likelihood ratio (PLR), negative likelihood ratio (NLR), and diagnostic odds ratio (DOR), were calculated. Relative diagnostic outcomes between index tests were computed using the indirect comparison of modalities.

Results: Twenty-one studies met the inclusion criteria. Nasal eosinophilia detected through nasal cytology had the highest sensitivity (0.69) but had the lowest specificity (0.56). Nasal-specific IgE (nsIgE) had the lowest sensitivity (0.48) but the highest specificity (1.00). The basophil activation test (BAT) had a sensitivity of 0.56 and a specificity of 0.94. Among the three index tests, nsIgE ranked the highest for PLR and DOR while BAT ranked the lowest for NLR.

Conclusions: None of the existing Th2-related biomarkers can serve as a substitute for NPT in diagnosing LAR.

IS-117 A clinical comparative study of an outpatient treatment group for maxillary sinus fungus ball.

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This is the first report of a case series of maxillary sinus fungus balls (FB) that were cured using an outpatient procedure. Endoscopic sinus surgery (ESS) was performed under general anesthesia in patients with no exposed fungal masses in the membranous portion of the maxillary sinus. Among the maxillary sinus FB, we compared the outpatient treatment group (Group O) and the ESS group (Group S). We hypothesized that in cases where the FB was in contact with the maxillary sinus membranous portion, the self-cleaning ability of the maxillary sinus mucosa could excrete the FB and that outpatient treatment might be a method to assist in this process. We are convinced that the treatment of maxillary sinus FB by outpatient procedures is less invasive and simpler, even for elderly patients, and is very beneficial in terms of medical cost.

IS-118 Sinonasal Oncocytic Papilloma: Clinical Features, Surgery, and Outcomes from a Single-Center Series

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Purpose: Sinonasal oncocytic papilloma (SNOP), a rare variant of sinonasal papilloma, is underreported in the literature. This single-center retrospective series systematically examines its clinical characteristics, enhancing understanding of this uncommon condition.

Methods: This retrospective study reviewed SNOP cases diagnosed at a tertiary medical center from 2018 to 2024. Key factors such as patient demographics, clinical presentations, surgical approaches, imaging findings, and treatment outcomes were analyzed.

Results: Study included 19 patients (12 males, 7 females), with a mean age of 59 years (range: 27-81). Nasal obstruction was the most common symptom, reported by 89% of patients. The maxillary sinus was the primary tumor site in most cases, with the majority managed through medial maxillectomy. Notably, no recurrences or malignant transformations occurred during follow-up, highlighting the treatment's effectiveness and the tumor's favorable prognosis.

Conclusions: Sinonasal oncocytic papilloma is rare. This study is the first to report a sizable cohort with no recurrences. Complete, meticulous surgical excision is essential to minimize recurrence risk.

IS-119 Bilastine for the treatment of allergic rhinitis: A Systematic Review and Meta-analysis

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Objective: The aim of this review was to determine the efficacy and safety of bilastine in treating AR. Methods: We searched the Cochrane Central Register of Controlled Trials (2020, issue 2) and MEDLINE (1966 to November 2020) and Web of Science (1985 to November 2020). The primary outcomes assessed were total symptom score (TSS), nasal symptom score (NSS) and non-nasal symptom score (NNSS). The secondary outcomes were discomfort due to rhinitis, quality of life (QOL) and adverse events. The meta-analysis was done using Review Manager 5.3 software. This study is registered with PROSPERO (CRD 42019125401). Result: Bilastine was superior to placebo in improving TSS, NSS, NNSS, rhinitis discomfort score and QOL but has comparable efficacy with other OAHs in TSS, NSS, NNS, rhinitis discomfort score and QOL. There was no difference in adverse effects when bilastine was compared against placebo and other OAHs except for somnolence. Bilastine has fewer incidence of somnolence compared to cetirizine. Conclusion: Bilastine is effective and safe in treating the overall symptoms of AR with comparable efficacy and safety with other OAHs except it has less somnolence than cetirizine.

IS-120 Comparison of Sampling Methods for Assessment of Endotype in Chronic Rhinosinusitis (CRS) Patients

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Purpose: CRS is characterized by inflammatory endotypes but methods of sampling affect accessibility and ease of ascertaining endotype. However, the correlation between different sampling methods using multiple biomarker endotyping have not been extensively studied.

Methods: Ethmoid tissue, sponge-collected middle meatal (MM) secretions, and nasal lavage samples were collected from 159 CRS patients undergoing endoscopic sinus surgery (ESS). Spearman's correlation was used to compare biomarker levels across the three sampling methods. Principal component analysis (PCA) was utilized to assess similarities between the sampling methods.

Results: Some biomarkers (ECP, IL-13, IL-5, CXCL13, TNSF13B, CCL26) demonstrated stronger correlation across different sampling methods. PCA demonstrated that MM secretions had closer proximity to tissue than nasal lavage.

Conclusion: Each sampling method has its unique advantages and is suitable for different clinical and research situations. This comprehensive comparison enhances our understanding of the relationships between sampling methods and provides insights into how data from one method can be extrapolated to others.

IS-121 Olfactory cleft and middle meatus biomarkers predict post-surgical outcomes in CRS patients

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Purpose: Prior studies have measured biomarkers in the middle meatus (MM) or olfactory cleft (OC) in chronic rhinosinusitis (CRS) patients, but none have assessed their differential ability to predict post-surgical outcomes. We evaluated MM and OC biomarkers in predicting post-surgical disease severity.

Methods: Secretions from MM and OC along with clinical outcomes (Lund-Mackay (LM), CRS-PRO, and Total Olfactory Cleft Opacification (TOCO)) were collected from 92 CRS patients pre-and 6-12 months post-ESS. 26 inflammatory biomarkers were quantified using Luminex and ELISA. Biomarkers were selected to represent unique endotypes and linear mixed effect models were used for post-ESS outcome prediction.

Results: ECP, IL-13, and MIP3α represented severity, type 2, and type 1/3 inflammation respectively. MM ECP and IL-13 significantly predicted LM scores ($p<0.001$; $p=0.026$). OC ECP significantly predicted TOCO ($p<0.001$) and CRS-PRO Smell Item Score ($p=0.027$), whereas IL-13 only significantly predicted TOCO ($p=0.003$).

Conclusion: MM biomarkers predict radiographic severity and OC biomarkers predict olfactory function, suggesting region-specific biomarkers could inform CRS prognosis.

IS-122 The effect of living alone on hearing performance and the efficacy of hearing aid usage

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The aim of this study is to evaluate the impact of living alone, an aspect of social frailty, on hearing performance and the subjective efficacy of hearing aid use. Participants included individuals over 60 years of age with bilateral sensorineural hearing loss who were undergoing hearing rehabilitation. Comparisons were made between individuals living alone and those living with others, examining pure tone thresholds, speech discrimination, aided thresholds, aided speech discrimination, and subjective satisfaction. Multivariate analysis revealed that the group living alone had significantly lower unaided speech discrimination ($p=0.0097$). Additionally, this group showed significantly reduced subjective satisfaction with hearing aid use ($p=0.0467$). Living alone appears to negatively affect both unaided speech discrimination and subjective satisfaction with hearing aids compared with non-living alone peers. To optimize auditory compensation in hearing-impaired older adults living alone, it is crucial to address social frailty by facilitating regular conversational opportunities and improving access to ENT clinics.

IS-123 Psychiatric comorbidity in patients with tinnitus or auditory hallucination and sleep evaluation

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[OBJECTIVE] We reported psychiatric comorbidity (1375/1900, 72.4%) in patients with dizziness. In this study, we investigated about tinnitus or auditory hallucination. [METHODS] The subjects were 413 patients (167men, 246 women) with tinnitus and 39 patients (13 men, 26 women) with auditory hallucination. Psychiatric comorbidity was revealed in 77.5 % (320/413) with tinnitus and in 97.4% (38/39) with auditory hallucination. AhHI (Auditory hallucination Handicap Inventory), which is a revised version of THI, was used as an evaluation method for auditory hallucinations. [RESULTS] An evaluation of sleep disorders was effective using Insomnia Severity Index (ISI). Sound therapy was performed on 52 cases of tinnitus and 6 cases of auditory hallucinations. As a treatment for auditory hallucination, sound therapy, oral antipsychotic drug and long-acting injection (LAI) were effective. Shared Decision Making (SDM) was performed to increase treatment continuation rates. [CONCLUSIONS] We believe that neuro-otological evaluation and sleep evaluation are useful for treating tinnitus or auditory hallucinations, and that improving insomnia, reducing anxiety, sound therapy and SDM are also useful.

IS-124 Efficacy of Cochlear Implantation in Cochlear Nerve Deficiency Children-A Single Center Study

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Purposes: The objective of this research was to interpret and analyze the imaging, audiological features and cochlear implantation outcomes in cochlear nerve deficiency children.

Material and Methods: Retrospective analysis.

Results: 25 prelingual hearing loss children diagnosed cochlear nerve deficiency (CND), the age range from 1 to 15 (mean age, 5.04), underwent cochlear implantation at Ear Nose and Throat Hospital-Ho Chi Minh City (ENT hospital-HCMC) from 2016 to 2023. All children had sensorineural hearing loss (SNHL) from severe to profound degree. Magnetic resonance imaging (MRI) showed cochlear nerve hypoplasia in 76% and cochlear nerve aplasia in 24% of cases. Inner ear malformations were found in 52% of cases. The mean Categories of Auditory Performance (CAP) score at 1 year after surgery was 4.8. At 6 months and 1 year after surgery, the mean CAP score of the aplasia group was significantly lower than that of the hypoplasia group ($p<0.05$).

