

## **SSORL Spring Assembly 2021**

Innovation and future development in ORL

June 17-18, 2021

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# ABSTRACTBOOK

SSORL Spring Assembly 2021

Swiss Society of Oto-Rhino-Laryngology,  
Head and Neck Surgery SSORL

June 17-18, 2021  
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# SSORL Spring Assembly 2021

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## SSORL Spring Assembly 2021

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O01

### **Perioperative predictors of early surgical revisions and flap-related complications following microvascular free tissue transfer in head and neck reconstruction**

Dr. med. John-Patrik Burkhard; Jelena Pfister; Dr. med. Claudia Lädach; Manuel Waser; Prof. Dr. Dr. med. Benoît Schaller; Dr. med. Radu Olariu; Dr. med. Dominique Engel; PD Dr. med. Lukas Löffel; Prof. Dr. med. Roland Giger; Prof. Dr. med. Patrick Wüthrich  
Inselspital - Universitätsspital Bern

#### Objectives:

The aim of this study was to identify perioperative predictors on early surgical revision and flap-related complications in free tissue Transfer for head and neck reconstruction.

#### Materials and Methods:

Intraoperative amount of fluid and of vasopressors, and other relevant perioperative parameters were recorded in 131 patients undergoing head and neck microvascular reconstruction and compared with early surgical complications, defined as interventions within 30 days after initial surgery. The relationship between perioperative variables and the different complication categories was determined using an optimized multiple logistic regression.

#### Results:

The administration of diuretics (OR 3.93 [95% CI 1.75, 9.14],  $p=0.001$ ) as a treatment for perioperative fluid overload and the type of flap (2.90 [1.19, 7.18],  $p=0.019$ ) was associated with a higher risk of early surgical revisions. Perioperative fluid overload (1.00 [1.00, 1.00],  $p=0.039$ ) is significantly related to flap-related complications. We found no effect of intraoperative administration of vasopressors on early surgical revisions (1.00 [1.00, 1.00],  $p=0.8$ ) or on flap-related complications (norepinephrine 1.00 [1.00, 1.00],  $p=0.6$ , dobutamine 1.00 [0.99, 1.01],  $p=0.5$ ).

#### Conclusion:

Perioperative fluid overload is associated with higher risks of early surgical revision and flap-related complications. In contrast, the administration of vasopressors seemed to have no effect on either surgical revision rate nor flap-related complications.

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O02

### **Predicting Factors for Oncological and Functional Outcome in Hypopharyngeal Cancer**

\*Dr. med. Miranda Visini; Prof. Dr. med. Roland Giger; PD Dr. med. Lukas Anschütz; Dr. med. Olgun Elicin; Dr. med. Mohamed Shelan  
Inselspital Universitätsspital Bern

#### Objectives:

Hypopharyngeal squamous cell carcinoma (HPSCC) is a rare but aggressive malignancy, with low survival rates and high incidence of tumor and treatment-related morbidity. This study aims to analyze the long-term oncologic and functional outcomes of a large cohort of patients and to determine prognostic factors.

#### Methods:

The records of all patients diagnosed with HPSCC and treated with curative intent between 2003 and 2015 at our tertiary referral center were reviewed. Patient and initial disease characteristics, features and complications of primary treatment, recurrence patterns and corresponding treatments and the oncologic and functional long-term outcome were determined.

#### Results:

Results: For a total 179 patients, primary radiotherapy (RT) was the predominant treatment modality (78%), whereas 22% underwent primary surgery. The median, 2-year and 5-year overall survival (OS) for the study cohort was 47 months, 64% and 43%, respectively. The 2- and 5-year relapse-free survival (RFS) was 52% and 36%. The median survival after first and second relapse was seven and six months, respectively. The median RFS after first relapse and salvage treatment was nine months. A nodal status of  $\geq$  cN2 (HR=1.89, CI:1.21-3.05,  $p < 0.005$ ) and any other primary tumor localization than pyriform sinus (HR=1.60, CI: 1.04-2.42,  $p < 0.05$ ) were identified as independent risk factors for shorter OS and RFS. Regarding functional outcome, the 2- and 5-year laryngectomy-free-survival was 55% and 37%, respectively.

#### Conclusion:

In this large cohort with long-term follow-up, any other primary tumor localization than pyriform sinus and  $\geq$  cN2 were identified as risk factors for reduced OS and RFS in HPSCC.

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O03

### **Fear of recurrence in patients with head and neck cancer: risk factors and implications for post-treatment follow-up**

Dr. med. Julia Sophie Riggauer

Inselspital, Bern University Hospital, Bern, Switzerland

#### Objective:

Although fear of cancer recurrence (FoR) is highly prevalent in survivors of head and neck squamous cell carcinoma (HNSCC) and impacts quality of life, it is rarely addressed in follow-up (FU) visits. This study investigated clinical and sociodemographic associations with FoR that would allow to recognize patients at risk.

#### Materials and methods:

We conducted a cross-sectional survey among HNSCC survivors with complete response after curatively intended treatment. The survey included a 7-item FoR questionnaire that provides criteria for elevated FoR as well as a total FoR score value (range 7 to 40), and explored patients' preferences regarding follow-up. Sociodemographic and clinical data were extracted from medical charts.

#### Results:

Elevated FoR was present in 37% of the 101 included patients, who had significantly higher FoR overall scores than patients without elevated FoR (21.7 vs. 13.0,  $p < 0.001$ ). Females and patients  $\leq 65$  years showed significantly higher FoR overall scores than males and patients  $> 65$  years (score difference 3.40 [ $p=0.022$ ] and 4.25 [ $p=0.002$ ]). Recurrence or second primary malignancy during follow-up increased relative risk for elevated FoR (RR 1.7,  $p=0.046$ ). Patients who preferred regularly imaging in FU had higher FoR overall scores (mean (SD): 17 [7.1] vs. 13 [4.2],  $p=0.034$ ). Tumor stage and treatment modality were not associated with elevated FoR or FoR overall score.

#### Conclusion:

FoR in HNSCC patients is associated with female sex, young age and history of past recurrence or second primary malignancy. Systematic screening and sensitization of clinicians is recommended to identify and adequately treat patients at risk.

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O04

### **Surgery as Single-Modality Treatment for Early-Stage Olfactory Neuroblastoma: An Institutional Experience, Systematic Review and Meta-analysis**

Gregori Binz; Dr. med. Christian Meerwein; Dr. med. Georgios Nikolaou; PD Dr. med. Michael Soyka; Prof. Dr. Dr. med. David Holzmann

USZ

#### Goals:

Olfactory neuroblastoma (ONB) is a rare neuroendocrinetumor and accounts for approximately 3-6% of all sinunasal malignancies. Traditionally, the combination of surgical tumor resection and radiation therapy (RT) has been considered as “gold standard” in treatment protocols intended to cure.

#### Methods:

We conducted a systematic review of the literature, a retrospective institutional case series and an individual patient data meta-analysis on only surgically treated ONB patients.

#### Results:

The screening of over 3238 studies revealed 33 studies on 128 patients with purely surgically treated ONB, suiting for individual patient data meta-analysis. Our analysis revealed a disease-free survival (DFS) and overall survival (OS) of 67.7% and 75.4% at 5 years and 57.1% and 71.9% at 10 years, respectively. Univariate analysis showed that Kadish stage C/D and Hyams grading III//IV significantly affected OS (P 0.000 and P 0.000) and DFS (P 0.000 and P 0.002). For low-risk patients with absence of risk factors, the DFS was 80.6% at 5 years and 67.8% at 10 years, respectively. At our institution, a total of 10 patients was treated with surgery alone and remained alive and free of disease at last follow-up (median follow-up 83 months, IQR 32-123).

#### Conclusion:

Surgery alone is an equivalent alternative to combined treatment in carefully selected low-risk ONB patients with better outcome measures than previously reported. The decision in favor of surgery as a single-modality treatment should be discussed at an interdisciplinary tumor board, and the question of microscopically clear surgical margins must be defined and addressed.

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O05

### **Surgical margins in 3D planned mandibular resections for Squamous Cell Carcinomas of the oral cavity**

\*Dr méd. Mona Lamy; Pr Dr méd. Stefano La Rosa; Martin Broome  
CHUV Centre Hospitalier Universitaire Vaudois (CHUV)

#### Objectives :

3D planned mandibular resections using cutting guides and pre-planned plates are now widely used in oncological surgery. The main advantages are gain of time, precision and aesthetic outcomes. The drawbacks include costs, time for planning and printing the surgical tools. This time between the radiological data and the surgery may allow a tumour progression, rendering the custom-made guides useless. There is no consensus regarding surgical margins that should be planned to ensure a safe oncologic outcome. The purpose of this retrospective study is to evaluate if the planned margins are adequate.

#### Materials, methods :

Inclusion criteria were: Squamous Cell Carcinomas of anterior and lateral floor of mouth with mandibular invasion (T4); mandibular resection using 3D planning and cutting guides. Between June 2015- December 2019, 17 patients met the criteria. Time between the planning and the surgery was recorded. We decided to use a margin of 1cm on the pre-operative CT-scans on each side of the tumours on our planning in all patients. We then measured the distance of the bone resection on the pathological specimen.

#### Results :

All 17 patients had safe bone surgical margins (R0). The average time from the scanners used for the planning to the surgery was 33 days.

#### Conclusion :

All the cutting guides could be used. The anatomo-pathological results showed safe oncological margins and no patients required a further resection. A 1cm margin during 3D planning for mandibular resections with 3D printed cutting guides, in patients with T4 Squamous Cell Carcinomas can therefore be considered safe.

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O06

### **Radiofrequenzablation von Schilddrüsenknoten – erste Erfahrungen aus dem Luzerner Kantonsspital**

\*Nadja Angela Stenz; Dr. med. Maria del Sol Pérez Lago; Dr. med. Michael Lehner; Prof. Dr. med. Gunesh Rajan; Dr. med. Stefan Fischli

Luzerner Kantonsspital (LUKS); Schilddrüsen- und Osteoporosepraxis, Wels

#### Ziele

Die Radiofrequenzablation benigner Schilddrüsenknoten hat in den letzten Jahren als Behandlungsalternative zunehmend an Bedeutung gewonnen. Diese Arbeit stellt die ersten Ergebnisse der bisher durchgeführten Radiofrequenzablationen an unserem Zentrum zusammen.

#### Methoden

Retrospektiv wurden die Daten von 11 Patienten erfasst, bei welchen 12 benigne Schilddrüsenknoten ab Juni 2019 mittels Radiofrequenzablation am Luzerner Kantonsspital behandelt wurden. Die Grösse der benignen Schilddrüsenknoten im Ultraschall sowie der Hormonstatus wurden vor Radiofrequenzablation sowie in regelmässigen Abständen nach der Intervention kontrolliert. Zusätzlich wurden die peri-/postinterventionellen Komplikationen analysiert.

#### Resultate

Das Knotenvolumen konnte von  $7.87 \pm 5.67$  mL prätherapeutisch auf  $3.53 \pm 3.28$  mL ( $p = 0.002$ ) und  $1.99 \pm 1.75$  mL ( $p = 0.028$ ) 3 bzw. 10 Monate posttherapeutisch reduziert werden. Entsprechend einer Volumenreduktionsrate von 59.97% bzw. 77.73% nach 3 bzw. 10 Monaten. Bereits 1 Monat postoperativ kam es bei 63.63% Patienten zu einer Normalisierung der Schilddrüsenfunktion und 10 Monate postoperativ lag die Rate der Patienten mit normalen Hormonwerten bei 87.5%. In einem Fall kam es zu einer Weichteilinfektion, welche chirurgisch versorgt werden musste, bei einer Patientin kam es zu einer passageren Minderbeweglichkeit der Stimm lippen.

#### Schlussfolgerungen

Basierend auf unseren ersten Daten sehen wir als interdisziplinäres Schilddrüsenzentrum die Radiofrequenzablation als eine effektive Behandlungsmethode von Schilddrüsenknoten bei relevanter Volumenreduktion, guter Rate postinterventioneller Normalisierung der Hormonwerte sowie Erhaltung der Schilddrüsenfunktion.

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O07

### **Seconde localisation de carcinome épidermoïde opéré au Robot da Vinci : résultats oncologiques et fonctionnels.**

\*Federico Soldati; Dr méd. Karma Lambercy; Christian Simon  
CHUV Lausanne

#### Objectifs

Etude rétrospective de patients présentant une seconde localisation de carcinome épidermoïde prise en charge par chirurgie trans-orale au robot Da Vinci. Analyse des résultats oncologiques et fonctionnels (FOSS) à long terme.

#### Matériel et Méthode

Etude rétrospective d'une série de patients présentant une deuxième localisation de carcinome épidermoïde de la sphère ORL opérés par TORS au CHUV entre 2013 et 2017.