Conclusions: In cochlear nerve deficiency children, auditory perception and speech performance still improved after cochlear implantation. However, this progress was significantly limited in cochlear nerve aplasia group.

IS-125 Revision Cochlear Implantation in Baghdad Medical City: A Retrospective Study

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Objectives: To identify the rate of revision surgeries and re-implantations, evaluate the causes, and analysis of clinical and operative findings.

Methods: A retrospective study including 46 cases underwent revision surgeries out of 1144 patients had CI in the department of otolaryngology/Baghdad Medical City in the period from March 2009 to November 2019. The data were collected from 3 statistical record sources (the otolaryngology department records, operative theatre records, and hospital's main statistic department).

Results: Revision cochlear implantation ratio was 4%. Most of the cases were from pediatric age group (98% of cases with mean age of 6.77 years) with no difference between males and females (male to female ratio was 1.1: 1). The most common causes were non-device related (63%) while device related causes counted (37%). Re-implantation rate was (24%).

Conclusion: Revision CI surgeries in our center were within lower limits of the universal revision rates. Most commonly encountered cause for revision was wound infection with/without dehiscence followed by hard device failure. No significant complications recorded per and post operatively.

IS-126 Clinical performance of a prefabricated immunofluorescence assay for nasopharyngeal cancer screening

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Purpose: Epstein-Barr virus (EBV) IgA serology for viral capsid antigen (VCA) and early antigen (EA) aids early detection of nasopharyngeal cancer (NPC), resulting in improved survival. We evaluated the diagnostic performance of a prefabricated immunofluorescent assay (IFA) for NPC screening in high-risk individuals.

Methods: Sera from 96 biopsy-proven patients with NPC diagnosed at the outpatient clinic and 96 healthy family members were tested for EBV-VCA IgA and EBV-EA IgA using the prefabricated IFA from EUROIMMUN (EI) and the traditional immunofluorescence method.

Results and discussion: The AUC of EI EBV-VCA IgA and EBV-EA IgA was 0.907 (95% confidence interval [CI]: 0.894-0.965) and 0.898 (95% CI: 0.848-0.947), respectively. Combined testing with the prefabricated assay at a threshold of VCA ≥1: 320 or EA ≥1: 10 showed 92.7% sensitivity and 81.2% specificity. Overall, the traditional EBV-EA IgA assay demonstrated the best accuracy (sensitivity 91.7% and specificity 96.9%) at a threshold of ≥1: 5.

Conclusion: While the traditional IFA method was more accurate, the prefabricated IFA test kit can be a useful tool for NPC screening in high-risk populations.

IS-127 Auditory and Vestibular Outcomes in Nasopharyngeal Carcinoma: Proton vs. Arc Therapy

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Purpose: Auditory and vestibular impairments are common in nasopharyngeal carcinoma (NPC) patients after radiotherapy. This study compares auditory outcomes, including pure-tone audiometry (PTA), air-bone gap (ABG), and the Tinnitus Handicap Inventory (THI), as well as vestibular outcomes using the Dizziness Handicap Inventory (DHI), between Volumetric Modulated Arc Therapy (VMAT) and Intensity-Modulated Proton Therapy (IMPT).

Methods: A case-control study included 180 NPC patients: 90 treated with IMPT (70Gy; 45-85Gy) and 90 with VMAT (70Gy; 53-81Gy). Pre-and post-treatment assessments included audiometric tests and THI/DHI evaluations.

Results: IMPT yielded better auditory outcomes, including improved PTA air conduction ($P = 0.009$) and high-frequency thresholds ($P = 0.017$). IMPT also reduced DHI scores ($P = 0.043$) and ABG ($P = 0.033$), highlighting its advantage in preserving auditory and vestibular functions.

Conclusions: IMPT provides superior auditory and vestibular protection compared to VMAT, emphasizing its benefits for NPC radiotherapy.

IS-128 Efficacy of Salivary Ductal Irrigation in Head Neck Cancer Patients with Post-Irradiation Xerostomia

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[Purpose]: Post-irradiation xerostomia significantly impacts the quality of life in head and neck cancer patients, with limited efficacy from conventional treatments. This study evaluates the therapeutic potential of salivary ductal irrigation.

[Methods]: 147 patients with post-irradiation xerostomia treated between November 2020 and October 2022 were included. All underwent at least one successful salivary ductal cannulation and irrigation. Efficacy was assessed by improvements in subjective xerostomia symptoms and objective salivary amylase levels. Logistic regression analyzed factors influencing treatment response.

[Results]: The response rate was 74.8% for NPC patients and 65.6% for non-NPC cases, with no significant differences between groups. Age, gender, and disease stage had no significant impact on response. Responsive non-NPC patients showed significantly higher post-treatment salivary amylase levels.

[Conclusions]: Salivary ductal irrigation shows promise as a treatment for post-irradiation xerostomia in head and neck cancer patients. While predictive factors were not identified, the high response rate supports its use in patients unresponsive to standard therapies.

IS-129 When treatment kills; A case of Radiation-Induced Sarcoma

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Nasopharyngeal carcinoma (NPC) is native to Southeast Asia and radiotherapy is the primary mode of treatment. However, a rare and late outcome of RT is Radiation-induced sarcoma (RIS). The reported incidence of this tumour is 0.03-0.8 % and the prognosis is guarded with a 5-year survival rate of 30%.

We report a case of RIS in a 71-year-old Chinese lady who was previously underwent radiotherapy for Stage 1 NPC 23 years ago. She presented with visual disturbances and nasal blockage for two months. A nasoendoscopy revealed an irregular, friable tumour occupying the entire left nasal cavity. Histopathological examination revealed a high grade sarcoma with irradiation induced fibrosarcoma consistent with RIS. CT scan revealed an infiltrating tumour arising from left nasopharynx with intracranial involvement. Palliative chemotherapy was offered in view of inoperable disease.

The rarity and delayed presentation of RIS poses a diagnostic and treatment challenge for clinicians. Patients often succumb to the illness due to rapid progression of the disease rendering treatment options limited. Due to the disease latency period, lifelong surveillance of NPC patients is necessary.

IS-130 Primary Paraglottic Space Tumors-A Case Report and Scoping Review

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Aim: Cases of primary paraglottic space tumors are exceedingly rare, and exist mainly as case reports. We aim to summarize the existing cases of primary paraglottic tumors.

Materials and methods

A scoping review on paraglottic space tumors was conducted.

Results: The literature search found 28 reports of primary paraglottic space tumours. Most primary paraglottic space tumours present with dysphonia (48%) and the commonest histology was schwannoma (28%) and lipoma (24%). Surgical outcomes were inconsistently reported, of which only our case was complicated by chronic inspiratory stridor. A total of 7 cases had delayed voice recovery. No swallowing complications were reported. Neurofibromas result in higher risks of nerve injury, recurrence and malignant change than schwannomas. Detachment and removal of part of the thyroid cartilage during surgery may cause dehiscence of the vocal cord from the laryngeal framework hence affect cord mobility. Intraoperative prophylactic resuspension of the vocal cord to the remnant laryngeal framework may reduce risk of airway complications.

Conclusion: The surgical approaches and outcomes of primary paraglottic tumors are summarised.

IS-131 Extranodal High-grade B-cell lymphoma (HGBCL): A rare presentation

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Background: Lymphoma is the second most common malignancy in the head and neck after squamous cell carcinoma. It is classified into Hodgkin lymphoma (HL) and non-Hodgkin lymphoma (NHL). Extranodal involvement can occur in the salivary glands, nasal cavity, larynx, and oropharynx. Cutaneous B-cell lymphoma (CBCL) is a rare form of NHL, begins as systemic B-cell lymphoma spread to the skin. Extranodal HGBCL with CBCL features is infrequent presentation and need early recognition.

Case: We report a rare case of high-grade B-cell lymphoma (HGBCL) of the buccal with CBCL features in a patient who came with painful right buccal swelling for 2 weeks, followed by right lower face swelling for 1 week, left shoulder and supraclavicular swelling with skin discolouration for 2 days. Biopsy of the lesion helps in confirming the disease and hence proper treatment can be started.

Conclusion: This case highlights the importance of recognizing possibility of patients having lymphoma, even though the manifestation of the disease at the oropharyngeal and cutaneous levels is uncommon. Early biopsy and treatment are crucial to improve the prognosis.

IS-132 Risk Factor Analysis for Postoperative Recurrent Laryngeal Nerve Paralysis in Thyroid Cancer Surgery

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Thyroid cancer is one of the most common malignancies in the head and neck region, and surgery remains the primary curative treatment. While thyroid surgery offers young surgeons opportunities to gain experience in neck procedures, the prevention of recurrent laryngeal nerve (RLN) palsy is crucial. Preoperative risk assessment is essential to ensure safe surgical outcomes. In our department, postoperative complications of thyroid surgery are continuously monitored as a hospital quality indicator. A previous retrospective analysis at our institution suggested that the incidence of RLN palsy correlates with the malignancy and severity of the disease. In this study, we retrospectively analyzed 250 cases of thyroid cancer patients who underwent initial surgical treatment at our institution since 2018. The study aims to investigate the association between postoperative RLN palsy risk and factors such as disease characteristics, patient demographics, and surgical techniques. Our findings aim to enhance RLN palsy risk assessment and contribute to improved safety management in thyroid cancer surgery.

IS-133 Long-Term Cardiovascular Complications in T1-T2 Oropharyngeal Cancer: Surgery vs. (Chemo) Radiation

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Purpose: The long-term cardiovascular complications associated with primary surgery versus primary radiation therapy or chemoradiation therapy (RT/CRT) for early-stage oropharyngeal cancer (OPC) remain unclear. This study aimed to evaluate and compare the cardiovascular risks linked to these treatment modalities over an extended follow-up period.