Inclusion des lésions néoplasiques secondaires oropharyngées et susglottiques, opérables au DaVinci, FOSS score disponible à plus de 3 mois de la chirurgie.

Exclusion des patients ayant bénéficié d'un suivi inférieur à 6 mois, patients ayant nécessité une pharyngo-laryngectomie totale par la suite.

Evaluation pré et post-opératoire au robot Da Vinci de la fonction de déglutition selon le score de FOSS.

#### Résultats

Nous présentons les résultats de 17 patients traités par TORS pour une seconde localisation de carcinome épidermoïde situé au niveau de la base de langue (8), amygdale (6), susglottique (1) et du palais mou (2). Les 17 cas ont été réséqué en R0.

Les complications opératoires étaient l'hémorragie (1), tracheotomie pour extubation impossible dans un contexte d'œdème (1), sténose cicatricielle (1). Suivi de la fonction de déglutition par FOSS moyenne de 39 mois, 10 patients sur 17 patients gardent à long terme une FOSS score stable.

#### Conclusion

La chirurgie robotique trans-orale permet d'obtenir des résultats oncologiques et fonctionnels satisfaisants. Les complications sont rares et non spécifiques au Robot. Notre série de cas, bien documentée, révèle une stabilité du FOSS score à long terme, la fonction de déglutition est préservée.

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O08

### **The Lateral Arm Flap for Reconstruction of Medium-size Defects in Head & Neck Surgery- a Case Series and how we do it**

\*Dr. med. Marco Hösl; Dr. med. Ilario Fulco; Prof. Dr. med. Stephan Haerle  
Zentrum für Kopf-Hals-Chirurgie Luzern; Belcare Aarau

#### Aim

Most common head and neck reconstruction free flaps are the radial forearm flap (RFF) and the anterolateral thigh (ALT) flap. In our opinion, these flaps are not ideal for medium-sized defects as they are too thin or too bulky. The lateral arm flap (LAF) is an excellent alternative.

#### Material and methods

Fourteen patients were included in this case series. All patients were pre-discussed in an interdisciplinary tumor-board, and the surgical resection was determined. A free lateral arm flap was raised and used for reconstruction tumor resection. Patients were followed up regularly.

#### Results

Data was collected regarding flap survival, complication rate, (neo-)adjuvant radiation or chemotherapy, outcome of speech and swallowing, and quality of life.

#### Conclusion

The lateral arm flap provides pliable, thin fasciocutaneous tissue, is safe and versatile and can be considered for medium-sized soft tissue defects in head and neck microsurgical reconstruction. Donor-side morbidity is low, as there is no functional impairment.

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O09

### Minimally invasive Management of Parapharyngeal Tumors

Manuel Schoch; Prof. Dr. med. Gunesh Rajan  
Luzerner Kantonsspital (LUKS)

#### Introduction

Traditionally tumors of the parapharyngeal space (PPST) are resected through transcervical, transparotideal or even transmandibular approaches with subsequent morbidity such as facial nerve palsy, first bite syndrome, salivary cutaneous fistula or mandibular non-union among other disadvantages like long operation times and prolonged recovery. Therefore we would like to discuss the option of treating these tumors through transoral-endoscopic or robotic techniques.

#### Methods

It is a retrospective study with 6 patients treated from Mai 2019 to January 21 with a PPST at the department of Otolaryngology, Head Neck Surgery in a tertiary teaching hospital.

#### Results

Average follow-up is 9 months (3- 21 months) after surgery. 3 patients were male, 3 were females. Tumor resection was performed via TORS in 3 patients and endoscopically in 3 patients. Mean operation time 114 minutes (51-178). No perioperative or postoperative complications occurred in the cohort. Minor complications such as wound dehiscence was found in 2 patients. Histology demonstrated pleomorphic adenoma in all cases. No evidence of residual tumor was found in the follow up MRI so far.

#### Conclusion

We conclude that the transoral resection of PPST via TORS or endoscopical techniques is a safe and effective surgical approach to these kind of tumors.

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O10

### The impact of chemosensory dysfunctions on weight loss

\*Dr méd. Dimitrios Daskalou; Dr méd. Julien W. Hsieh; Marianne Hugentobler; Basile N. Landis  
 Rhinology-Olfactology Unit, Department of Otorhinolaryngology- Head and Neck Surgery,  
 Geneva University Hospitals, Geneva, Switzerland

Background:

This study aims to investigate which findings in patients' smell and taste workup are predictors of weight loss.

Methods:

This is a retrospective study based on a validated questionnaire consecutively given to adult patients presented in smell and taste consultations during a 10-year period. Psychophysical tests were used to measure chemosensory function (Sniffin' Sticks, taste powder, and Taste Strips tests).

Results:

We included 554 patients (307 females) with a median age of 51 years (IQR 23). Among them, 76 (13.7%) reported involuntary weight loss due to chemosensory disorders occurred over periods ranging from 3 to 36 months. We found that the odds of losing weight were 2.1 times higher when patients reported changes in aroma perception ( $P=0.012$ ; 95% CI 1.15-3.83). Parosmia, but not phantosmia nor smell loss, was a significant predictor of weight loss (OR 2.22;  $P=0.015$ ; 95% CI 1.17-4.2). Furthermore, the duration of symptoms for more than two years was protective for weight loss (OR 0.44;  $P=0.014$ ; 95% CI 0.23-0.85). Regarding putative etiologies, post-traumatic chemosensory dysfunction was also a significant predictor (OR 2.08;  $P=0.039$ ; 95% CI 1.04-4.16). Concerning psychophysical tests, we found that the probability of a patient to present weight loss increased by 8% for every 1-unit reduction in Taste Strips score ( $P=0.006$ ; 95% CI 0.87-0.98).

Conclusion:

We recommend investigating weight loss in smell and taste consultations, especially when patients report changes in aroma perception, parosmia, duration of symptoms for less than two years, head injury, and when low Taste Strips score is measured.

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O11

### Effects of biological treatments in Chronic Rhinosinusitis

Catrin Brühlmann; Fabio Ryser; Jacqueline Dülgeroglu; Dr. med. Urs Steiner; PD Dr. med. Michael Soyka

Universitätsspital Zürich & Universität Zürich

#### Introduction and aims:

The monoclonal antibody Dupilumab can be used as a treatment in patients with Chronic Rhinosinusitis with Nasal Polyps (CRSwNP). In a previous study a significant reduction of all reported symptoms after 24 weeks could be demonstrated. In the present study, we aimed to document treatment response over a shorter period of time (days to weeks) by using subjective and objective measures.

#### Material and methods:

Monocentric study of 29 patients: 1) Assessment of subjective treatment response using the Sino-Nasal Outcome Test-20 (SNOT-20) on day 0, 3, 7, 14, 21, 28 and 90 after the first injection, 2) Assessment of objective treatment response using the Total Nasal Endoscopic Polyp Score (TPS) on day 0, 7, 28 and 90 after the first injection, 3) Retrospective analysis of the blood count and of cytokine levels.

#### Results:

The patients treated with Dupilumab showed a significant reduction in subjective SNOT-20 scores within 7-10 days ( $p = 0.032$ ). They also showed a significant reduction in objective TPS within 7 ( $p = 0.007$ ) and within 28 days ( $p < 0.001$ ). With a Receiver Operating Characteristic (ROC) curve we could also show that subjective scores at 7-10 days after the first injection were predictive for therapy response after one month (Area under the curve: 0.935).

#### Conclusion:

Patients suffering from CRSwNP who get treated with Dupilumab show a significant reduction of their objective and subjective symptoms earlier (after 7-10 days) than other studies showed previously. Therapy response after 7-10 days can predict therapy response after one month and can appropriately select patients who will benefit from a continuation of the therapy.

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O12

### **Sinus surgery in lung transplant recipients with cystic fibrosis and its impact on overall survival**

\*Manuel Meier; Prof. Dr. med. David Holzmann; PD Dr. med. Michael Soyka; PD Dr. med. Macé Schuurmans  
USZ Zürich

Aim:

The aim of this study is to critically review the standard protocol at the University Hospital in Zurich which intends sinus surgery as soon as possible postoperatively for all cystic fibrosis patients undergoing lung transplantation. We analyze the short-term and overall survival after lung transplantation and compare these results between patients who had sinus surgery (pre- and post-transplant) versus patients who did not undergo surgery after the transplantation due to various reasons.

Methods/Material:

We performed a retrospective analysis of clinical data from 69 patients with cystic fibrosis who underwent bilateral lung transplantation at the University Hospital Zurich between 01.01.2009 and 01.01.2020. The population consists of men and women between 18 and 55 years old.

Results:

Preliminary results indicate that there is no benefit in the long time overall survival in lung transplant recipients who did have sinus surgery pre- or post lung transplantation (63%) compared to those without sinus surgery (68%) ( $p=0.385$ ).

Nevertheless, the analysis shows that there is a trend without significance to a benefit in the 5-year survival after transplantations of the patients undergoing sinus surgery with an 84% survival-rate versus 68% in the group without sinus surgery. However, confounding factors could not be completely eliminated.

Conclusion:

We suggest a more individual approach in this very ill collective of patients. It might be more appropriate to do sinus surgery only if the patients are symptomatic or are at high risk for infectious complications posing a possible threat to the transplant.

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O13

### **Progression of Rhinitis to Rhinosinusitis: A Cohort Study**

\*Dr. med. Bram van Schie; PD Dr. med. Michael Soyka; Joel Vavrina  
 Universitätsspital Zürich; Universitätsspital & Universität Zürich

Chronische Rhinitis (CR) und Rhinosinusitis (CRS) sind Krankheitsbilder vergesellschaftet mit signifikanter Morbidität, erheblicher finanzieller Last und verminderter Lebensqualität. Für eine adäquate Betreuung dieser PatientInnen muss die Pathogenese und die Assoziation dieser Krankheitsbilder besser verstanden werden. Es wird u.a. angenommen, dass Patienten mit einer CR ein erhöhtes Risiko haben im Verlauf eine CRS zu entwickeln. Das Ziel der Studie war es zu untersuchen, wie viele Patienten mit einer CR nach 10 Jahren eine CRS entwickeln und welche Subgruppe der CR oder sonstige Faktoren hierfür prädisponieren.

In dieser deskriptiven Kohortenstudie wurden 228 PatientInnen, welche zwischen 2005 und 2010 an der Klinik für Ohren-, Nasen-, Hals- und Gesichtschirurgie des Universitätsspitals Zürich mit einer CR diagnostiziert wurden, telefonisch kontaktiert. Im strukturiertem Telefon-Interview, u.a. mit NOSE-D und SNOT-20-GAV Score, wurde eingeschätzt, ob zwischenzeitlich eine CRS vorliegen könnte. Bei 6 davon lag bereits ein dokumentierter Verlauf vor. 114 wurden telefonisch erreicht und befragt und bei 7 (6%) davon wurde nach 8 Jahren (Median) eine CRS diagnostiziert. Keine Rhinitissubgruppe zeigte eine statistisch signifikant erhöhte Wahrscheinlichkeit eine CRS zu entwickeln. Jedoch waren hohes Erkrankungsalter, vorhergehende Operationen in der Nase und regelmässiger Gebrauch eines Nasensprays sowie Medikamenteneinnahme statistisch signifikante Risikofaktoren.

Nur ein kleiner Anteil der Patienten mit einer CR entwickelt also eine CRS, weshalb das Paradigma 'CR als Risikofaktor für eine CRS' überdacht werden muss.

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O14

## Olfactory Fluctuation Revisited

\*Dr méd. Julien Wen Hsieh; Dr méd. Dimitrios Daskalou; Dr méd. Valentine Detroux; Rebecca Sipione; Pr Dr Dr méd. Pascal Senn; Marianne Hugentobler; Pr Dr Dr méd. Basile Landis  
 Hôpitaux Universitaires de Genève (HUG); University of Geneva (UNIGE)

### Objectives

Many patients complain about olfactory fluctuation (OF), which is a symptom commonly attributed to sinonasal disease. Evidence for its association with sinonasal disease is scarce. The aim of the study is to identify explanatory variables associated with OF and to analyze its predictive value regarding sinonasal disease.

### Methods

In a retrospective study, we analyzed data from 482 patients attending the smell and taste outpatient clinic with full psychophysical workup and structured questions regarding their symptoms. The questionnaire included items on OF and chronic nasal symptoms. Clinical investigators filled out the second part of this questionnaire that included information about nasal endoscopy, psychophysical tests of orthonasal olfaction (Sniffin' Sticks), retronasal olfaction, and putative etiology of olfactory dysfunction.

### Results

OF was more prevalent in sinonasal disease (42.4%) compared to other putative etiologies of olfactory dysfunction such as postinfectious (28%) or posttraumatic (11.7%). OF was associated with high Sniffin' Sticks test scores and presence of "chronic nasal symptoms". OF positive predictive value to detect putative sinonasal disease against other etiologies was: 50.5% (idiopathic), 65% (postinfectious), 76.5% (posttraumatic), 92.9% (congenital), 92.9% (post-surgery).