Methods: This national multicenter cohort study utilized TriNetX data from 2010 to 2023 to assess cardiovascular complications in patients with T1-T2 OPC. A total of 4, 815 patients were identified, with functional outcomes assessed up to 10 years post-treatment. Propensity score matching yielded two balanced cohorts of 416 patients each, enabling direct comparisons.

Results: The surgery cohort had significantly lower risks of total cardiovascular complications (HR 0. 583, 95% CI: 0. 395-0. 860), arrhythmias (HR 0. 616, 95% CI: 0. 415-0. 914), thrombotic disorders (HR 0. 310, 95% CI: 0. 157-0. 613), and myocardial infarction (HR 0. 407, 95% CI: 0. 178-0. 929) compared to RT/CRT.

Conclusions: Primary surgery markedly reduces long-term cardiovascular risks compared to RT/CRT in T1-T2 OPC patients, supporting it as a preferred option in selected cases.

IS-134 Associations between immune-mediated diseases (IMDs) and the risk of oropharyngeal cancer

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Introduction: This study aimed to investigate the associations between immune-mediated diseases (IMDs) and the risk of oropharyngeal cancer.

Materials & Methods: A retrospective cohort study was conducted using data from 500, 371 participants from the UK Biobank. A total of 80 different IMDs were identified. Cox proportional hazards models were employed to assess their association, with adjustments for age, sex, smoking status, alcohol use, and sexual behavior.

Results: During the median follow-up of 12. 0 years, the study identified a significant association between certain IMDs and an increased risk of HPV-associated oropharyngeal cancer. Specifically, rheumatoid arthritis was associated with a markedly elevated risk of oropharyngeal cancer in women (HR = 5. 14, 95% CI: 2. 45 to 10. 77, $p < 0. 001$). No specific IMDs were found to be significantly associated with oropharyngeal cancer in men, although overall, participants with IMDs had a higher risk of HPV-related diseases compared to controls.

Conclusions: These findings emphasize the need for focused screening and preventive measures for HPV-associated cancers in patients with IMDs, especially those with autoimmune conditions.

IS-135 Swallowing Outcomes in Oral Tongue Squamous Cell Carcinoma: Upfront Brachytherapy versus Surgery

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Aim: This study assessed swallowing in oral tongue squamous cell carcinoma (OTSCC) cases who received brachytherapy followed by intensity-modulated radiotherapy and concurrent chemotherapy.

Methods: This cross-sectional study included 30 OTSCC cases [14 in the brachytherapy group (BG), 16 in the surgery group (SG)] from June 2022 to October 2023. Eligibility required imaging-confirmed complete response and disease-free for at least 6 months. Average follow-up was 13 months for BG and 34 months for SG. Swallowing was assessed using the Swallowing Capacity Scale (SCS), Eating Assessment Tool (EAT-10), and Penetration-Aspiration Scale (PAS) via Flexible Endoscopic Evaluation of Swallowing.

Results: The BG showed superior swallowing outcomes in SCS (mean score: 6. 5 vs. 4. 7, $p < 0. 01$) and EAT-10 (median score: 5 vs. 22, $p < 0. 01$). In PAS, BG outperformed in PAS-liquid (median 1 vs. 2, $p = 0. 02$) and PAS-semi-solid (median 1 vs. 2, $p = 0. 02$), but not in PAS-solid (median 1 vs. 1, $p = 0. 94$). In SG, 31% had oral phase arrest in PAS-solid (0% in BG, $p = 0. 03$), with 2 required tube feeding ($p = 0. 3$).

Conclusion: Upfront brachytherapy shows promising results for swallowing function in OTSCC cases.

IS-136 The prognostic value of worst pattern of invasion-5 on low-risk and early-stage oral tongue cancer

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Purpose. To evaluate prognostic value of worst pattern of invasion-5 (WPOI-5) for patients with pathologically early-stage and low-risk oral tongue squamous cell carcinoma (OTSCC).

Methods. Patients with early-stage, low-risk OTSCC (n＝224) treated between 2005 and 2016 were analyzed. WPOI-5, defined as tumor satellites ≥1 mm from the main tumor or closest satellite, was evaluated for its prognostic impact on cancer-specific survival (CSS) and locoregional recurrence-free survival (LRRFS). A WPOI-5-based nomogram was also developed for validation.

Results. For those with WPOI-5, the 5-year CSS and LRRFS were significantly inferior to those without WPOI-5 (both $p < 0.001$). In multivariate Cox model, WPOI-5 was observed to be an unfavorable prognosticator of 5-year CSS (HR: 6.908, $p = 0.006$) and LRRFS (HR: 14.91, $p < 0.001$). Including WPOI-5 improved the value of area under curves of the nomogram for 5-year LRRFS from 0.789 to 0.842.

Conclusions. Presence of WPOI-5 is a potentially risk factor for patients with pathologically early-stage and low-risk OTSCC, which might highlight the importance of clinical trial to investigate the role of adjuvant therapy for these patients.

IS-137 Lingual Lymph Nodes in Tongue Cancer: Implications for Compartmental Tongue Resection

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Purpose: Tongue cancer treatment remains challenging due to its complex anatomy and the limitations of traditional wide-margin resections. By performing compartmental tongue resection (CTS), this study aims to investigate the prevalence and metastatic involvement of lingual lymph nodes (LLNs)-structures not adequately addressed by traditional surgical techniques.

Materials and Methods: A cohort of 46 patients with T2-T4 squamous cell carcinoma of the tongue (AJCC 8th edition) underwent CTS. Resected specimens were pathologically examined for the presence of LLNs and their metastases. LLNs were classified into three anatomical compartments: space A (median), space B (paramedian), and space C (lateral).

Results: LLNs were identified in 14 patients (30.4%), with a total of 24 LLNs: 2 in space A (8.3%), 4 in space B (16.7%), and 18 in space C (75%). Metastatic LLNs were observed in 5 patients (10.9%), with 9 LLNs involved: 7 in space C (77.8%) and 2 in space B (22.2%).

Conclusions: The significant presence and metastatic potential of LLNs, particularly in the lateral space C, highlight the necessity of CTS to ensure effective oncological management in tongue cancer treatment.

IS-138 Augmentation therapy with aripiprazole for refractory vertigo including PPPD

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Some cases of intractable vertigo, including persistent postural paraesthesia vertigo (PPPD), may benefit from antidepressant medications. However, there are also cases in which antidepressants are inadequately effective. Aripiprazole is indicated as augmentation therapy in the treatment of depression when conventional antidepressants are ineffective. We report a case in which aripiprazole combined with conventional antidepressants produced improvement. The patient was a 41-year-old man who came to our hospital after receiving standard treatment for Meniere's disease at two clinics without improvement. His chief complaint was persistent dizziness and ear obstruction for more than three months. 58 points on the DHI, 17 and 11 points on the HADS for depression and anxiety, respectively, and 43 points on the NPQ. After initial treatment with vortioxetine and clonazepam, the patient's DHI improved to 18 points and her psychiatric symptoms were significantly alleviated. Other effective cases will be presented.

IS-139 Effectiveness of betahistine in residual dizziness for posterior canal BPPV, a double-blind RCT

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Introduction: After canalith repositioning procedure (CRP) for the treatment of BPPV, approximately 2/3 of patients experience residual dizziness symptoms. Betahistine is a histamine modulator and may improve vestibular function.

Objective: To compare the efficacy of betahistine in improving QoL and duration of residual dizziness in posterior canal BPPV after successful CRP.

Methodology: This study is a randomized double-blind placebo-controlled trial. Data was collected from 36 patients aged 18 to 80 years diagnosed with posterior canal BPPV and successfully treated with CRP between March 1, 2023, and October 31, 2024. VVAS, DHI, and the duration of residual dizziness were assessed at baseline, one-week, and one-month.

Results: Both VVAS and DHI scores showed significant improvement from baseline in both groups. In the betahistine group, 77.7% reported symptom improvement within one month, compared to 66.6% in the placebo but this was not statistically significant (p-value＜0.05).

Conclusion: Betahistine did not show a significant difference compared to CRP alone, but may benefit in reducing the duration of symptoms of BPPV when compared to CRP alone.

IS-140 Serum Otolin-1 and Vitamin D: Are They Reliable Early Outcome Indicators after Treatment of BPPV?

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Introduction: Otolin-1 and vitamin D are biomarkers for the diagnosis and prognosis of BPPV. Evidence previous studies has confirmed increased serum otolin-1 levels and decreased serum vitamin D levels in BPPV patients.

Methods: BPPV patients and without conditions affecting serum otolin-1 and vitamin D levels were recruited. All patients received repositioning maneuvers. Blood samples were collected on the day 0 and day 7±3 after the reposition procedure. Serum were measured by the EL ISA method.

Results: There were 21 patients. No differences were observed between pre-and post-treatment levels of serum otolin-1 (337; 330-348 and 340; 327-359 (median; quartile 1-3) pg/mL; p-value＝0.339) and Vitamin D3 (43.54; 19.15-60.04 and 32.16; 19.35-45.29 pg/mL; p-value＝0.543). Subgroup analysis between patients with positive and negative positioning tests at week 1 showed no differences in serum otolin-1 levels (335; 328-448 and 343; 319-360 pg/mL; p-value＝0.763) and Vitamin D3 levels (47.06±34.00 and 36.67±27.26 (mean±SD) pg/mL; p-value＝0.560).

Conclusion: No changes in serum otolin-1 and vitamin D levels in the first week after the repositioning procedure were observed.