### Conclusion

Olfactory fluctuation is a symptom mostly but not exclusively associated with sinonasal disease, elevated Sniffin' Sticks test scores, and is frequently accompanied by other nasal complaints. Its presence is valuable information for clinicians to be integrated into the clinical context when doing patients' workup.

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O15

### **Berner Cocktail Party (BCP) Datensatz**

Tim Fischer; Prof. Dr. med. Marco Caversaccio; PD Dr. med. Wilhelm Wimmer  
Insel Gruppe AG, Inselspital

Der Cocktail-Party-Effekt bezieht sich auf die Fähigkeit des menschlichen Gehörs, in komplexen akustischen Szenarien eine bestimmte Zielschallquelle aus einem Gemisch von Hintergrundgeräuschen zu extrahieren.

Die Leichtigkeit, mit der Normalhörende diese anspruchsvolle Aufgabe bewältigen, steht in krassem Gegensatz zu den Schwierigkeiten, die Hörgeräteträger\*innen in diesen Situationen haben. Um ebendiesen Patient\*innen zu helfen, versuchen Wissenschaftler\*innen, diese Fähigkeit des menschlichen Gehörs zu imitieren, bisher mit bescheidenem Erfolg. Um die wissenschaftliche Gemeinschaft in ihren Bemühungen zu unterstützen, stellen wir den Berner Cocktail Party (BCP) Datensatz zur Verfügung.

Die Daten der 55938 Cocktail Party Szenarien wurden mit 16 synchronisierten Mikrofonen gesammelt, welche an den Köpfen und CI-Audioprozessoren der 20 Teilnehmer\*innen sowie eines Kunstkopfes platziert wurden. Zusätzlich zu den mehrkanaligen Audioaufnahmen, wurden die räumlichen Koordinaten der Mikrofonpositionen für jede Teilnehmer\*in digitalisiert. Zur Erleichterung der Datenverarbeitung wurden Python-Skripte bereitgestellt.

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O16

### Gustatory function in patients with cholesteatoma

\*Aline Sophie Neumann; PD Dr. med. Michael Soyka; Elisabeth Jane Rushing; PD Dr. med. Christof Röösl

University of Zurich and Department of Otorhinolaryngology, Head and Neck Surgery, University Hospital Zurich, Zurich, Switzerland; Department of Neuropathology, University Hospital Zurich, Zurich, Switzerland

#### Objectives:

To compare gustatory function of patients before and after surgery for chronic otitis media with cholesteatoma (OMCC) with patients operated for chronic otitis media simplex (OMCS) and lateral skull base lesions (LSB).

#### Materials and Methods:

This prospective study included 19 patients with unilateral OMCC. In six of these patients, the chorda tympani nerve (CT) was resected. Eleven patients with unilateral OMCS and three patients with LSB served as the control group. Taste function on both sides of the tongue was measured with taste strips, and a questionnaire on taste sensation was completed before and two weeks after surgery.

#### Results:

The mean difference in taste function between the healthy and affected side of the tongue was compared. Preoperatively, OMCC patients showed a significantly larger mean difference than OMCS or LSB patients ( $p = 0.044$ ). Three patients (16%) with OMCC and three patients (21%) with OMCS or LSB reported preoperative taste alterations.

Two weeks postoperative, taste function indicated a statistically significant larger decrease in OMCC patients without CT resection (mean taste function affected side: 10.38 vs. 6.69) compared to OMCS patients (11.45 vs. 11.45) ( $p = 0.003$ ). Taste alterations were reported by nine OMCC patients (69%) compared to four OMCS patients (36%).

#### Conclusions:

Before surgery, patients with OMCC display a more pronounced lateral difference in gustatory function than patients with OMCS or LSB. However, this discrepancy often seems to go unnoticed. Postoperatively patients with OMCC without CT resection show a greater reduction in taste function and experience more taste alterations than controls.

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O17

### **Mikroskop – Endoskop - Orbeye - Exoscope oder Robotic Scope in der Ohrchirurgie! Quo vadis?**

Prof. Dr. med. Thomas Linder; Prof. Dr. med. Gunesh Rajan; Dr. med. Christoph Schlegel-Wagner

Luzerner Kantonsspital LUKS

Ziele:

Die Einführung des Ohrmikroskopes 1953 (OPMI-1) ermöglichte eine rasante Entwicklung in der Ohr- und lateralen Schädelbasischirurgie. Welches sind die aktuellen Trends und Herausforderungen in der Weiterentwicklung der bisherigen optischen Systeme?

Material und Methoden:

Innovative neue 2- oder 3D-Ohrendoskope konkurrenzieren sich bezüglich der optimalen Visualisierung mit 4K 3D Kamerasystemen auf halbautomatischen Roboterarmen, wie dem Vitom-Exoscope von Storz, dem Orbeye von Olympus oder dem Robotic Scope von bhs. Die aktuellen Vor- und Nachteile dieser innovativen Technologien sollen aufgrund von Testversuchen dem bisherigen binokularen Ohrmikroskop der neusten Generation gegenübergestellt werden.

Resultate:

Während optische und digitale Zoom-Möglichkeiten eine eindruckliche hochauflösende Videoqualität erlauben und die Ergonomie der aufrechten Körperposition Vorteile gegenüber der bisherigen sitzenden Position ergibt, ist die exakte Tiefenschärfe und Kontrastierung gegenüber den rein optischen Systemen weiterhin eine Herausforderung. Die verschiedenen Systeme sollen einander gegenübergestellt werden.

Schlussfolgerungen

Die Integration von neuester 4K 3D Kameratechnologie auf entsprechende Bildschirme oder virtuelle 3D-Brillen stellt tatsächlich eine grosse Herausforderung an bisherige binokulare Mikroskope dar. Ob es die Chirurgie auch verändert, wird sich weisen.

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### **Herstellung von anatomisch akkuraten Scala-Tympani-Modellen mit einer hydrophilen Beschichtung für Experimente zur Cochlea-Implantation**

Philipp Aebischer; Prof. Dr. med. Marco Caversaccio; Wilhelm Wimmer

ARTORG Center for Biomedical Engineering, University of Bern; Inselspital - Universitätsspital Bern

Die Insertion von Elektrodenträgern in das Innenohr ist ein entscheidender Schritt bei der Cochlea-Implantation. Künstliche Cochlea-Modelle können ein wertvolles Werkzeug zur Untersuchung der Dynamik dieses Prozesses darstellen. In dieser Arbeit beschreiben wir die Herstellung und Validierung von Scala-Tympani-Modellen mit realistischer Geometrie und Oberflächenbeschaffenheit.

Unsere Modelle adressieren die Einschränkungen früherer Designs. Insbesondere reproduzieren wir erstmals die intracochleären Reibungseigenschaften mit einer einfach aufzutragenden Polymerbürstenbeschichtung, welche hydrophile Oberflächen erzeugt. Des Weiteren stellen wir Geometrien mit präziser Makroanatomie basierend auf mikrotomographischen Aufnahmen her. Die angewendeten Methoden beruhen auf frei verfügbaren Daten und verwenden einfach zu beschaffende Materialien und Werkzeuge.

Der Vergleich mit Untersuchungen an Kadaverpräparaten zeigt eine gute Übereinstimmung der Einführungskräfte, sowohl in Bezug auf die Einführtiefe als auch auf die Einführgeschwindigkeit. Wir sind deshalb der Ansicht, dass hydrophile Beschichtungen und auf menschlicher Anatomie basierende Modellgeometrien das Potenzial haben, in Experimenten zur Einführung von Elektrodenträgern und der Entwicklung von chirurgischen Werkzeugen umfassende Anwendung zu finden.

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### **Role of contrast-enhanced MRI as a diagnostic and prognostic tool in patients with sudden sensorineural hearing loss**

Dr méd. Jelena Todić; Pr Dr méd. Minerva Becker; Pr Dr Dr méd. Pascal Senn

CHUV Centre Hospitalier Universitaire Vaudois (CHUV); HUG Hôpitaux Universitaires Genève

To evaluate the prevalence and clinical significance of MRI findings in patients with Sudden Sensorineural Hearing loss (SSNHL) and assess the prognostic value of MRI for hearing recovery.

This retrospective study included adult patients with unilateral SSNHL seen in our institution between 2005 and 2017. The MRI reports and images were analyzed in terms of peripheral auditory lesions, central nervous system (CNS) lesions and incidentalomas. Based on MRI findings, patients were divided into 3 groups: (1) normal ± incidentalomas, (2) peripheral lesions and (3) CNS lesions. The ENT files were reviewed for clinical information and hearing tests. Appropriate statistics were applied to detect differences between groups and prognostic factors for hearing recovery.

Two hundred and sixty-six out of 298 patients (137 males, 129 females, mean age = 52 years) fulfilled the inclusion criteria; 128 patients had normal MRIs with (n=40, 15.1%) or without (n=88, 33%) incidentalomas. MRI detected peripheral auditory lesions in 95 (35.7%) and CNS lesions in 43 (16.2%). Poor hearing recovery was significantly and independently associated with CNS lesions on MRI and with an age >70 years (p>0.05). In 26/266 (9.8%) patients, MRI findings related to SSNHL warranted a major change in patient management and follow-up by the ENT in comparison to current guidelines for SSNHL.

The presence of CNS anomalies on MRI is an independent negative predictor of hearing recovery. In about 10% of patients with SSNHL, MRI leads to a major change in patient management and follow-up by the ENT. Taken together, these data underline the significance of contrast-enhanced MRI in the work-up of SSNHL.

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### Prevalence of Endolymphatic Hydrops in Cochlear Implant Candidates with Idiopathic Profound Sensorineural Hearing Loss

\*Philipp Reddiess; Eva Mosimann; Dr. med. David Bächinger; Dr. med. Andreas Eckhard; KD Dr. med. Dorothe Veraguth; PD Dr. med. Christof Rössli; Alexander Huber; Dr. med. Anthony De Vere-Tyndall; PD Dr. med. Sebastian Winklhofer; Dr. med. Adrian Dalbert  
 University Hospital Zurich, University of Zurich

Objective:

To determine the prevalence of endolymphatic hydrops (EH) in cochlear implant (CI) candidates with idiopathic profound sensorineural hearing loss (SNHL) and its influence on structure preservation during cochlear implantation.

Material and Methods:

Delayed intravenous gadolinium-enhanced inner ear fluid-attenuated inversion recovery magnetic resonance imaging was performed prospectively in CI candidates with idiopathic progressive SNHL and no history suggestive for Meniere's disease. Before and 4 weeks after surgery pure-tone audiograms, video head impulse tests (VHITs), and vestibular evoked myogenic potentials (VEMPs) were conducted to determine changes in inner ear function.

Results:

Thirty-two ears in 16 CI candidates were included. Nine ears (28%) with EH were detected: cochlear hydrops grade 2 in n=2 (6%) and grade 1 in n=7 (22%), vestibular hydrops grade 2 in n=1 (3%) and grade 1 in n=4 (13%). Ten subjects received a unilateral CI. Of these, 3 (30%) showed EH on the implanted side. There was no difference regarding preoperative pure-tone average (85 dBHL vs. 76 dBHL,  $p=0.4$ ) as well as postoperative hearing loss (24 dB vs. 22 dB,  $p=0.6$ ) between hydropic and non-hydropic implanted ears. According to VHITs and VEMPs, 4 subjects, of which one had vestibular and cochlear hydrops grade 1, showed a reduced vestibular function after cochlear implantation.

Conclusions:

EH can be assumed in about one third of patients with idiopathic profound SNHL. There seems to be no influence of EH on structure preservation after cochlear implantation.

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### **Teaching Middle Ear Anatomy and Basic Ear Surgery Skills: A Qualitative Study Comparing Endoscopic and Microscopic Techniques**

\*Till Siggemann; Dr. med. Cilgia Dür; Corinne Dreifuss; Prof. Dr. med. Marco Caversaccio; Prof. Dr. Dr. med. Sören Huwendiek; PD Dr. med. Lukas Anschütz  
Inselspital, Universitätsspital Bern; Universität Bern

Objective:

Endoscopic ear surgery is gaining popularity as a minimally invasive surgical technique for middle ear diseases. Its ongoing implementation into clinical routine has consequences regarding teaching of middle ear anatomy and surgery. To improve undergraduate and postgraduate training, we investigated the perception of and preference for endoscopy as compared with microscopy at different educational levels.

Material and Methods:

After a standardized curriculum was run on endoscopic and microscopic anatomy and surgical skills education, 5 focus groups were held. The interviews were conducted, video recorded, transcribed, and analyzed. Analysis of the data gave rise to 11 themes showing the participants' perceptions and preferences.