IS-141 Impact of Onset Age on Meniere's Disease Outcomes

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Introduction: The relationship between the age of onset and clinical outcomes in Meniere's disease (MD) remains unclear, especially in symptom severity and treatment efficacy. Objective: To evaluate the impact of onset age on symptom, disease progression, and treatment response. Methodology: This study reviewed MD patients presenting to ORL Clinic, Hospital Kuala Lumpur, from January to November 2024. Patients were categorized into early onset (＜40 years), middle onset (40-60 years), and late onset (＞60 years) groups. Symptom severity, hearing loss, and treatment responses were assessed. Results: 27 patients (mean age: 51 years), 40% were diagnosed with probable MD while 60% definitive MD. Early onset patients sought treatment earlier (55.5% within 1 year), while middle and late onset groups delayed treatment (58.3% and 83.3%, beyond 1 year). Severe symptoms were observed across all groups, but mild-to-moderate SNHL was predominant at presentation. Treatment responses favorable, with late onset patients demonstrating slightly better outcomes (66.6% good response). Conclusion: Onset age influences the timing of treatment-seeking but not symptom severity or treatment effectiveness.

IS-142 Accessory Infraorbital Foramen: Presence and Localization Relative to Adjacent Structures on CT

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Purpose: This study evaluates the prevalence of the accessory infraorbital foramen (AIOF) and its relationship with adjacent structures. Methods: A cross-sectional study was conducted using paranasal sinus CT scans of 151 patients aged 16 years or older at Ho Chi Minh City ENT Hospital from October 2022 to August 2023. Results and Discussion: The male-to-female ratio was 1: 1, with a mean age of 45. 15 ± 14. 37 years. All cases had one infraorbital foramen (IOF) per side. The percent of the AIOF was 16. 6%, with 4. 7% occurring bilaterally. There were no statistically significant differences in AIOF prevalence between sexes, sides with and without infraorbital nerve angulation. The mean distance of the AIOF to the infraorbital rim was 1. 16 ± 0. 46 cm, and to the midface, 2. 28 ± 0. 33 cm, with no significant differences by sex or side. The distance from IOF to adjacent structures showed no significant difference between cases with and without AIOF. Conclusions: AIOF has a high prevalence, often accompanied by accessory infraorbital nerve branches. Identifying its location is crucial for midface trauma surgery, facial aesthetics, and neurotomy radiofrequency ablation for pain management.

IS-143 Radioanatomical Analysis of Vidian Canal and Its Relationship to Surrounding Structures

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Purpose: To compare the different patterns of vidian canal (VC) position in relation to the body of sphenoid sinus with the variation in VC course, different position of VC with relation to anterior genu of petrous portion of ICA (pICA) and the relationship of VC termination and pICA for use in endoscopic endonasal skull base approaches.

Methods: A retrospective cross sectional study on 240 subjects who underwent CT skull base from 2015 to 2019.

Results: Malay, Chinese and Indian were evenly distributed, 80 subjects for each group. There were significant differences in measurement of VC length as Chinese revealed shortest VC length. No statistically significant difference among three races in the distance between VC and foramen rotundum. The most common VC types were Type 2 and the least were Type 1. Variation of rostral-caudal course (RCC) of VC revealed to be predominantly medial to lateral. All subjects revealed superior-medial pICA types for both side of the sections.

Conclusion: This paper is essential to provide a better and precise knowledge regarding VC landmarks, assist in endoscopic sinuses and skull base surgery planning and provide contributions to literature.

IS-144 The application of sialendoscopy in patients with recurrent sialoadenitis with ductal stenosis

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Purpose: Salivary duct stenosis is the second most common cause of obstructive sialadenitis. Most patients with this condition are treated conservatively but with limited effectiveness. We applied sialendoscopy to treat the disease, and analyzed the overall success rate, recurrence rate, complications.

Methods: Our study included patients with recurrent salivary gland swelling, diagnosed with salivary duct stenosis via sialendoscopy from April 2017 to June 2023. Treatments included the use of endoscopic instruments, balloon, laser, saline irrigation and steroid infusion.

Results and Discussion: A total of 49 patients were included, 34 females and 15 males. Totally 76 gland surgeries were performed, 55 cases involved parotid duct and 21 submandibular duct. Type III stenosis accounted the majority (47 cases). Average operative time was 84. 05 minutes. Overall surgical success rate was 88. 16%. The failed 9 cases had Type III stenosis. Salivary gland preservation was achieved in 98. 7% cases.

Conclusions: Sialendoscopy is an effective treatment option for patients with salivary duct stenosis, offering a high success rate, reasonable operative time and no significant complications.

IS-145 From Pipes to Pixels: Innovating through Necessity and Collaboration

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Aims: This study aims to assess the feasibility and impact of four cost-effective healthcare innovations developed in Nepal to address critical challenges in resource-limited settings.

Methodology: This study presents four innovations developed at T.U. Teaching Hospital with local partners: a cost-effective speaking valve, a rigid ventilating pediatric airway dilator, CFD analysis for optimizing drug delivery, and an asynchronous telemedicine model for rural healthcare. Prototypes were 3D-printed, CFD analysis used ANSYS Fluent, and telemedicine utilized smartphones, endoscope cameras, and electronic medical records.

Results: 1. Speaking valve: 3D-printed case with a one-way valve, reducing costs to USD 15.
2. Pediatric airway dilator: A rigid, reusable, balloon catheter-like device with a ventilating port.
3. CFD analysis: Identified optimal drug delivery angles for pediatric adenoid hypertrophy.
4. Asynchronous telemedicine model: Remote diagnoses in 94 cases showed high agreement with in-person assessments

Conclusion: These innovations offer scalable, cost-effective solutions to healthcare challenges in low-resource settings.

IS-146 Addressing Inequities in Pediatric Cancer Treatment: A Health Economics Perspective from Indonesia

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Pediatric cancer in Indonesia, with 11, 000 new cases annually, poses significant health and economic challenges. Late-stage diagnoses, limited access to care, and high treatment costs lead to poor survival rates and financial burdens for families. This study analyzed data from PedsCommons, health ministries, and cancer centers, focusing on medical costs, non-medical expenses, and caregiver productivity losses. Over 60% of cases are diagnosed late, increasing costs and reducing survival. Treatment averages $5, 000, exceeding many families' income, while early detection programs improve survival by 30% and reduce costs by 25%. Regional cancer centers and treatment subsidies could reduce 45% of deaths and ease economic burdens, highlighting the need for cost-effective policies to improve equity and outcomes.

IS-147 Bacteriology and antibiotic resistance in pediatric rhinosinusitis in Viet Nam

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Purpose: Bacteriology and antimicrobial susceptibility in children chronic sinusitis. Methods: Prospective cross-sectional study on 47 patients from age 5-15 years who have been diagnosed chronic rhinosinusitis at the National Otorhinolaryngology Hospital of Vietnam 9/ 2018-7/2019. Results: Bacterial isolates were cultured in 66% of the cases, positive anaerobic bacterial culture rate 66%, 8 bacterial species were isolated. Common bacteria: S.aureus 45. 1%, S.epidermis 19. 3 %, HI 19. 3%, HI 18. 2%. Prevalence MRSA was high in 78. 6%. Antibiotic groups with high sensitivity include Quinolone (92. 9-100%), Linezolid (100%) Amikacin (100%) Cephalosporin 4 (Cefepime 100%) Vancomycin (100%). Ampicillin is less sensitivity to bacteria (sensitive 0-17%). Betalactamase-resistant derivatives are 50-100% sensitive but completely resistant to staphylococci (0% sensitive). Cephalosporin 2, 3 is highly sensitive to bacteria except S. aureus and S. epidermis (sensitivity is only 14. 3-33. 3%). Conclusion: S. aureus, S. epidermis and HI were the most prevalent pathogens. MRSA was high prevalence. Antibiotic high sensitivity include Quinolone, Linezolid, Amikacin, Cephalosporin 4, Vancomycin.

IS-148 Analysis of 11 cases of Intra-Temporal Facial Nerve Schwannoma with Surgery in the last 3 years

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The intra-temporal facial nerve schwannoma could result in several symptoms causing deterioration of the QOL of the patient, such as facial nerve palsy or conductive hearing loss, while the tumor is benign. Usually, a small tumor can be managed by the "wait and scan" policy. The surgical intervention would be applied for growing or relatively large tumors or symptomatic cases. Total resection must cause severe facial nerve palsy and will be applied in limited cases. In contrast, subtotal resection would sometimes be used as a surgical intervention. However, subtotal resection also would cause facial nerve palsy as a surgical complication. Therefore, decision-making on "when" and "how" to treat with surgery would be difficult, especially if patients with growing tumors had been suffering gradually worsening facial nerve palsy. So far, we reported the usefulness of continuous and quantitative intraoperative monitoring for the tumor resection of the facial nerve schwannoma. In this study, we retrospectively analyzed 11 cases with surgical interventions in our department in the last 3 years. We will discuss how to treat this benign tumor.

IS-149 Two cases conducted a clade classification for Candida auris detected in serous otorrhea

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Candida auris is a yeast that was first discovered in 2009 in Japan in the otorrhea of a patient from its external auditory canal. We describe two clinical features with the photos of their otorrhea where C. auris was isolated. Both had favorable clinical outcomes with drainage. By the way, C. auris was thought to be a low-virulent strain that colonizes in external auditory canal and rarely progresses to systemic infection at first discovery in 2009. However, systemic yeast infections via the bloodstream have recently been reported globally. C. auris is classified in some clades by the results of recent molecular system analysis data and virulent depends on each clade. We obtained the cooperation of department of clinical laboratory and clade classified both two isolates of C. auris in our own institution. We could classify the one and were not able to classify the other by using a set of specific primer. The other was required to determine CauMT1 region. Finally, we were able to conclude both to be clade II known as low-virulent strain.