Results:

Five medical students, 11 otorhinolaryngology residents, and 3 staff members participated in this qualitative study. For anatomy teaching, there was a clear preference for the endoscopic technique. The main advantages were the enhanced overview and perception of the anatomic details provided through endoscopy. For skills acquisition, the perceived advantages of the techniques were the same view of the surgical field for endoscopy and the 2-handed surgical technique for microscopy. However, there was no clear preference between the techniques for skills acquisition.

Conclusion:

The endoscopic technique was generally judged more beneficial for teaching anatomy, especially due to the greater visualization of the complex middle ear anatomy. Given that both techniques will remain important to future surgeons, the relative unique benefits of each must be considered when designing and optimizing curricula for otologic education.

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### **Analyse Quantifiée de la Marche (AQM) chez des patients avec un Déficit Vestibulaire Bilatéral (DVB) sévère, étude pilote**

\*Rebecca Revol; PD Dr méd. Stéphane Armand; Maurizio Ranieri; Samuel Cavuscens; Julie Corre; PD Dr méd. Angélica Pérez Fornos; PD Dr méd. Nils Guinand; Anissa Boutabla  
 Hôpitaux Universitaires de Genève (HUG)

#### Objectifs:

L'instabilité chronique, particulièrement lors de la marche, est la plainte la plus fréquente chez les patients avec un DVB. Le but de ce projet pilote est d'analyser quantitativement la marche des patients avec DVB grâce à une AQM.

#### Matériel et méthode:

Trois patients (S1, S2 et S3) avec DVB sévère ont réalisé une AQM à 3 vitesses auto-sélectionnées : lente, normale et rapide. Les paramètres spatio-temporels (vitesse, cadence, largeur et longueur du pas, longueur et durée de la foulée), et cinématiques (Gait Deviation Index - GDI et mouvements de la tête) ont été comparés avec des valeurs normatives (Z-scores, t-test).

#### Résultats:

Chez les 3 patients, dans toutes les conditions, la composante antéro-postérieure (pitch) des mouvements de la tête était inférieure à la norme. La vitesse de marche « normale » auto-sélectionnée et la cadence ont tendance à être inférieures à la norme. Dans toutes les conditions de marche, la largeur du pas était inférieure à la norme chez S1, supérieure à la norme chez S3 et dans la norme chez S2. Il n'y avait pas de différence pour les autres paramètres spatio-temporels. Le GDI était inférieur de la norme (>2 écarts types) uniquement pour S3.

#### Conclusion :

Lors de la marche, les 3 patients présentent une très faible composante de « pitch », qui pourrait refléter une stratégie de stabilisation de la tête. Les autres altérations retrouvées sont variables.

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### **Multifocal Tomographic Neurofeedback for Treating Chronic Tinnitus in Older People**

David Talaska; Prof. Dr. med. Tobias Kleinjung; Dr. med. Nicole Peter-Siegrist; Patrick Neff; Dominik Güntensperger; Martin Meyer

Universität Zürich, Zürich, Switzerland; UniversitätsSpital Zürich, Klinik für Ohren-, Nasen-, Hals- und Gesichtschirurgie; Universität Regensburg; Schweizerische Tinnitus-Liga; Universität Zürich

**Aim:**

First studies in treating chronic tinnitus applying source localized individualized alpha/delta neurofeedback targeting the auditory cortex displayed a persisting reduction of tinnitus-related distress whereas effects on tinnitus loudness disappeared again within 6 months after training. Building on those results, the aim for the current study is to expand the tomographic protocol with further key brain regions within the tinnitus network such as the dorsal anterior cingulate cortex and the insula by training the theta/beta1 ratio to reduce tinnitus loudness.

**Methods:**

Thirty-six chronic tinnitus patients between the age of fifty and eighty years are currently undergoing a clinical study including twelve neurofeedback training sessions within 9 weeks and broad pre-, peri- and post-, as well as follow-up tests 3 and 6 months after training. The main outcome measures are tinnitus-related distress measured with the Tinnitus Handicap Inventory (THI) and Tinnitus Functional Index (TFI), tinnitus loudness, and resting-state EEG activity.

**Results:**

Present-day statistical analysis of patients who have completed the trainings show a significant decline in perceived tinnitus loudness. Tinnitus distress as measured with the THI shows a significant decline. However, TFI-scores show no significant difference after training. Resting-state EEG activity is yet to be analyzed.

**Conclusion:**

For now, this study shows to reduce perceived loudness after training as well as a trend of loudness decline 6 months after training. Resting-state EEG analysis will show whether any subjective changes in tinnitus perception can be attributed to the chosen protocol.

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### **Reduction of ENT Consultations and its Impact on Disease Progression During the COVID-19 Lockdown**

\*Dr. med. Sarina Bucher; Aline Sophie Neumann; Prof. Dr. med. David Holzmann; PD Dr. med. Michael Soyka  
 Universitätsspital Zürich

#### Objectives:

To compare emergency consultations at the Otorhinolaryngological Emergency Department at the University Hospital Zurich between the COVID-19 lockdown in 2020 and the same period of time in 2019, as well as to study the effect of deferring visitations due to lockdown restrictions on disease progression in patients with chronic rhinosinusitis (CRS), benign and malignant tumors.

#### Methods:

This monocentric, retrospective study analyzed the number and reason of emergency consultations during the lockdown period in 2020 and the same period of time in 2019. Additionally, the medical records of 125 patients with CRS, 46 patients with a benign tumors and 26 patients with a malignant tumor were examined for progression of disease due to the mandatory postponement of appointments during lockdown.

#### Results:

During the lockdown, a reduction of 44.1% in emergency consultations compared to 2019 was observed. The largest difference in consultation numbers was seen in otitis media (3.4% in 2020 vs. 9.4% in 2019) and tonsillitis (5.9% vs. 9.0%). In more than one-third (37.8%) of patients with CRS a disease progression was seen. In 17.6% of patients with a benign tumor and in 15.4% of patients with a malignant tumor disease progression was noticed.

#### Conclusions:

Several reasons might have attributed to a drop in emergency consultations. With disease progression seen in more than one-third of all patients with CRS, regular follow-up appointments seem to be important and should not be rescheduled in this chronic disease even during lock-downs. Furthermore, a relevant part of patients with benign and malignant tumors showed unnecessary tumor progression due to deferring consultation.

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### **Roll-Down Nasal Dorsum in Preservation Rhinoplasty: An alternative to Spreader Flaps**

Prof. Dr. med. Daniel à Wengen

ORL

In Preservation Rhinoplasty structural integrity is important. In reduction rhinoplasty Spreader Grafts require division of the Upper Lateral Cartilages (ULC) from the septum. In our new Roll-Down Nasal Dorsum this connection is kept intact.

In order to reduce the profile of the middle third of the nose the nasal septum is pulled down from inside the nose to achieve the desired level. Then the ULC are sutured together applying a modified mattress suture that only includes the medial parts of both ULC leaving the lateral parts free. This keeps the natural elastic bow of the ULC intact that will preserve the internal nasal valve better than compressive sutures which include both layers of each ULC. Unlike in Spreader Flaps the septum is not part of the suture because it is lowered into the nose. After suture fixation of the ULCs the length of the septum is reduced near the anterior nasal spine of the nose to achieve a solid support.

Functional and aesthetic results as well as surgical details of this new technique will be presented in detail.

Roll-down dorsum is another step in the field of Preservation Rhinoplasty that respects natural structures better.

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### Closure of the Posterior Glottis during singing: True or not?

\*Dr. med. Linda März; Jan Thommen

Unispital Basel; Univeristaetsspital Basel

#### Objective:

The posterior glottis and its behaviour during phonation are still a little-explored area in laryngology. Laryngoscopy seems to be only suitable for a closer examination of the functional behaviour of the posterior glottis. Since only one plane can be observed, it cannot be ruled out with certainty that there is still an opening when a complete closure is observed. The aim of this study was to investigate the behaviour of the posterior glottis during phonation with HRCT recordings. Thereby an observation in all 3 planes is possible.

Study Design: Prospective study

#### Methods:

We examined 90 volunteers: 48 female professional singers, 22 male professional singers and 20 non-singers (10 mal, 10 female). Laryngoscopy as well as High-resolution computed tomography scans were performed during singing at the fundamental mean speaking frequency. HRCT images of the larynx and air-column were rendered and visualized 3-dimensionally using MIMICS software. Opening state of the posterior glottis was assessed in both examination and were compared for each participant.

#### Results:

The 3D reconstruction showed a complete closure of the posterior glottis, in 20/32 men (62.5%) and 30/58 women (52%); in the group of professional singers: 17/22 men (77%) and 26/48 women (54%); in the group of non-singers: 3/10 men (30%) and 4/10 women (40%).

#### Conclusion:

An observed closure of the posterior glottis on laryngoscopy does not necessarily correlate with an actual closure.

With respect to a complete closure of the glottis, there indeed seems to be a sex-specific difference. Likewise, there is strong evidence that posterior glottis closure can be influenced to some degree by training.

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### **Dizziness predicts history of migraine in chronic rhinosinusitis patients**

\*Dr. med. Marlene M. Speth; Dr. med. Katie M. Phillips; Prof. Dr. Ahmad R. Sedaghat  
 Kantonsspital Aarau; University of Cincinnati College of Medicine

Dizziness is a symptom that is commonly reported in patients with chronic rhinosinusitis (CRS) although its etiology is unclear. Herein, we report the association between dizziness and migraine in patients with chronic rhinosinusitis.

#### Methods:

Cross-sectional study of 135 CRS patients (31.1% CRSwNP, 68.9% CRSsNP). Participants were asked if they had ever been diagnosed with migraine by a physician in the past. Each participant completed the 22-item Sinonasal Outcome Test (SNOT-22) from which the nasal, sleep, ear/facial pain and emotional subdomain scores were calculated. Associations between SNOT-22 subdomain and individual item scores were sought with regression and receiver operating characteristic (ROC) curve analysis.

#### Results:

History of migraine was reported by 25.9% of participants. Using multivariable regression, a history of migraine was associated with the ear/facial pain subdomain score (odds ratio [OR]=1.11, 95%CI:1.01–1.23, p=0.038) but not with any of the other SNOT-22 subdomain scores. Although a history of migraine was associated with all of the symptoms reflected in the ear/facial pain subdomain of the SNOT-22 (ear fullness, dizziness, ear pain/pressure and facial pain/pressure) on univariate regression, in a multivariable model accounting for all four symptoms, migraine was associated only with the burden of dizziness (OR=1.48, 95%CI:1.11–1.98, p=0.008). On a scale of 0 – 5, a dizziness item score of  $\geq 1$  on the SNOT-22 predicted history of migraine with 80% sensitivity and 51% specificity (C-statistic=0.691, 95%CI:0.592–0.791, p < 0.001).

#### Conclusion:

While CRS is associated with otologic conditions, dizziness in CRS patients may indicate underlying migraine disorder

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### „Der funkelnde Stein“ Neues aus der Ultraschalldiagnostik

Dr. med. Gunther Pabst; Dr. med. Jonas Zehnder

HNO Klinik, LUKS

Ziel:

Die Abbildung von Speichelsteinen in den Speicheldrüsen und -kanälen ist selbst für erfahrene Ultraschalluntersucher eine Herausforderung. Ziel der Studie war es, zu untersuchen, ob das Twinkling Artefakt, das beim Doppler-Ultraschall an Kalkherden auftritt, zum Nachweis von Speicheldrüsensteinen geeignet ist.

Material und Methoden:

In einem Modelltest wurden 20 Speichelsteine in vitro mittels Doppler-Ultraschall auf ihre Darstellbarkeit und die Auslösung des Twinkling Artefakts analysiert. In einer Folgestudie wurden 28 Patienten mit Sialolithiasis im Power-Doppler (PDI) sowie im Color-Doppler-Modus (CDI) auf das Artefakt untersucht. Alle Ultraschalluntersuchungen wurden von einem erfahrenen Untersucher durchgeführt und von zwei erfahrenen Ultraschalluntersuchern nachträglich bewertet.

Ergebnisse:

Alle Steine konnten im Modellversuch mit dem Twinkling Artefakten zuverlässig nachgewiesen werden. 27 von 28 (96%) der Speichelsteine zeigten während der Beurteilung des Patienten auch in vivo ein Twinkling. Der PDI-Modus zeigte eine signifikant höhere Intensität des Twinklings als der CDI ( $p < 0,0001$ ).

In der US Untersuchung am Patienten verbessert eine gleichzeitige Phonation eines Tones durch den Patienten die Darstellung des Speichelsteines.

Schlussfolgerung:

Das Twinkling Artefakt ist ein sehr zuverlässiges Zeichen für die Diagnose einer Sialolithiasis. Der Power Doppler ist dem Farbdoppler zur Erkennung des Twinkling Artefakts überlegen.