IS-150 Intracranial complications of acute mastoiditis

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Acute mastoiditis can lead to severe intracranial complications, such as epidural abscess, bacterial meningitis, brain abscess, and sigmoid sinus thrombosis. The present study reviewed nine cases of acute mastoiditis treated at our department between November 2014 and October 2024, with a focus on intracranial complications. The patients were seven males and two females, aged 11 months to 68 years. Intracranial complications were identified in four cases: two cases of epidural abscesses, one case of sigmoid sinus thrombosis, and one case of bacterial meningitis with a brain abscess. All patients who experienced intracranial complications received antimicrobial therapy and prompt mastoidectomy. The patient with bacterial meningitis complicated by a brain abscess presented with impaired consciousness, suggesting advanced involvement of the central nervous system. Although the infection was resolved, prolonged consciousness impairment led to aspiration pneumonia and eventual death. Delayed treatment of mastoiditis with intracranial complications can result in fatal outcomes. Therefore, early therapeutic intervention is crucial to improve prognosis.

IS-151 The Role of Sonotubometry in Assessing Paediatric Eustachian Tube Balloon Dilation (ETBD)

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ETBD is performed in chronic otitis media with effusion (COME) assuming it is secondary to obstructive cartilaginous ET dysfunction. This was supported by tympanometry and pure tone audiometry but the ET function was not assessed specifically.

The aim is to describe the ET function before and after ETBD using Sonotubometry.

Methods: Sonotubometry was performed in children aged 5-12 years old who had undergone ETBD for COME before and at 6 weeks after ETBD.

Results: 11 children had undergone ETBD. Their pure tone average had improved at an average of 12.70±9.14 dB and 11.40±10.96 dB for right and left ears. The number of active Eustachian tube openings measured using Sonotubometry also had increased at an average of 4.25±4.44 and 2.90±2.79 for right and left ears. The improvement in pure tone average and sonotubometry were statistically significant.

Conclusion: COME secondary to obstructive cartilaginous ET dysfunction will be benefited from ETBD in the absence of bony ET dysfunction. It is advisable to wait for 6 months for complete healing and fibrosis before repeating ETBD for persistent OME.

IS-152 Balloon Dilatation Outcome in Irradiated vs Non-Irradiated Patients with Eustachian Tube Dysfunction

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Aim: To compare outcome of balloon dilatation of the eustachian tube (BDET) in patients with eustachian tube dysfunction (ETD) who had undergone radiation therapy for nasopharyngeal carcinoma (NPC) to those without radiation. Material & Method: Conducted at Sarawak General Hospital between January 2022 and December 2023, this prospective study included 30 patients (40 ears total), with 20 ears in each group. BDET was performed under local anesthesia, and key variables were recorded and analyzed. Results: The average patient age was 51.1±13.5 years. Both irradiated and non-irradiated groups showed significant improvements in ETDQ-7 scores ($p<0.001$) from diagnosis to 12 weeks post-procedure, with no significant differences between the groups. Tympanometry and the ability to perform the Valsalva maneuver improved for all patients. NPC patients treated within 12 months had higher ETDQ-7 scores than those treated earlier. Minor complications included local mucosal bleeding during the procedure. Conclusion: BDET proved effective in improving ETD symptoms for both irradiated and non-irradiated patients, with results sustained for at least 12 weeks, demonstrating short-to-medium term efficacy.

IS-153 Coblation Tonsillectomy: Our experience how to tame the Werewolf

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Introduction: Tonsillectomy is a commonly perform surgeries by ENT Surgeon. The surgery itself has undergone tremendous technological changes. One of a newer technique is coblation tonsillectomy. The coblation technology itself has evolved with introduction of a newer wand. The halo wand werewolf. This article attempts to discuss the use of this technology and sharing our experience.

Objective: Retrospective reviews of 65 cases adult and children undergone coblation tonsillectomy with or without additional procedures.

Methods: All cases adult and children undergone for coblation tonsillectomy were included in a period of 18 months and we emphasized on intraoperative and post operative morbidity.

Results: In general, intraoperative bleeding was less, post operative pain better but the morbidity post operative bleeding equivalent with other techniques.

Conclusion: The coblation technology looks promising and embracing technology for better patient care is strongly encouraged.

IS-154 Assessing Cognitive Impairment and Adult Obstructive Sleep Apnea using Montreal Cognitive Assessment

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Aim: Obstructive sleep apnea (OSA) is a known risk factor for cognitive impairment (CI), but studies in sleep clinic populations are limited.

Method: 78 untreated adults diagnosed with OSA via home sleep test assessed CI using the Montreal Cognitive Assessment (MoCA).

Result: 67.9% had mild cognitive impairment (MCI), particularly in those with moderate and severe OSA. The cohort was mostly male smokers with thick necks, vascular comorbidities, and low education. Moderate and severe OSA were associated with CI (OR=4.57, p=0.03; OR=6.2, p=0.03). Education reduced CI with executive function and abstraction being the most affected domains.

Discussion: These findings align with previous research linking OSA severity to cognitive decline, with OSA-related hypoxia and fragmentation contributing to deficits. Education acted as a protective factor, supporting the cognitive reserve hypothesis. Vascular comorbidities, smoking, and neck circumference further exacerbated cognitive decline.

Conclusion: Early intervention is crucial, as moderate to severe OSA is a significant risk factor for CI.

IS-155 Preliminary Results in Neck Wound Management

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Purpose: Neck wounds are serious and life-threatening injuries. This research presents preliminary results on managing neck wounds.

Methods: All neck wound patients were enrolled and initially evaluated. Stabling patients before undergo CT and endoscopy for comprehensive assessment. All management, recovery, and complications were recorded.

Resutls: The study included 40 patients (95% males) with neck wounds. Most resulted from personal conflicts (17) or vehicle accidents (11). Common types were sharp object injuries (20) and knife wounds (17). Initial assessments revealed severe injuries, including vessel lesions (5), esophageal lesions (6), and airway damage (11). Imaging studies showed significant complications, such as emphysema and air leaks in the chest. Endoscopy confirmed esophageal and laryngeal injuries. Most patients (82.5%) underwent surgery with an average stay of 7.6 days, while others (17.5%) received conservative treatment with a shorter stay (4.1 days). Complications included abscesses, tracheostomy, and facial nerve palsy, but no deaths.

Conclusion: The initial results suggest that prompt first aid and rapid evaluation are crucial for patient recovery.

IS-156 Cosmetic incision for parotidectomy (no visible incision mark) compared to other incision

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Purpose: Parotidectomy is done by different incisions, resulting in a visible scar on the Face & neck. A retroauricular minimally invasive incision alternative to other incisions with no obvious incision mark results better cosmesis.

Methods: 80 parotidectomy done by retro auricular incision and 80 using the modified Blair's incision & periauricular incision. Parotidectomies, by retro auricular incision were pleomorphic adenoma (59), Parotitis (2), mucoepidermoid carcinoma (9), wardins tumour (5), tuberculosis (2), Adenocarcinoma (1), Benignparotid cyst (2) were reviewed.

Results and discussion: Retro auricular incision has no visible incision mark from postoperative period. Temporary facial weakness developed in 6 cases. Infection in 2 cases, and 1 patient suffered from Frey's syndrome.2 patients suffered from sialocele and 1 from salivary fistula. 20 patients suffered from hypoesthesia of the operative area. & transient ear discomfort in 15 patients. These complications have been described by other incisions for parotidectomy operation.

Conclusions: Parotidectomy by retroauricular incision is highly acceptable procedure both from aesthetic point of view & surgical approach.

IS-157 A case series on arrow injuries in the head and neck region of Bhutanese archers

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Background: Arrow injuries in Bhutan pose a distinct public health challenge, reflecting the deep-rooted cultural significance of archery in this Himalayan kingdom. While archery is celebrated as a national sport, the increasing incidence of arrow-related injuries raises urgent safety concerns. Injuries caused by arrows to the head and neck region pose a significant threat to life, with the potential for devastating consequences. Managing arrow injuries in the head and neck region is exceptionally complex.

Cases: This case series examines six patients who sustained injuries to the head and neck, offering valuable insights into our management experiences and the challenges we faced. We delve into the cultural and regulatory factors that shape archery practices and safety protocols, highlighting the need for a nuanced understanding of this issue.

Conclusion: Our findings emphasize the critical importance of community education and the implementation of enhanced safety measures aimed at reducing the risk of injuries. This presentation seeks to inspire collaborative efforts to reduce the prevalence of arrow injuries, ensuring that this cherished sport can be enjoyed safely by all.

IS-158 The Birmingham AI Approach: A Novel Simultaneous Anterior-Lateral Approach to Petroclival Lesions

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Background: Petroclival lesions pose significant challenges in surgical management due to their complex location, involvement of critical neurovascular structures and cavernous sinus invasion. This case series introduces a novel approach, not previously reported, combining simultaneous endonasal and lateral access to these tumors, creating a unified surgical corridor.

Cases: Seven patients (5 males, 2 females) with petroclival lesions underwent this novel technique. Anterior Endonasal approaches (transsphenoidal, expanded endonasal, modified Denker's, transpterygoid) and lateral approaches (infratemporal fossa, transotic, translabyrinthine) were employed. For intradural extension, neurosurgeons could utilize the same lateral incision.