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### **Preservation Rhinoplasty revisited: 124 Consecutive Primary Cases and Revision Rates**

Dr. med. Simon Zimmermann; Dr. med. Stephan Bessler

Nasal Surgery Clinic, Zürich

#### Background/Goal:

Preservation rhinoplasty (PR) is currently a trend in nose surgery. Here we present our operative techniques focusing on primary cases and revisions rates.

#### Patient and Methods:

124 patients who underwent PR from January 2019 to December 2020 in the Nasal Surgery Clinic in Zurich were retrospectively analyzed. Dr. Bessler was the senior surgeon. The operative technique was documented by photographs and operation reports, including incisions, dissection plane, ligament preservation, reduction of dorsum with a combination of push-let-down or push-over technique and alar cartilage maneuvers. Indications and revisions were documented.

#### Results:

All patients had closed rhinoplasty with an average follow-up time of 12 months. Low septal, intracartilaginous (with auto-rim flap) and apertura piriformis incisions were used for all patients. The dissection plane was subperichondrial/subperiosteal over the dorsum and sub-SMAS in the alar region. In all patients reconstruction of the scroll area/ligament was performed. Correction of the dorsum with push-let down technique was performed in 107 patients. 5 patients had a recurrence of the dorsal convexity, two an asymmetry of the nasal pyramid and one a relaxation of the caudal septum. 4 of 8 revisions were performed in local anesthesia.

#### Conclusion:

PR merges various approaches in current nose surgery with the main focus to preserve the dorsal structures. The presented surgical technique is reliable with respect of dorsal and tip stability. Revision rates are lower in comparison to standard rhinoplasty techniques using dorsal reduction and reconstruction. Half of the revisions could be performed in local anesthesia.

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### **Supraglottoplasty with concomitant interarytenoid injection augmentation: A new iteration**

Dr. med. Thomas Schrepfer; Dr. med. Ahmed Labadibi; Olivia Brooks; Emily Ile  
 University of Florida College of Medicine; UF Health Shands; 3 University of Florida College of Medicine, Department of Otolaryngology

#### Objective:

Improve and avoid postintervention dysphagia in children undergoing supraglottoplasty.

#### Materials and Methods:

Indication for supraglottoplasty with interarytenoid injection augmentation included evidence of laryngomalacia with failure to thrive, obstructive sleep apnea and/or penetration or aspiration on pre-operative clinical swallow evaluation or Videofluoroscopic Swallow Study (VFSS). Evidence of penetration and aspiration was quantified using the Penetration-Aspiration Scale (PA-S). All children underwent cold steel supraglottoplasty and were assessed pre and postoperatively by a Speech-Language Pathologist. 17 out of 18 children had a VFSS evaluation pre-operatively to confirm dysphagia (penetration vs aspiration) and guide management. Post-operative VFSS was performed on all participating patients.

#### Results:

Our cohort consisted of 18 children with a heterogenous past medical history. Specifically, 50% (9/18) patients suffered from neurological, genetic, or prematurity related comorbidities. The first postoperative VFSS occurred 4-12 weeks after the procedure. The PA-S was used in order to quantify and compare changes to penetration and aspiration events on pre- and post-VFSS. Average age at procedure time was 13.44 months (range 2-24 months). 88.8% (16/18) showed improvement in PA-S. 66.6% (12/18) of our patients showed resolution of aspiration or penetration on postoperative VFSS. One patient showed worsening of PA-S scores. Two patients had concurrent laryngeal cleft type 1.

#### Conclusion:

Patients undergoing spraglottoplasty for laryngomalacia may benefit from concomitant interarytenoid injection augmentation to avoid and improve postoperative dysphagia.

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### **Splinting of the nasal septum with a modified Titanium Breathe Implant**

Prof. Dr. med. Daniel à Wengen

ORL

The nasal septum is a difficult structure to straighten completely and to splint it efficiently. This fine Titanium plate of 0.5 mm is capable of facilitating septal surgery in various indications.

The anterior nasal septum often remains bent and unstable. A median position of the septum is crucial for symmetric respiration. First choice is always the patient's perpendicular plate that is fixed to the cartilage. This bony structure may be missing in revision cases or its length is insufficient. Furthermore in extracorporeal septoplasty larger areas need splinting. This Titanium splint is readily available. Septal Extension Grafts are adapted end-to-end with the septum and splinted with this plate. Fractures of the septum are equally splinted.

Surgeons benefit from the use of this fine and strong splint. Rib harvest may be spared. Surgical details and functional results will be presented in detail including video instruction of important steps.

For more than five years this technique has proven safe and efficient in our patients.

Disclosure: Royalty from Heinz Kurz, Germany

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P01

### **Increasing the Reliability of Real-time Electrocochleography**

Klaus Schuerch; Manuel Waser; Prof. Dr. med. Georgios Mantokoudis; PD Dr. med. Lukas Anschuetz; Prof. Dr. med. Marco Caversaccio; Wilhelm Wimmer; PD Dr. med. Stefan Weder  
ARTORG Center for Biomedical Engineering, University of Bern; Insel Gruppe AG, Inselspital, Universitätsspital Bern

Electrocochleography (ECoChG) measures electrical potentials generated by the inner ear in response to acoustic stimulation. Real-time (rt) recordings are increasingly used during cochlear implant (CI) surgeries to monitor the inner ear function. However, the performance of rt-ECoChG is a delicate measurement procedure involving several pitfalls, which lead to inaccurate or invalid signal recordings in up to 20%. In order to use the technique routinely in CI candidates, an improvement in measurement reliability must be achieved.

In our prospective study, we systematically investigated potential pitfalls and error sources during rt-ECoChG recordings. We performed experiments i) on a head and torso simulator, ii) on a whole-head cadaver specimen, iii) as well as during 19 intraoperative rt-ECoChG recordings in CI recipients. Besides improper installation, surgical and patient-specific factors can have an influence on the measured signal. We have summarized our findings in a standardized guideline as how to perform rt-ECoChG measurements best.

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### **Management of Severe Cochlear Implant Infections – 35 Years Clinical Experience**

PD Dr. med. Stefan Weder; Prof. Dr. med. Robert Briggs; Prof. Dr. med. Marco Caversaccio  
Inselspital, Universitätsspital Bern; Royal Victorian Eye and Ear Hospital; Inselspital Bern

#### Objective:

Infectious complications occurring in cochlear implant (CI) recipients is of potentially major impact. A better understanding of severe infections in this cohort is necessary.

#### Setting:

Retrospective cohort study at a tertiary referral hospital.

#### Participants and interventions:

We included all patients who received a CI at the Royal Victorian Eye and Ear Hospital in Melbourne, Australia, between 1983 and end of 2018 (4622 implantations).

#### Main Outcomes:

Prevalence, incidence, risk factors and functional outcomes in severe implant infections.

#### Results:

There was an overall prevalence of 0.65% of severe CI infections. The cumulative incidence decreased after the year 2000, with lower infection rates with newer implant models. Patients with local risk factors were more susceptible to implant infection. In most patients, delayed re-implantation was successful. Speech-perception after re-implantation was comparable to pre-revision performance.

#### Conclusions:

Modified implant design and improved surgical technique has led to a decrease in the prevalence and incidence of infected implants. In severe implant infections, active surgical and antimicrobial management is required, in order to achieve good long-term results.

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P03

### Effect of sutures in bone conduction of acoustic waves

Chiara Ermanni; Ivo Dobrev; Tahmine Farahmandi; Alexander Huber; PD Dr. med. Christof Rööfli

Universitätsspital Zürich & Universität Zürich

#### Aims:

The effect of the skull structure, sutures in particular, on bone conduction (BC) hearing is yet not sufficiently understood. This work investigated the influence of sutures and fractures on BC sound propagation in entire cadaver heads and in extracted bone samples containing sutures.

#### Methods:

Experiments were conducted on six cadaver heads. Electromagnetic actuator from a BC hearing aid was used to provide stepped sine stimulus (0.1-10 kHz). The response of the whole intact skull surface, of seven sutures per head and of two fractures were monitored. Surface motion was quantified by measuring about 900 different points on the intact skull surface with a 3D laser Doppler vibrometer system. Before extracting bone samples containing sutures, the location of each sample and several anatomical locations were registered via fiducial markers. Besides, a CT scan was conducted for each intact head (incl. markers). The motion of the lateral and medial surface of each sample and the position of the fiducial markers were measured. Based on the fiducial markers data, the velocity and CT data were translated into a single coordinate system, allowing for comparison between structural and motion data.

#### Results:

The skull surface underwent spatially complex motion regardless of skull state or vicinity to sutures. Skull surfaces were moving without any significant modification at the sutures. Vibration mode shapes of the extracted bone samples, containing sutures, resemble simple homogeneous plates.

#### Conclusion:

Experimental data from multiple domains of different heads allow to conclude that the effects of sutures on the propagation of sound waves over the skull remain insignificant.

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P04

### **Advanced lacrimal sac tumors treated by surgery with eye preservation and frontal flap reconstruction: review of 3 cases**

\*Dr méd. Edwige Gombert; Dr méd. Antoine Reinhard; Dr méd. Yann Litzistorf  
CHUV Centre Hospitalier Universitaire Vaudois (CHUV)

#### Objectif:

Describe the surgical management of 3 advanced stage lacrimal sac tumors with invasion of the medial canthus, eyelids and periorbital fat with eye preservation and frontal flap reconstruction.

#### Material and Method:

3 patients presenting a tumor of the lacrimal sac (2 squamous cell carcinomas and a recurrence of mucosal melanoma) were treated at CHUV between January and February 2021. All presented an advanced stage with invasion of the medial canthus, the eyelids and the periorbital fat but without invasion of the medial rectus muscle. 2 patients had an extension to the anterior ethmoid and the nasolacrimal duct. One presented an involvement of the inferior turbinate. All were treated by surgery with preservation of the eyeball and a two-stage frontal flap reconstruction.

#### Results:

A complete resection, R0, could be achieved with an external approach in 2 cases and a combined access (external and endonasal approach) for the patient with the inferior turbinate involvement. Thanks to frozen section, the reconstruction was performed with a contralateral paramedian frontal flap during the initial surgery. The flaps were weaned at 3 weeks. Adjuvant radiotherapy was started within 6 weeks postoperatively. The patient with mucosal melanoma received immunotherapy. Short-term aesthetic and functional results were satisfactory in all 3 cases.

#### Conclusion:

Advanced lacrimal sac tumors affecting the medial canthal region can be treated surgically with eye preservation, frontal flap reconstruction and eyelid plasty in association with adjuvant therapy with short-term satisfactory oncological and functional results.

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P05

### Free-flap for Soft Palate Reconstruction, a New Approach for the In-setting

\*Laurence Pincet; Christian Simon; Dr méd. Karma Lambercy  
 CHUV Centre Hospitalier Universitaire Vaudois (CHUV)

#### Objectif

The soft palate (SP) has a complex anatomy and physiology for deglutition, breathing, sneezing, and phonation. Reconstruction after tumor resection is a challenge, and procedures that only restore bulk don't give good results(1)(2). We aim to present a new technique for the in-setting.

#### Procedure

We use mainly antebrachial (AB) flaps (F), but anterolateral thigh F can be an alternative. In case of significative mandibular resection, we perform an osteocutaneous peroneal free flap. Special care is given for the flap in-setting: we suture the flap more caudally than usual under the tongue base (Fig 1). It creates a neo-posterior pillar. The objective is to produce a light tension and reproduce the function of the palatopharyngeus and palatoglossus muscles (Fig 2).

#### Discussion

Local F give interesting functional results as they preserve the structures. But they are limited to small defects and cannot be used in irradiated tissues. Regional pediculated F bring healthy tissue with no size limitation, but can be too bulky with the risk of secondary defect or velar insufficiency(1–3). Free F remain the best option for large defects. AB F is the most commonly used thanks to its thinness and flexibility.

We describe a new technique for the in-setting : placing the F lower than usual under the tongue base gives tension effect that helps to ensure the sealing with the nasopharynx. However, this technique increases the risk of early suture failure. During swallowing, the SP tenses while the tongue base lowers, creating opposite tractions (Fig 3).

#### Conclusion

This new free-flap in-setting technique restores as close as possible the original anatomy and function of the SP.

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P06

### **Impact of intraoperative Cone-Beam Computed Tomography use on patient satisfaction after closed nasal reduction**

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Universitätsspital Zürich & Universität Zürich

#### Introduction and aims:

Various medical departments perform closed nasal reductions after nasal fractures with different strategies of intraoperative imaging during surgery. Some departments use intraoperative Cone-Beam Computed Tomography to confirm the correct positioning of the bony elements, other departments use no intraoperative imaging. In the present study, we aimed to assess, whether there is a difference in aesthetic and functional patient satisfaction between the two strategies.