Conclusions: Gross total resection was achieved in 6 out of 7 patients. This innovative, multiportal approach offers improved control over the ICA, dura, inner ear, and facial nerve, avoiding brain traction and reducing complications seen in traditional open methods. Additionally, it shortens surgical time reducing infection risk and minimising hospital stay. We refer to this technique as the BIRMINGHAM AI approach after Messrs. Ahmed and Irving.

IS-159 Deep learning-based computer-aided diagnosis for parotid gland tumors on magnetic resonance imaging

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This study aimed to develop a deep learning (DL)-based computer-aided diagnosis (CAD) system to distinguish benign from malignant parotid gland tumors on MRI. A retrospective diagnostic study was conducted using MRI data from 190 patients diagnosed with parotid gland tumors (88 benign, 82 malignant) collected from two centers between 2000 and 2022. A DL model was trained to predict malignancy probability from MRI images. Four readers (two radiologists and two residents) independently assessed malignancy probabilities in the test set. After reviewing the CAD results, the readers revised their predictions. The DL model achieved an accuracy of 0.85 and an area under the curve (AUC) of 0.93. Reader performance significantly improved with CAD assistance, with accuracy increasing from 0.76 to 0.86 and AUC from 0.82 to 0.93. No significant differences in CAD-assisted performance were observed between radiologists and residents (AUC: 0.94 vs 0.95). These findings highlight the potential of DL-based CAD systems to improve diagnostic accuracy and consistency in distinguishing parotid gland tumors.

IS-160 Improving Endoscopic Diagnosis Accuracy for Nasopharyngeal Carcinoma Using Transfer Learning

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Background: Diagnosing nasopharyngeal carcinoma (NPC) via endoscopy is challenging due to manual interpretation and device variability. Advances in artificial intelligence (AI) and deep learning offer potential to improve diagnostic accuracy. This study applies transfer learning, combining a base model for NPC detection with a plugin model to address device-specific errors.

Methods: A single-institution pilot study (2015-2022) included NPC patients and controls evaluated via flexible endoscopy. The EfficientNet-B3 architecture, with oversampling and image augmentation, enhanced model generalization across devices. Key metrics assessed included positive predictive value (PPV), negative predictive value (NPV), sensitivity, and specificity.

Results: Transfer learning improved diagnostic accuracy from 42.45% to 80.19% across 594 images. The EfficientNet-B3 model achieved PPV 0.737, NPV 0.878, sensitivity 0.875, and specificity 0.741, surpassing traditional Convolutional Neural Network (CNN) models.

Conclusions: Transfer learning significantly enhances diagnostic accuracy in NPC endoscopic imaging, supporting further studies for clinical application.

IS-161 AI-Driven Prediction of Cranial Nerve Injury in Head and Neck Cancer Using PET/CT and Dose Maps

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Purpose: This study developed a machine learning model integrating PET/CT imaging, RT dose maps, and diffusion tensor imaging (DTI) baselines to predict RICNI risk. Methods: Imaging and RT dose data were obtained from the HECKTOR dataset, while DTI metrics came from OpenNeuro and the Human Connectome Project. Cranial nerves were segmented to extract diffusion metrics (e.g., fractional anisotropy, mean diffusivity) and cumulative RT dose. PET/CT features were analyzed with a convolutional neural network, dose data with gradient-boosted decision trees, and clinical variables with hierarchical attention mechanisms. Results and Discussions: The model achieved an AUC of 0.89 (95% CI: 0.85-0.92), sensitivity of 87.5%, and specificity of 84.3%. High-dose exposure (>55 Gy) and reduced FA significantly predicted RICNI ($p<0.001$). SHAP analysis identified dose heterogeneity and tumor proximity as key predictors. Calibration plots showed strong agreement between predictions and outcomes. Conclusions: Although generalizability is limited by DTI baselines from healthy controls, this framework provides a novel tool for RT optimization and patient risk stratification.

IS-162 Predicting Second Primary Occurrence in Head Neck Cancer with Explainable Artificial Intelligence

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Aim: Head and neck cancer (HNC) is a complex disease influenced by numerous clinical and demographic factors. A significant challenge in managing HNC is the risk of second primary tumors, which substantially impact morbidity and mortality. In this study, we aimed to predict the occurrence of second primary tumors in HNC patients by analyzing multiple factors.

Material and Methods: We collected data on 1060 patients diagnosed with head and neck cancer between 2008 and 2021 at Wan-Fang Hospital. We employed a hybrid analytical framework integrating traditional statistical methods, machine learning algorithms, and explainable artificial intelligence (XAI) techniques. This approach enhanced prediction accuracy and provided interpretable insights into the interactions and contributions of predictive factors.

Results: Our study revealed key predictors of second primary tumors, including age, tumor origin site, BMI coding, and lifestyle habits.

Conclusions: This comprehensive study underscores the value of integrating traditional and advanced analytical techniques to improve risk stratification and personalized care for HNC patients.

IS-163 Deep Learning Framework for Predicting Radiation-Induced Dysphagia in Head and Neck Cancer

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Purpose: Radiation-induced dysphagia (RID) in head and neck cancer (HNC) patients impacts quality of life. Predicting RID is challenging due to its multifactorial nature. This study develops a deep learning framework integrating longitudinal imaging and clinical data for early detection. Methods: PET-CT scans and clinical data from 250 HNC patients at 750 timepoints were sourced from the HECKTOR challenge database. Imaging features, including tumor shrinkage and dose distribution, were extracted using a CNN. Clinical data, such as TNM stage and radiation dose, were processed using an RNN with GRU. Outputs were combined with an attention mechanism. The model was trained on an 80-10-10 split, with AUC and F1 score as key metrics. Results and Discussion: The model achieved an AUC of 0.84, precision of 89.5%, recall of 87.3%, and F1 score of 88.4%, outperforming static imaging models. SHAP analysis identified tumor shrinkage and dose to pharyngeal muscles as key predictors. High-risk patients were detected three months before clinical onset. Conclusions: This framework offers high accuracy in predicting RID, enabling early intervention and addressing radiation-related complications.

IS-164 A Case of Adenoid Cystic Carcinoma in the External Auditory Canal

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Adenoid cystic carcinoma (ACC) is a rare malignant tumor that primarily arises in the salivary glands but is occasionally found in the external auditory canal (EAC). ACC of the EAC is often diagnosed late, with perineural invasion, low cervical lymph node metastasis, high local recurrence, and frequent distant metastasis. The main treatment options include surgery and radiotherapy. We report a case of ACC diagnosed following EAC tumor resection, treated with additional resection and reconstruction using rectus abdominis (RA) flap. A 40-year-old man presented with right otalgia, otorrhea, and ear fullness. Examination revealed entire circumferential swelling and marked stenosis of the EAC. Imaging suggested a malignant tumor in the cartilaginous EAC without bone destruction. An initial biopsy was inconclusive, and the patient opted against further biopsy. Partial EAC resection, partial parotidectomy, and skin grafting were performed. Pathological examination confirmed ACC. Subsequently, lateral temporal bone resection, total parotidectomy, right upper neck dissection, and RA flap reconstruction were performed. The patient remains under follow-up with no evidence of recurrence.

IS-165 Giant cell tumor of the temporal bone treated with surgery and adjuvant denosumab

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Giant cell tumor of bone is classified as an intermediate malignancy that predominantly arises at the ends of long tubular bones; occurrences in the temporal bone are rare. A 68-year-old woman presented with a pulsatile dark reddish mass lesion in the right external auditory canal, accompanied by a conductive hearing loss of 35dB. Computed tomography showed a 2. 5-cm diameter mass lesion in the right temporal bone with osteolytic extension. MRI indicated that the lesion compressed the temporal lobe. A biopsy from the external auditory canal confirmed the diagnosis of giant cell tumor. Treatment consisted of surgical resection of the tumor and the adjuvant administration of denosumab. During surgery, the tumor was found to be a well-vascularized, soft, gray mass involving the dura of the middle cranial fossa. The tumor was firmly fused to the dura and was gradually removed. Following the surgery, denosumab, a monoclonal antibody against the receptor activator of nuclear factor kappa-B ligand (RANKL), was administered for 10 months, resulting in a gradual reduction in tumor size. This case suggests that denosumab is a promising therapeutic option for giant cell tumor.

IS-166 Canal Plasty for Exostoses of the Ear Canal

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Surgery for exostoses can be performed using either an intra-canal or a post-auricular incision, but there are needs for minimally invasive surgery, as many cases require surgery on both sides.

When performing a trans canal approach, the surgical field is extremely limited. Poor visibility can lead to skin damage. Sometimes, the difficulty of the surgery depends more on the curvature and narrowness of the cartilaginous part of the ear canal than the severity of the exostosis lesions.

We have devised a method that makes it easier to manipulate the bony external ear canal, regardless of the shape of the cartilaginous part.

A ring-shaped incision is made outward to the narrowest part of the cartilaginous part of the ear canal. The skin of the external auditory canal is elevated with periosteum and the back of the skin is attached to the cartilage. Then, the subcutaneous tissue and cartilage attached to the skin flap is removed with scissors, so that the bony external auditory canal can be seen.

This procedure makes it easier to remove bone lesions deep in the ear canal. To avoid damaging the skin, we remove exostoses lesion with chisels and bone curette instead of burr.