#### Material and methods:

Monocentric retrospective study of 43 patients: 1) Assessment of subjective postoperative aesthetic and functional aspects of the nose using the Standardized Cosmesis and Health Nasal Outcomes Survey (SCHNOS) score, 2) Assessment of the desire of revision surgery, 3) Statistical comparison.

#### Results:

Patients treated without intraoperative imaging showed worse aesthetical outcomes ( $p = 0.023$ ) but the difference was lower than the suggested minimal clinically important difference (MCID) of 18. The comparison of aesthetical outcomes between male and female subjects over both groups revealed worse outcomes in female patients ( $p = 0.013$ ). There was no difference in functional outcomes between the two strategies ( $p = 0.107$ ).

#### Conclusion:

Closed nasal reductions with and without intraoperative CBCT imaging appear to have comparable outcomes regarding postoperative aesthetics and function of the nose. Gender instead of the different imaging strategies could contribute to the demonstrated differences. Female patients seem to be more sensitive to postoperatively remaining nasal deformities, resulting in lower patient satisfaction with aesthetical aspects of their nose.

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P07

### **Interdisciplinary “fast track” evaluation: impact of optimizing diagnostic workup and reducing time to treatment in head and neck cancer**

Cosima Riemenschneider; PD Dr. med. Martina Broglio-Däppen; PD Dr. med. Thomas Gander;  
PD Dr. med. Panagiotis Balermipas; Dr. med. Jan Schulze  
USZ Zürich; University Hospital Zurich; UniversitätsSpital Zürich (USZ)

#### Background:

The rapid start of therapy is crucial for the prognosis of head and neck tumor patients. Studies have shown that by shortening the time between diagnosis and therapy initiation, survival and functional outcome can be significantly improved. In February 2020 a new concept of multidisciplinary work up of head and neck cancer patients was implemented in the University Hospital Zurich, Head and Neck Tumor Centre. The aim of the concept was to optimize the diagnostic work up and staging process in order to include all the necessary steps within three subsequent days. Furthermore we aimed to reduce professional bias in therapy decisions by interdisciplinary evaluation of patients at first consultation.

#### Methods:

We included all primary tumor cases of the Head and Neck registered in the University Hospital Zurich, from 2019 and 2020 in our study. The patient cohort from 2019 (before introduction of the new clarification approach) was compared with the cohort after the start of the intake consultation in 02/2020.

#### Results:

289 Patients with HNSCC treated in curative intent either surgically or radiotherapeutically were included in the study. The time-to-treatment intervall was significantly lower in the fast track work up cohort than the conventional work up cohort.

#### Discussion:

By increasing the efficiency of diagnostic workup, we save time. Furthermore we see the potential to avoid redundancies, save costs (infrastructure, consultations), detect potential risk factors early on (delirium, malnutrition, social situation) and, last but not least, increase patient satisfaction.

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P08

### **Processing undecalcified human temporal bones for otopathology research using a new methyl methacrylate resin**

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Universitätsspital Zürich; Vetsuisse Faculty, University of Zurich; University Medical Center; Rowiak ; University of Zurich; University Hospital Zurich

#### Background:

Research on otologic and vestibular disorders requires the analysis of human temporal bone (hTB) tissue. Celloidin, since the late 19th century, is the preferred embedding medium for hTBs, due to its excellent tissue preservation for light-microscopic, histologic studies. However, years-long processing times, high costs, laborious protocols, and limited applicability of modern molecular biological methods are serious shortcomings of celloidin. Here, we aim to overcome these shortcomings by processing hTBs using the methyl methacrylate resin Technovit 9100 New (TV).

#### Methods:

A TV-based embedding protocol for formalin-fixed, undecalcified hTBs was adapted. In a proof-of-concept study, three hTBs, including one with an implanted cochlear implant (CI) electrode, were processed. Histological sections (20 µm thickness) were acquired by laser microtomy (TissueSurgeon). Tissue morphology and tissue antigenicity were assessed using standard histological staining and immunohistochemistry.

#### Results:

TV-embedding enables a 12-times faster and 9-times more cost-effective processing of hTBs as compared to celloidin. TV provides an excellent tissue morphology that is comparable to that of celloidin. Using laser microtomy allows to preserve the inorganic bone matrix, enables sectioning with metal implants in place, and prevents sectioning artefacts that are common with knife microtomes. Immunohistochemical labeling with antibodies against laminin, Na-K-ATPase, and TuJ1 produced strong and specific signals.

#### Conclusion:

TV-embedding of undecalcified hTBs is a promising new method in human otopathology research with significant advantages over the celloidin-based standard method.

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P09

### **Case reports of sphenopalatine artery injury after nasopharyngeal swab for COVID-19**

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Department of Oto-rhino-laryngology - Head and Neck Surgery, Centre Hospitalier Universitaire Vaudois, Lausanne, Switzerland

Objective :

Report the location of bleeding induced by the nasopharyngeal swab for COVID-19 and identify the factors that led to surgical management in the operating room.

Materials and Methods :

We review 3 cases of severe epistaxis after a nasopharyngeal swab for COVID 19 screening which required surgical hemostasis in the operating room between September and November 2020. We collected bleeding sources and their management, patient's demographic characteristics, medical history including anticoagulation/anti-aggregation drugs, previous nasal surgery and anatomical risk factors.

Results :

All three bleeding sources were coming from the septal branch of the sphenopalatine artery (SPA). One patient was treated with selective cauterization of the septal branch of the SPA and two by ligation of the SPA. One patient was under anticoagulation and two patients had previous nasal surgery, one of whom presented with a posterior septal deviation. During the mean four months follow-up, no recurrences occurred.

Conclusion:

A misorientation of the nasopharyngeal swab can induce a lesion of the SPA. This iatrogenic injury combined with preexisting hemorrhagic risk factors or a rhinologic disorder can lead to severe and refractory epistaxis. Health care workers should be sensitized to this concern. For high risk patient, an alternative to nasopharyngeal swab or referral to an ENT could be considered.

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P10

### Can Postoperative Acoustic and Electric Hearing Thresholds Predict Speech Perception Outcomes after Cochlear Implantation?

Ursina Rüegg; Flurin Pfiffner; KD Dr. med. Dorothe Veraguth; PD Dr. med. Christof Rössli; Alexander Huber; Dr. med. Adrian Dalbert  
Universitätsspital Zürich

#### Objective

To correlate postsurgical acoustic and electric hearing thresholds of cochlear implant (CI) recipients to speech perception scores to reveal markers of postoperative cochlear health and to identify CI users showing deviations from the expected outcome.

#### Materials and methods

A total of 237 CI recipients were included in this retrospective monocentric study. Correlation analysis between routinely assessed postoperative pure-tone averages (PTAs), electric CI fitting thresholds (hearing threshold, T-level, and comfortable loudness threshold, C-level) and speech perception scores of monosyllabic words in quiet were performed. Additionally, a correlation analysis was performed between postoperative acoustic thresholds of intracochlear electrocochleography (EcochG) and speech outcomes in a smaller group (group II, n = 14) of CI recipients.

#### Results

Postoperative acoustic hearing thresholds do not have a significant correlation with CI speech perception outcomes (Spearman  $r = 0.06$ ,  $p = 0.32$ ). The same applied for electric fitting parameters, including the T-level, C level and the electric dynamic range. On the other hand, in group II, the postoperative intracochlear EcochG recordings showed a good correlation with the speech recognition scores (Spearman  $r = 0.65$ ,  $p = 0.01$ ).

#### Conclusions

Postoperative acoustic and electric thresholds do not serve as reliable predictors to monitor CI outcomes. Postoperative intracochlear EcochG recordings showed a positive correlation with speech perception outcomes and need to be investigated further.

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### **Intra-operative Monitoring of Cochlear Function during Cochlear Implantation: The Use of Simultaneous Intra- and Extracochlear Electrocochleography**

Leanne Sijgers; Flurin Pfiffner; Sonia Tabibi; Norbert Dillier; Dr. med. Christof Rösli; Alexander Huber; Dr. med. Adrian Dalbert  
 UniversitätsSpital & Universität Zürich

Aims:

The desire to preserve residual hearing following cochlear implantation has recently led to the use of electrocochleography (ECoChG) as an intra-operative monitoring tool. This study compares ECoChG signals recorded simultaneously from the tip of the cochlear implant (CI) electrode array and from a fixed extracochlear location. Thereby, it aims to distinguish intracochlear ECoChG changes corresponding to cochlear trauma from changes solely resulting from a change in recording location.

Methods:

An insert earphone was placed in the ear canal for acoustic stimulation. In the surgical field, a needle electrode was placed near the round window for extracochlear ECoChG recordings. For intracochlear recordings, a clip electrode was attached to the reference ring electrode of the CI which was shorted to the most apical electrode of the CI electrode array. ECoChG responses to 500 Hz tone bursts were recorded during CI insertions in six human CI recipients.

Results:

Phase shifts and amplitude decreases in intracochlear recordings could be observed without associated changes in extracochlear recordings. An amplitude decrease with associated near 180-degree phase shift and harmonic distortions in the intracochlear recording during the first two thirds of insertion was not accompanied by a decrease in the extracochlear difference curve's amplitude (n = 1). Late amplitude decreases in intracochlear difference curves (near full insertion, n = 2) did correspond to extracochlear amplitude decreases.

Conclusion:

ECoChG is a promising technique to predict hearing preservation during cochlear implantation.

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### **Odour identification testing in children aged 3-6 years: how to improve test performance? A pilot study.**

Dr. med. Eva Novoa; André Emmenegger-Hirschi; Dr. med. Christoph Schlegel-Wagner  
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#### Goal:

Evaluation of odour identification in children aged 3-6 years using the Smell Diskettes Olfaction Test® and observation of possible modifications required for a better test reliability.

#### Methods:

Pilot study including 20 healthy children between 3-6 years (5 children per age group). Conditioning to the smell testing was achieved by presenting different age adapted and well-known natural products with characteristic odour (e.g. pine branch, orange, honey) to smell and touch. A short picture identification test was performed to evaluate cognitive and verbal function. The Smell Diskettes Olfaction Test® including eight different odours was performed (forced choice). Answers were given either by signalling or by naming one of the pictures per odour. Test performance and pitfalls were observed.

#### Results/Conclusions:

The test could be performed correctly in about half of the children. There is a clear correlation with the age of the children. The preparation and conditioning shows an important benefit in performing the smell test. The exact figures will be presented on our poster at the spring meeting.

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### **Teleconsultations for Head & Neck Cancer Patient Follow up: A retrospective study during the first lockdown due to SARS-CoV-2**

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Teleconsultations for Head & Neck Cancer Patient Follow up: A retrospective study during the first lockdown due to SARS-CoV-2

#### Background:

The early and accurate detection of local or regional recurrence of head and neck cancers is crucial for survival. This is traditionally achieved by time- and resource-intensive follow-up programs through the head & neck follow-up clinics. Purpose: To compare the recurrence detection rate and diagnostic accuracy of follow-up visits in clinic vs. teleconsultations conducted in post-treatment head & neck cancer patients during the COVID-19 lockdown phase in Switzerland

#### Material and methods:

In our study, we retrospectively calculated the average cancer recurrence rate from the central Swiss head & neck cancer database from 01.01.2014-31.12.2020. From this data set, the recurrence rate of patients monitored via the teleconsultations during the COVID-lockdown date: 30.03.2020 -27.04.2020 was compared with the recurrence rate during the regular follow-up visits in clinic in non-COVID times.

#### Results:

The average recurrence rate detected during the regular follow-up visits in OPDs is 16% per cent. Of the 23 patients followed up via teleconsultations, subsequent follow-ups after the COVID-lockdown demonstrated recurrence in 1 patient. All remaining 22 patients are tumor-free to date. The recurrence rate indicated by teleconsulting is 4.3%.

#### Conclusion:

Our results indicate that teleconsultations for the head & neck cancer patients during the lockdown phase did not result in a higher recurrence rate after the lockdown in the same patient cohort. This is suggestive that teleconsultations are not inferior to regular follow-up visits in

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### **Histopathological evaluation of intralabyrinthine schwannoma**

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UniversitätsSpital Zürich (USZ); Department of Otolaryngology, Harvard Medical School;  
Department of Otolaryngology, Massachusetts Eye and Ear Infirmary

**Aims:**

The aim of this study is to perform a histopathologic analysis of temporal bones with an intralabyrinthine schwannoma (ILS) in order to characterize its extension.

**Methods:**

Archival temporal bones with a diagnosis of sporadic schwannoma were identified. Both symptomatic and occult non-operated ILS were included for further analysis. Sections of each case were examined to determine the origin of the tumor, its precise location in the labyrinth, and its extension.

**Results:**

A total of 6 ILS were identified, with four intracochlear and two intravestibular schwannomas. All intracochlear schwannomas involved the osseous spiral lamina with two extending into the modiolus. The intravestibular schwannomas were limited to the vestibule, but growth into the bone next to the crista of the lateral semicircular canal was observed in one patient.