IS-167 Ossifying Fibroma in an Unusual Site: Case Report and Challenges in the External Auditory Canal

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Background: Ossifying fibroma is a rare benign tumor of fibroosseous origin typically found in the mandible and maxilla. Its presence in the external auditory canal is extremely rare presenting diagnostic and therapeutic challenges due to proximity to vital structures and potential recurrence. Case: A 21 years old woman presented with left otalgia, intermittent ear discharge, reduced hearing, and occasional tinnitus over 10 months. Examination revealed a mass in the left external auditory canal, obscuring the tympanic membrane. Audiometry showed left moderate to severe mixed hearing loss. CT imaging identified a sclerotic lesion (1.2 χ 1.9 χ 1.9 cm) occluding the left ear canal. The mass was excised via endaural canalplasty with intraoperative findings confirming a bony mass near the tympanic membrane. Histopathology confirmed ossifying fibroma. Recurrence occurred one month postoperatively necessitating plans for further surgery and hearing rehabilitation. Conclusion: Ossifying fibroma of the external auditory canal is rare and challenging to manage. Surgical excision is the primary treatment, but vigilant long term follow up is essential to address recurrences.

IS-168 When Benign Mimics Malignant: Nodular Fasciitis of the Pinna in a Young Adult

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Background: Nodular fasciitis (NF) is a benign myofibroblastic proliferation that mimics malignancy due to its rapid growth and firm texture. While it typically occurs in the trunk or extremities, NF in the pinna is rare, and such cases may be mistaken for malignancies like squamous cell carcinoma.

Case: A 24-year-old female presented with a painless, gradually enlarging left ear mass, for the past three months. Examination revealed a firm, non-tender lesion on the left pinna, initially raising concerns for squamous cell carcinoma. However, histopathological analysis identified spindle-shaped myofibroblastic cells within a myxoid stroma, consistent with nodular fasciitis. The patient was treated conservatively with an intralesional triamcinolone acetonide injection, leading to gradual and complete resolution. No recurrence or complications were noted during a six-month follow-up.

Conclusion: This case highlights the importance of considering NF in differential diagnoses of rapidly growing ear masses to avoid overtreatment. Conservative corticosteroid treatment can effectively manage NF of the pinna, providing an alternative to surgical intervention with favorable outcomes

IS-169 Surgery to Treat Cancer of the Ear and Temporal Bone at a Tertiary Hospital in Vietnam

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Objective: This study aims to highlight surgical techniques, staging, and clinical aspects of temporal bone resection (TBR) for treating primary malignancies affecting the ear and temporal bone.

Methods: This case series includes 15 patients who underwent TBR for cancer from Sep 2022 to Sep 2023.

Results: There were 8 men and 7 women, aged 32 to 90. All patients presented with ear discharge. The predominant pathology was squamous cell carcinoma (14/15). Tumors were staged according to the University of Pittsburgh classification: 10 cases were T4, 5 were T3, no cases of T1 or T2. 7 patients had parotid gland invasion. One had cervical lymph node metastasis. Partial TBR was performed in 10 patients, while lateral TBR was done in 5. Postoperative care involved adjuvant radiotherapy in 14 patients, an average hospital stay of 8 days, and an estimated blood loss of 250ml. One patient developed cerebrospinal fluid leakage. One experienced a recurrence at 4 months. Follow-up ranged from 2 to 8 months.

Conclusion: TBR is effective for achieving tumor-free margins in advanced ear cancer cases but requires comprehensive postoperative management and multimodal treatment for optimal outcomes.

IS-170 The decline of whole-blood NAD$^+$ level is correlated to the developing age-related hearing loss

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Background: The aim of the study was to investigate the relationship between the development of SNHL and the decline of whole-blood Nicotinamide adenine dinucleotide (NAD$^+$) levels which is closely related to the function of mitochondria or the development of aging or age-related disease. Methods: A total of 80 patients visiting Kawagoe Ear Institute were allocated to four groups of 20 patients: patients aged 50-79 years with or without unilateral sudden SNHL (SSNHL), and patients aged over 80 years with or without bilateral age-related HL (ARHL). The distribution of whole-blood NAD$^+$ levels and oxidative stress markers (dROMs and BAP) was investigated. Results: Whole-blood NAD$^+$ level in patients with ARHL was significantly lower than those without ARHL in the group aged over 80 year, but there were no significant differences between them in patients with or without SSNHL in the group aged 50-79 years. Each level of decreased whole-blood NAD$^+$ and increased dROMs was significantly correlated to the risk of the developing SNHL. Conclusions: We identified that the decline of whole-blood NAD$^+$ level and increased dROMs with age might be useful as a biomarker of the development of ARHL.

IS-171 Affinity purification of the outer hair cell motor protein prestin using His-tag

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In the present study, a simple expression and purification system using Chinese hamster ovary cells and His-tag was developed. Cell lines highly expressing prestin were selected. These cells were gently disrupted using a Dounce tissue grinder. Membrane fractions were extracted by ultracentrifugation and affinity chromatography was performed. The efficiency of the purification process was evaluated by quantitative Western blotting using a standard protein. Among the cell lines constructed, Western blotting analysis showed bands at around 100 kDa and the highest intensity was confirmed from the 3C8 cell line, indicating that this cell line has the highest expression of prestin molecules. The membrane fraction was therefore extracted from this cell line and subjected to the following purification procedure. It was found that 78.7 μg of prestin was purified from 2.0×10^9 CHO cells. In the present study, 78.7 μg of prestin was purified from 2.0×10^9 CHO cells, which stably expressing 6×His-tagged prestin, by extracting cell membrane fractions and standard affinity chromatography for His-tag.

IS-172 Basic fibroblast growth factor helps protect facial nerve cells in a freeze-induced paralysis model

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Severe axonal damage in the peripheral nerves results in retrograde degeneration towards the central side, leading to neuronal cell death, eventually resulting in incomplete axonal regeneration and functional recovery. We aimed to examine the percentage of facial nerve cell reduction and the extent to which intratympanic administration of a basic fibroblast growth factor (bFGF) inhibits neuronal cell death in a model of severe facial paralysis. A severe facial paralysis model was induced in Hartley guinea pigs by freezing the facial canal. Animals were divided into two groups: one group was treated with gelatin hydrogel impregnated with bFGF and the other was treated with saline. Facial movement scoring, electrophysiological testing, and histological assessment of facial neurons were performed. The freezing-induced facial paralysis model showed a facial neuronal cell death rate of 29.0%; however, bFGF administration reduced neuronal cell death to 15.8%. Facial movement scores also demonstrated improvement in the bFGF group compared with those in the control group. Intratympanic bFGF administration has a protective effect on facial neurons in a model of severe facial paralysis.

IS-173 Correlation Between Vestibular Test Abnormalities and Hearing Loss Severity in Meniere's Disease

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Purpose: To investigate the correlation between vestibular test abnormalities (vHIT and cVEMP) and hearing loss severity in Meniere's disease. Methods: Retrospective study of patients visiting Vestibular Clinic, Hospital Kuala Lumpur from January to November 2024. Patients' hearing levels were classified based on pure tone audiometry results. Vestibular tests (vHIT and cVEMP) were performed. Statistical analysis was conducted to corelate between hearing loss severity and vestibular dysfunction. Results and Discussion: 30 patients (24 females, 6 males) were included. The mean age was 51 years (range: 28-74 years). 12 patients had probable Meniere's disease and 18 had definitive Meniere's disease. 18 had unilateral disease and 12 had bilateral disease. 60% abnormal vHIT and 66.6% abnormal cVEMP results revealed no significant correlation with hearing loss. Conclusions: No significant correlation between hearing loss severity and vestibular test abnormalities in Meniere's disease. Vestibular dysfunction may not directly correlate with hearing impairment. Comprehensive vestibular testing should be emphasized in Meniere's disease management regardless of hearing status.

IS-174 p16 Overexpression in sinonasal squamous cell carcinoma

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p16 overexpression is often used as a surrogate marker for HPV infection in oropharyngeal cancer, but it is an uncertain diagnostic tool for HPV-related sinonasal squamous cell carcinoma (SNSCC). Our study included 79 SNSCC patients treated at Ryukyu University Hospital between 2006 and 2021. We retrospectively reviewed the clinical features and examined p16 immunohistochemistry/HPV detection using FFPE or fresh frozen samples. 12.7% of the patients showed p16 overexpression, which is significantly common in the nasal cavity and has increased from 2015 onward. The HPV detected a high-risk type, and viral loads ranged from 4.2 to 1.6 x 106 copies/ng DNA with genome integration. The 5-year OS was 74.6%, and the 5-year RFS was 69.9%. Our multivariate analysis showed that the T category (T1-4a) and hemoglobin levels were significant favorable prognostic factors for OS, whereas the T category, PS, and p16 over-expression were significantly associated with RFS. In patients with p16 overexpression, OS was 100%, and RFS was 90%. Our results indicate that p16 overexpression is a reliable surrogate marker for transcriptionally active HPV infection and a favorable prognosis.

IS-175 HPV related Multi-phenotypic Sinonasal Carcinoma

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HMSC (HPV related Multi-phenotypic Sinonasal Carcinoma) is a rare tumour, with about 100 cases worldwide, including five in our healthcare cluster since 2017. It primarily affects the sinonasal cavity, presenting with epistaxis, nasal congestion, and sinusitis. The WHO defines HMSC as a sinonasal epithelial neoplasm with both surface-derived and minor salivary gland elements, often containing active HPV. A 2022 review by Akira showed heterogeneous enhancement on CT/MRI due to the tumour's diverse histology.

Diagnosis is based on histopathology, with basaloid cells showing myoepithelial differentiation, luminal cells showing ductal differentiation, and surface cells showing squamous differentiation. HMSC is multi-phenotypic and may show squamous, chondroid, or anaplastic features. HPV is implicated in carcinogenesis, especially in the sinonasal region, where HPV is typically absent. The most common high-risk HPV types are HPV 33, 35, 16, and 56.

Treatment for early-stage HMSC includes wide excision, with adjuvant radiotherapy if margins are close or there is bone/perineural invasion. Local recurrence occurs in 36% of cases, while distant metastasis is rare (5.2%).

IS-176 HPV Vaccination and Protective Effect on Head and Neck Cancers: Large-Scale Real-World Cohort Study

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Purpose: Human papillomavirus (HPV) is a major cause of head and neck cancers (HNC), particularly oropharyngeal cancers. This study evaluates HPV vaccination's impact on HNC incidence in real-world settings.

Methods: A retrospective cohort study used the TriNetX database, comprising records from 66 US healthcare organizations. Individuals aged 9-45 years (2011-2024) were grouped into HPV-vaccinated and non-vaccinated cohorts. Propensity score matching balanced baseline covariates. Follow-up extended from index date to HNC diagnosis, death, or study end.

Results and Discussion: Among 716, 630 matched pairs, 40 HNC cases occurred in vaccinated versus 130 in non-vaccinated cohorts (HR 0. 315, 95% CI 0. 221-0. 450, $p<0.001$). Risk reduction was greatest for oropharyngeal cancers (HR 0. 087, 95% CI 0. 021-0. 369). Subgroup analysis showed significant risk reduction in individuals aged 9-26 years (HR 0. 323, 95% CI 0. 219-0. 476). Protective effects persisted 5-13 years post-vaccination (HR 0. 416, 95% CI 0. 203-0. 852).

Conclusions: HPV vaccination reduces HNC risk, especially in younger populations, supporting broader vaccination programs to prevent HNCs.

IS-177 Differential association of statins with head and neck cancer survival by HPV status

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Introduction: Evidence regarding the protective effect of cholesterol-lowering drugs on head and neck squamous cell carcinoma (HNSCC) survival has been mixed. Given the distinct epidemiological and etiological profiles of HPV-positive and HPV-negative HNSCC, we examined the survival impact of genetically proxied cholesterol-lowering drug targets and lipid traits in HNSCC patients by HPV status using two-sample Mendelian randomization.

Methods: Single-nucleotide polymorphisms (SNPs) in LDL-C-lowering drug target genes (HMGCR, NPC1L1, PCSK9, LDLR) and lipid traits were used. Associations between these SNPs and overall survival (OS) were assessed in 1, 120 HPV-positive and 2, 570 HPV-negative HNSCC patients. Causal effects were estimated as hazard ratios (HRs) using inverse-variance weighted (IVW) methods.

Results: Genetically-proxied HMGCR inhibition, as with statins, was significantly associated with better OS in HPV-positive patients ($HR=0.12$, 95% CI: 0. 02-0. 82, $P=0.03$), but not in HPV-negative patients. No associations were found for lipid traits.

Conclusions: Long-term HMGCR inhibition is associated with improved survival in HPV-positive but not HPV-negative HNSCC patients.

IS-178 Withdrawn

IS-179 Effects of the Blue Laser and the KTP Laser-Using the Shell-less Chick Amnioallantoic Membrane Model

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Purpose: After the discontinuation of the potassium titanyl phosphate (KTP) laser, a novel 445-nm blue laser was developed in laryngeal surgery. The balance between a desired tissue effects and collateral tissue damage is crucial for laser selection. The shell-less incubation system for the chick chorioallantoic membrane (CAM) simulates the microvasculature of the vocal fold and is useful for testing effects of laser. The aim of this study is to compare the tissue effects of the KTP and blue lasers using the shell-less CAM model. Methods: The model contains polymethylpentene film, calcium lactate and distilled water supplementations. The effects of the 2 lasers were quantified at clinically relevant energy settings and laser distances from target. Measures included imaging real-time vascular reactions in the CAM model, post-procedure histologic analysis of CAM tissue and temperature changes. Results: The blue laser has less vessel coagulation and rupture rates, less tissue disruption and less temperature changes. Conclusion: In the CAM model, the blue laser reveals less tissue damage. Suitable working distance and power setting of the laser are necessary for desired tissue effects.

IS-180 The Effects of the Micronized Amniotic Tissue on Chorioallantoic Membrane after Laser Application

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Purpose: Although Photoangiolytic lasers have desired tissue effects in laryngeal surgery, collateral tissue damage may accompany then cause possible vocal fold scar. The dehydrated human amnion/chorion membrane (DHACM) has been proven to have regenerative potential, as it contains numerous growth factors. The shell-less incubation system for the chick chorioallantoic membrane (CAM) simulates the microvasculature of the human vocal fold and is useful for testing effects of laser. The current study investigated the biocompatibility and effects of DHACM for regeneration of the vocal fold mucosa. Methods: Two groups of CAM were divided: laser treatment with DHACM application and laser treatment without DHACM application. The regenerative effects were examined 3 days and 7 days later by histological and immunohistochemical examination. Results: In immunohistochemical stain, DHACM group showed high Ki67. In histology, DHACM group showed a significantly higher density of hyaluronic acid and lower density of collagen. Conclusions: The current study suggests biocompatibility and possible regenerative effects of DHACM for vocal folds after photoangiolytic laser treatment.

IS-181 Outcomes of CO2 laser assisted unilateral cordotomy in patients with Bilateral Vocal Fold Paralysis

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Aim: To study the outcomes of CO2 laser assisted unilateral cordotomy in patients with BVFP.

Methods: A hospital based, interventional study conducted at Department of Otorhinolaryngology-Head &Neck Surgery, North Okkalapa General Hospital and Thingangyun General Hospital from November, 2021 to December, 2022. 22 patients were included. All patients were treated by CO2 laser assisted unilateral cordotomy. Pre-op 2 week and post-op 3 month assessments were conducted, including: dyspnoea scale, spirometery, VHI-10, acoustic analysis. Post-op complications were assessed at post-op 1 week, 1 month and 3 months.

Results: All subjective and objective airway assessments were statistically significant after operation ($p = < 0.0001$). Although subjective vocal assessment was not significant ($p = 0.909$), all objective vocal assessments were significant F0 ($p = 0.057$), Jitter ($p = < 0.0001$) and Shimmer ($p = < 0.0001$). No major complications was not found. Occurrence of decannulation was seen in 85.71% and 14.29% could not be decannulated.

Conclusion: CO2 laser assisted unilateral cordotomy had significantly improved in subjectively as well as objectively and there had no major adverse effects.

IS-182 Laryngotracheal Stenosis in Vietnamese Adults: A Five-Year Management Review in a Developing Country

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Laryngotracheal stenosis poses significant challenges in head and neck surgery, particularly in developing countries, necessitating a multidisciplinary approach. This retrospective study analyzed 42 cases of laryngotracheal stenosis treated at University Medical Center Ho Chi Minh City between 2019 and 2024. Patient demographics, etiology, stenosis characteristics, and outcomes were assessed, along with correlations between endoscopic, CT-scan, and intraoperative findings. Among patients, 23.9% had glottic stenosis (GS), 76.1% had subglottic tracheal stenosis (SGTS). Prolonged intubation or tracheostomy was the leading etiology (61.9%). Stenosis severity was predominantly Cohen II in GS (40%) and Myer-Cotton III in SGTS (50%). Endoscopy accurately evaluated GS (100%) and SGTS (93.8%), while CT-scan achieved 100% accuracy for SGTS and strongly correlated with surgical findings of stenosis diameter and length ($r = 0.946$ and 0.994; $p < 0.01$). Treatments included endoscopic procedures, stenting, and tracheal resection and anastomosis, achieving a decannulation rate of 73.8%. These findings emphasize the importance of precise diagnostic tools and individualized treatment strategies.

IS-183 Evaluating Surgical Outcomes of End-to-End Anastomosis for Tracheal Stenosis

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Purpose: In Vietnam, the most common reason of tracheal stenosis have seen was post-intubation. It affects to patients quality of life. This research aimed to evaluate the outcome of the end to end anastomosis for the tracheal stenosis.

Methods: A single center prospective cohort study was conducted. All the cases of tracheal stenosis with the indication of tracheal resection with end-to-end anastomosis underwent a follow-up.

Results: 86 cases met the inclusive criteria with the mean age $41 +/- 12$. The cause of tracheal was 78 (90.7%) post intubation. the narrow length of 2-4cm was 88.4% (76/86), only 10 cases were over 4cm in length. The procedure was performed with 13 underwent endoscopic resection and dilation, 7 had stent replacement, and 66 De novo. Finally, 76 had mobile vocal cords, 10 had unilateral vocal cord paralysis, and none had bilateral vocal cord paralysis. 100% of surgeries were successful, which was assessed by decannulation.

Conclusions: The end-to-end anastomosis technique is a well-established and highly successful method for treating airway stenosis.

IS-184 Bilateral combined laryngocele: Comprehensive review of the literature

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Background: Laryngocele, an abnormal dilation of the air-filled laryngeal ventricle, is rare and typically unilateral. Methods: This case of bilateral laryngocele was excised using a combined external cervical and endoscopic approach, with a literature review. Articles were sourced from PubMed, Web of Science, Cochrane Library, and Scopus. Results: We identified 77 cases of bilateral laryngocele, ages 16-87 (mean 48 years), predominantly in males (33 males vs. 8 females). Symptoms included neck swelling (25 cases) and hoarseness (15 cases). The mixed type was most common (22 cases). Tracheostomy was performed in 8 patients; laryngopyocele was noted in 9. Tumor associations, mainly squamous cell carcinoma, were seen in 25 cases. Positive outcomes were achieved with the external cervical surgical approach, though some recurrences occurred with endoscopic and laser excision. No significant differences in variables except a potential link between laryngopyocele and SCC ($p = 0.057$). Conclusion: Bilateral laryngocele requires prompt diagnosis and management, with surgery as the cornerstone treatment. Further research is needed to enhance understanding of this rare condition.