**Conclusion:**

Complete removal of an ILS may require partial removal of the modiolus or bone surrounding the crista ampullaris as an ILS may extend into these structures, risking damage of the neuronal structures. Due to the slow growth of the ILS, it remains unclear if a complete resection is required with the risk of destroying neural structures hindering hearing rehabilitation with a cochlear implant.

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P16

### **Potential role of FDG-PET in preoperative assessment of primary salivary gland malignancies**

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UniversitätsSpital & Universität Zürich

#### Purpose:

The added value of 18F-fluorodesoxyglucose (FDG positron emission tomography (FDG-PET) head and neck cancer is increasingly recognized. However, its potential role in salivary gland cancer has not been described yet.

#### Methods:

A consecutive cohort of 45 salivary gland cancer patients with pretherapeutic FDG-PET that underwent surgical resection was reviewed. Statistical analysis was performed to assess whether pre-treatment metabolic tumor parameters (maximum standardized uptake value – SUVmax) correlated with tumor phenotype.

#### Results:

Tumor showing high grade histology had a higher SUVmax (Kruskal Wallis Test  $P=0.011$ ), that is that SUVmax was higher in salivary duct carcinoma, squamous cell carcinoma and rather low in adenoid cystic and acinic cell carcinoma. Patients with pN+ disease had a significantly higher SUVmax of the primary tumor than patients with pN0 disease (Kruskal Wallis Test,  $p=0.012$ ).

#### Conclusion:

SUVmax of primary tumor may assist in clinical decision-making regarding salivary gland cancer, as a high SUVmax is associated with high-grade histology and positive nodal disease. Clinicians may consider more aggressive surgery for these patients.

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### **Preservation of laryngeal function through reconstruction of the supraglottis and thyrohyoid membrane with a chimeric anterolateral thigh flap after supraglottic laryngectomy: A case report and literature review**

Dr. med. Jonas Werner; Dr. med. Mario Scaglioni; Dr. med. Seo Ko; Prof. Dr. med. Gunesh Rajan

Luzerner Kantonsspital

#### Introduction:

Supraglottic laryngectomy offers a treatment option in laryngeal cancer confined to the supraglottis with the aim to preserve laryngeal functions. Current reconstruction modalities face the challenges of restoring swallow function and preventing chronic aspiration.

#### Case Report:

We present for the first time a case in which the thyrohyoid membrane and supraglottis were reconstructed using a chimeric anterolateral thigh (ALT) flap. Horizontal supraglottic laryngectomy was performed in a 70-year-old male patient with recurrent supraglottic laryngeal cancer after primary radiotherapy. The chimeric ALT flap used for reconstruction measured 7 x 20 cm and was based on two perforators, allowing it to be divided in two parts. The larger deepithelialized fasciocutaneous paddle was used for the reconstruction of the supraglottic defect and the smaller skin paddle was utilized as monitor flap and for neck resurfacing. The chimeric ALT flap was anastomosed to the superior thyroid artery and to a branch of the internal jugular vein. The postoperative recovery was uneventful. Laryngeal functions, including an unimpaired voice, could be preserved. Six months postoperatively, the patient showed no signs of chronic aspiration or tumor recurrence.

#### Conclusion:

Using a chimeric ALT free flap for reconstruction after horizontal supraglottic laryngectomy may prevent chronic aspiration through restoration of larynx elevation, mobility, and thus airway protection during deglutition due to increased supraglottic bulk.

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### Tracheal and Neo-hypopharyngeal Stent Fixation Using the Lichtenberger Needle Carrier

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 CHUV Centre Hospitalier Universitaire Vaudois (CHUV)

#### Objectives:

Stenting of the aerodigestive tract relieves dyspnea and dysphagia associated with tracheal and esophageal stenosis. However, migration is a common and potentially lethal complication of indwelling stents. We describe a fixation strategy with the Lichtenberger needle carrier for transcervical suturing of subglottic and neo-hypopharyngeal stents and patients' follow up.

#### Materials and Methods:

Patients with malignant tracheal stenosis not eligible to surgical management and with at least one prior stent migration were enrolled. Laryngectomized patients presenting recurrent benign neo-hypopharyngeal stenosis despite dilatation programs were included. Using the inside-out Lichtenberger needle carrier, under suspension micro-laryngo/pharyngoscopy, the stents were fixed to the anterior neck encircling the anterior cricoid ring or the first tracheal ring between the two sutures or subcutaneous tissue for laryngectomized patients.

#### Results:

5 patients were enrolled: 3 in palliative care for a malignant carcinoma with tracheal invasion and dyspnea and 2 post-laryngectomized with neo-hypopharyngeal stenosis and dysphagia. The 3 tracheal stents were placed in the subglottic area and 1 migrated 1 month after fixation. The 2 others were still in place after several months. Except after migration, all stents were well tolerated. 1 sutured salivary bypass was well tolerated with no recurrent dysphagia and 1 migrated after few days.

#### Conclusion:

The use of the Lichtenberger needle carrier was safe and quick. Both subglottic and neo-hypopharyngeal stents were well tolerated except when migrating. Securing subglottic and esophageal stents can avoid their migration.

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### **Langzeitresultate nach offener oder geschlossener Cholesteatom-Chirurgie: Erkenntnisse aus der Luzerner Ohrdatenbank**

Dr. med. Filip Kostadinov; Kai Münker; Dr. med. Christoph Schlegel-Wagner; Prof. Dr. med. Thomas Linder

Luzerner Kantonsspital, Klinik für Hals-Nasen-Ohren-Heilkunde und Gesichtschirurgie

#### Ziele

Seit ca. 20 Jahren werden alle Ohreingriffe in einer ENT-Statistics Datenbank prospektiv erfasst. Diese Datenmengen erlauben die Auswertung nach unterschiedlichen Kriterien. Anhand der Cholesteatom-Operationen soll aufgezeigt werden, was sich bewährt hat und welche Erkenntnisse gewonnen werden können.

#### Material und Methoden

Im Zeitraum von 2010–2015 wurden 264 Operationen unter der Diagnose eines Cholesteatoms prospektiv erfasst. Die vor 3 Jahren von uns eingeführte ChOLE Klassifikation wurde verwendet, um diese Operationen zu kodieren. Komplette Audiogrammdaten waren bei 151 Primär- und 72 Revisionseingriffen vorhanden (n=223). Die offenen (72) versus geschlossenen (151) Operationstechniken wurden einander gegenübergestellt und nach "Erfolgsparametern" ausgewertet.

#### Resultate

Dank den Operationszeichnungen und der CT-Analyse konnten auch retrospektiv die Ausdehnung der Cholesteatome nach der ChOLE Klassifikation eindeutig zugeordnet werden. Dagegen sind die Verlaufseinträge postoperativ oft unvollständig und erfordern eine aufwändige Nachkodierung. Die Hörergebnisse hängen primär von der Präsenz der Ossikel ab und unterscheiden sich nicht zwischen Primär- oder Revisionseingriffen oder der offenen versus geschlossenen Operationstechnik. Die Rezidivrate liegt bei offener Technik unter 10%.

#### Schlussfolgerung

Ein alleiniges Kodieren gemäss einer Klassifikation ersetzt nicht das manuelle Zeichnen des Operationssitus. Die international geforderte audiometrische Erfassung von Reinton- und Sprachaudiogrammdaten ist in der Schweiz noch nicht etabliert. Die offenen Kavitäten zeigen in vielerlei Hinsicht mindestens ebenbürtige Langzeitergebnisse in der Cholesteatom-Chirurgie.

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### **Congenital aural atresia: hearing rehabilitation using active middle ear implants**

Simon Thurnheer; Tobias Müller; Prof. Dr. med. Daniel Simmen; Dr. med. Meike Harder; Prof. Dr. med. Thomas Linder

Luzerner Kantonsspital (LUKS); Universitäten Luzern und Zürich; Klinik Hirslanden Zürich

#### Objective:

To assess the surgical concept and hearing improvement in patients with congenital aural atresia (CAA) using the active middle ear implant (Vibrant Soundbridge®, VBS; Med-EL, Innsbruck, Austria) at the ENT-Clinic Kantonsspital Luzern between 2008 and 2020.

#### Data Sources and Methods:

The ENT-statistics database was used to extract information of 8 patients with CAA who underwent Vibrant Soundbridge (VSB) implantation. Two patients had binaural implantation resulting in the analysis of 10 ears. Preoperative audiometric data, CT-scans, the timing of surgery in the overall rehabilitation process, the exact location of the coupling onto the malformed ossicles were compared with postoperative hearing improvement and long-term stability.

#### Results:

Whereas the previous Jahrsdoerfer CT classification was not helpful, a careful analysis of the anatomy on CT scans allowed the planning of the coupling once the malformed ossicles were mobilized. In case of microtia repair, the hearing rehabilitation was performed at the second or third stage. There were no complications and no revision surgeries required. Pure tone average (PTA) improved from 64.3 dB to 28.1 dB and CPT-AMA improved from 75.8 % to 15.1 % in hearing loss. Seven out of 8 patients remain daily users of the implants.

#### Conclusion:

The implantation of an active middle ear implant type VSB allows in selected cases of CAA an ipsilateral hearing rehabilitation and provides long-term stability in children and adults. Accurate planning and the correct timing are crucial for successful implantation in patients with CAA.

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### Neurostimulateur de l'hypoglosse et oxygénothérapie : traitement combiné efficace en cas d'apnées centrales

\*Dr méd. Avinash Beharry; Dr méd. Victoria Salati; Dr méd. Sibylle Chatelain; Dr méd. Raphael Heinzer; Dr méd. Karma Lambercy  
 Centre Hospitalier Universitaire Vaudois (CHUV)

#### Objectif

L'implantation d'un neurostimulateur du nerf hypoglosse (INH) est un traitement alternatif du syndrome d'apnée obstructive du sommeil (SAOS) de degré sévère en cas d'échec de traitement par ventilation à pression positive (cPAP) et par orthèse d'avancement mandibulaire (OAM). Le développement d'apnées centrales est connu après la levée de l'obstruction des voies aériennes (cPAP ou OAM) mais peu décrit après INH. Nous présentons ici deux cas d'apnées centrales après INH s'amendant sous traitement combiné avec oxygénothérapie (OT).

#### Présentation de cas

Mme M de 74 ans et Mme C de 63 ans présentent un SAOS sévère avec échec de traitement par cPAP, OAM et traitement positionnel. La polysomnographie (PSG) pré-opératoire met en évidence des événements surtout obstructifs et rarement d'origine centrale. Les patientes bénéficient de l'INH avec un contrôle à 3 mois par PSG montrant la persistance des troubles respiratoires obstructifs et une péjoration des apnées et hypopnées centrales.

#### Résultats

Grâce à la titration d'OT lors d'une nouvelle PSG, nous observons une amélioration des troubles respiratoires nocturnes sous traitement combiné de l'INH et de l'OT.  
 Pour Mme M et C respectivement avec titration d'OT de 1-3 L/min : Index d'apnées-hypopnées : de 36.8 à 8.4/h et 81.6 à 8.3/h, apnées centrales de 10.7 à 1/h et de 1.4 à 0/h.

#### Conclusion

Grâce au traitement combiné de l'INH et OT, nous observons une amélioration objective des troubles respiratoires nocturnes, et subjective de la qualité de sommeil, probablement due à une stabilisation de la boucle de rétrocontrôle respiratoire (loop gain).

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### **The place of the radiology in invasive fungal rhinosinusitis**

\*Sonia Macario; Ricardo Correia; Pr Dr. Basile Landis; François Voruz  
HUG Hôpitaux Universitaires Genève

The objective is to demonstrate, through the use of three cases of proven invasive fungal rhinosinusitis, the key role played by radiology in the diagnosis process.

Symptoms and signs of invasive fungal rhinosinusitis in immunocompromised patients are unspecific and a high clinical suspicion index is needed.

Computed tomography reveals unspecific signs of rhinosinusitis and rarely bone erosion. Magnetic resonance, however, is able to show signs of mucosal necrosis and deep tissue inflammation, giving rise to an increase in the suspicion of an invasive process. The MR imaging of each of the three cases showed suspicious areas of non-enhancing mucosa compatible with necrosis, where biopsies were performed, and the definitive histological diagnosis of invasive fungal rhinosinusitis was confirmed.

Invasive fungal sinusitis is a rare and difficult-to-diagnose pathology that typically affects immunocompromised patients and carries a high mortality rate. Magnetic resonance imaging plays a key role in the management and therefore the prognosis of the patient.

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### **Verschluss einer juvenilen Tracheostomadehiszenz mittels fasziokutanem inguinalen Lappen: Fallbericht**

\*Lukas Schmid; Prof. Dr. med. Nicolas Gürtler; Martin Haug

HNO-Universitätsklinik, Universitätsspital Basel; Universitätsklinik für plastische und Handchirurgie, Universitätsspital Basel

Ziele:

Die Verkleinerung einer Stomadehiszenz bei Kindern mit Heimbeatmung ist aufgrund der Komplexität eine Herausforderung, da oftmals auch ein syndromales Grundleiden besteht.

Material und Methoden:

Fallbeschreibung mit Darstellung einer neu gewählten trachealen Rekonstruktionsmethode. Eine 16-jährige Patientin mit Merosin-negativer Muskeldystrophie bekam im Alter von 9 Jahren erstmals eine Tracheotomie aufgrund respiratorischer Globalinsuffizienz. Es folgte eine Revisionstracheotomie mit 24h Heimbeatmung. Dabei stellte sich zunehmend eine ausgeprägte Stomadehiszenz dar, die die Beatmung erschwerte. Im Alter von 15 wurde versucht mittels Rippenknorpel die Dehiszenz zu verkleinern, was misslang. Es erfolgte die Zuweisung an unsere Klinik.

Resultate:

Der freie faszio-kutane inguinale Lappen zeigt sich 12 Monate nach der Operation stabil. Die Heimbeatmung gestaltet sich deutlich vereinfacht und komplikationslos. Die Patientin und das sie betreuende Umfeld sind sehr zufrieden.

Schlussfolgerung:

Die Wahl der Rekonstruktion muss unter Berücksichtigung vieler Faktoren getroffen werden. Erfahrung in der Entscheidungsfindung und Falleinschätzung sowie technische Fertigkeiten spielen eine zusätzliche, wichtige Rolle.

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### High Resolution Diffusion Tensor Imaging (DTI) of The Auditory Pathway – first insights

Dr. med. Lorenz Benjamin; Marco Piccirelli; Dr. med. David Bächinger; Dr. med. Adrian Dalbert;  
 Dr. med. Athina Pangalu; Dr. med. Christof Rööslü; Prof. Dr. med. Alex Huber

USZ

#### Goals:

To assess the integrity of the vestibulocochlear nerve (cranial nerve [CN] VIII), cochlear nucleus (CNcl) and inferior colliculus (IC) using DTI in vestibular schwannoma (VS) patients.

#### Materials/Methods:

VS patients received high resolution DTI (1.1mm voxel size) and hearing testing (pure tone and speech audiometry) as follow up or preoperative assessment. DTI measures such as fractional anisotropy (FA), mean diffusivity (MD) and Mode were retrospectively assessed in the CN VIII, CNcl and IC. The side affected by the tumor was compared to the healthy side. These structural findings were then correlated to the hearing tests.

#### Results:

A total of 22 patients were included, mean age was 53 +/- 12 years, 10 were female. Depending on the field of view, not all structures could be assessed in all patients. CN VIII, CNcl and IC could be assessed in 26, 24, 12 ears, respectively. Pure tone average (PTA) was 45 +/- 32 dB HL (affected ears) vs. 15 +/- 12 dB HL (controls). The mean of maximum speech discrimination (SpD) in affected ears was 67 +/- 35 %. Overall, FA, MD and Mode did not significantly differ in CN VIII, CNcl and IC between affected and control ears ( $p > 0.05$ ). However, patients with  $SpD < 55\%$  had significantly lower FA values in the CN VIII (difference affected to control ear:  $FA - 0.08 \pm 0.01$  [ $SpD < 55\%$ ] vs.  $0.01 \pm 0.11$  [ $SpD > 55\%$ ], student t-test,  $p = 0.012$ ).

#### Conclusion:

First results indicate poor speech discrimination implicates lower FA values in the CN VIII. Numbers in this study, however, are generally low and more scans have to be performed in order to confirm this assertion and replicate the findings along the whole auditory pathway.

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### **Petrous apicitis and otogenic thrombosis of the cavernous sinus in a 10 year old boy**

\*Patrick Bergsma; Dr. med. Seraina Kunz; Anna-Lena Kienle; PD Yves Brand

Kantonsspital Graubünden

Petrous apicitis and otogenic thrombosis of the cavernous sinus in a 10 year old boy

#### Aims

Petrous apicitis and cavernous sinus thrombosis are exceedingly rare complications of acute otitis media with only few reported cases in the post-antibiotic era. Especially in children, the appropriate management is a subject of controversy.

We would like to present two rare complications of otitis media in a 10 year old child and illustrate the radiological course under anticoagulant therapy.

#### Materials and Methods

We report the case of a 10-year old boy who presented to the emergency department with left-sided otalgia, otorrhea, and hearing loss, accompanied by somnolence and high spiking fevers. CT and MRI revealed partially obstructed mastoid air cells and signs of petrous apicitis on the left side. Furthermore, thrombosis of the cavernous sinus and vasculitis of the internal carotid artery on the left side were present. The patient was treated with antibiotics for 6 weeks and anticoagulant therapy for 3 months.

#### Results

Follow-up carried out 3 months post-admission showed complete recanalization of the cavernous sinus recovery of the internal carotid artery on MRI. Fatigue was the only remaining symptom.

#### Conclusion

With our presented case, we hope to highlight that even with rare and threatening complications of otitis media such as petrous apicitis and cavernous sinus thrombosis, surgical intervention is not always a necessity.

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### **Preliminary results of a retrospective analysis of oncological outcome in Cis & T1-T2 glottic larynx carcinoma after primary laser cordectomy at the Kantonsspital Aarau over a 15 year period.**

\*Raphael Jeker; Dr. med. Nader Ahmad; Prof. Dr. med. Frank U. Metternich  
Kantonsspital Aarau

#### Objectives:

The primary objective of our study was to retrospectively analyze the oncological outcome after primary Laser cordectomy for T1-T2 glottic larynx carcinoma, to determine the rate of persistence & recurrence in our cohort.

#### Material & Methods:

Single center retrospective data analysis of oncological outcome in 94 Patients treated for Cis & T1-T2 glottic Larynx carcinoma by primary laser cordectomy from 2005 to 2019. 3 months after primary therapy a microlaryngoscopy with biopsy was performed to determine persistence.

#### Results:

The tumor staging offered the distribution of 23.4% pCis, 57.4% pT1a, 3.2% pT1b, 16% pT2. 19.1% of all cases showed a recurrence during follow-up. Rate of recurrence was 18% pCis, 15.8% pT1, 40% pT2 respectively. The overall disease free survival in the analyzed cohort was 41.4 months.

#### Conclusion:

Laser cordectomy remains the primary treatment modality for initial as well as persistent low stage larynx carcinoma and can deliver a good local control as well as long-term survival.

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### **Meningitis after adenoidectomy, a rare but possible complication: a case report.**

\*Dr méd. Massimo Sussetto; Dr méd. Hélène Cao Van  
HUG Hôpitaux Universitaires Genève

#### Case report:

A 7-year-old boy undergoing adenotonsillectomy due to OSA. Surgical technique was a cold dissection and bipolar diathermy hemostasis for tonsils and an optic-assisted curettage technique for adenoidectomy. Five days after the surgery he presented an unusual headache, lethargic status and fever. A lumbar puncture culture confirms a *Streptococcus pneumoniae* type 3 meningitis.

#### Discussion:

Adenotonsillectomy is one of the most performed surgery in childhood. Few cases of meningitis post adenoidectomy are described in the literature and they are explained by causality, retrograde vascular spread or direct irritation of meninges. Due to the standardization of our surgical technique used for the adenoidectomy, the direct meningeal lesion without a preexisting anatomical defect are unlikely, and the causality is difficult to quantify. The retrograde vascular spread is the most probable pathological pathway.

#### Conclusion:

Meningitis is a rare but possible complication after adenoidectomy. While modern technics allow a good exposition and control of the operation site, a few concepts should always be kept in mind: it is important not to hyperextend the head to avoid direct injury to the meninges; the obsolete practice of infiltrating local anesthetic into the nasopharynx must be avoided due to the higher risk of retrograde vascular spread to the meninges.

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### **Dysphagie und Atemwegsobstruktion bei diffuser idiopathischen skelettalen Hyperostose**

Dr. med. Evelin Kovacs-Sipos; Dr. med. Seo Simon Ko; Dr. med. Fabian Baumann; Prof. Dr. med. Gunesh Rajan

Luzerner Kantonsspital

Die diffuse idiopathische skelettale Hyperostose (DISH) ist ein nicht entzündlicher Prozess, welcher eine ausgeprägte Osteophytenbildung in der Wirbelsäule verursacht. In 78% ist das zervikale Segment betroffen und kann zu einer Dysphagie und zu Dyspnoe mit Atemwegsverlegung führen. Die richtige Erkennung der zugrundeliegenden Pathologie ist von Anfang an entscheidend in der Behandlung.

Ein 64-jähriger Patient stellte sich notfallmässig mit akuter progredienter Dyspnoe vor. Er berichtete auch über zunehmende Schwierigkeiten beim Schlucken seit 2-3 Monaten. Endoskopisch zeigte sich ein asymmetrisches Gewebeplus von der linken Aryregion ausgehend mit Verlegung des Aditus laryngis, so dass die Indikation zu einer Mikrolaryngoskopie mit Probiopsie gestellt wurde. Aufgrund einer intraoperativ obstruierenden supraglottischen Schwellung war eine Tracheotomie notwendig. Die Histopathologie ergab keine Hinweise auf Malignität. CT-morphologisch waren ausgeprägte Spondylophyten in Höhe HWK 4 - BWK 4 darstellbar. Nach interdisziplinärer Therapieplanung zwischen HNO und Neurochirurgie wurde eine Supraglottoplastik sowie die Abtragung der Spondylophyten durchgeführt. Aufgrund der schweren Dysphagie erhielt der Patient zudem eine PEG-Sonde.

Postoperativ konnte der Patient zügig dekanüliert werden. Unter regelmässiger logopädischer Dysphagietherapie waren zudem die Schluckbeschwerden deutlich regredient.

Die fortgeschrittenen cervikale DISH kann zur lebensbedrohlichen Atemwegsobstruktion und zu schwerer Dysphagie führen, weshalb die frühzeitige Diagnose und das interdisziplinäre Management durch die Phoniatrie, Logopädie, Neurochirurgie und HNO entscheidend sind für eine gute Prognose.

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### **Rare case of oculoglandular tularemia requiring surgical treatment**

\*Dr. med. Marc Schmid; Eckhard Kunze; PD Dr. med. Yves Brand

Kantonsspital Graubünden, Klinik für Hals-Nasen-Ohren-Heilkunde und Gesichtschirurgie

#### Goal:

Oculoglandular tularemia is an exceedingly rare disease in non-endemic geographical regions, which is normally treated by antibiotics. In the literature, very few cases are described, where additional surgical treatment was indicated.

#### Material and Methods:

A 61-years old man presented to our department with preauricular and cervical, painful swelling and signs of a conjunctivitis on the left side. An ultrasound imaging showed pronounced cervical and intraparotid lymphadenopathy, a serological investigation revealed the presence of positive IgG and IgM for Francisella tularensis. An initial antibiotic therapy resulted in a decrease of symptoms. However, after a few weeks, the lymphadenopathy progressed rapidly, and a CT scan showed necrotizing lymph nodes. Therefore, a cervicotomy and excision of a lymph node was performed. Intravenous antibiotic therapy with gentamicin was also initiated and then switched to ciprofloxacin after release from hospital. Due to another progressive episode, the decision was taken to perform a lateral parotidectomy and neck dissection. Postoperatively, the situation was much improved and the patient was symptom-free after completion of the antibiotic therapy.

#### Summary:

A case of oculoglandular tularemia is described, where unsuccessful antibiotic therapy required subsequent surgical interventions.

#### Conclusion:

Oculoglandular tularemia is a rare, granulomatous inflammation which may require surgical treatment if the response to antibiotic therapy is inadequate.

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### **Zervikale Schwellung beidseits und Heiserkeit - Ein Fallbericht einer bilateralen, kombinierten Laryngozele**

Thirza Singer-Cornelius; Dr. med. André Arnoux; Dr. med. Nader Ahmad  
Kantonsspital Aarau

Ziel:

Darstellung einer seltenen, aber wichtigen Differentialdiagnose bei zervikaler Schwellung und Heiserkeit im Rahmen eines Fallberichts.

Kasuistik:

Es präsentierte sich eine Patientin mit zervikaler Schwellung beidseits und Heiserkeit seit 6 Wochen. Die fiberendoskopische Untersuchung zeigt eine symmetrische Raumforderung mit glatter Schleimhaut im Bereich der Taschenfalten beidseits sowie eine polylobulierte Raumforderung der rechten Stimmlippe. Mittels Sonographie und MRI erhärtete sich der V.a. eine bilaterale kombinierte Laryngozele. Nach Ausschluss von Malignität erfolgte die Resektion mittels kombinierten endoskopischen und externen Eingriffes im Rahmen einer Zervikotomie beidseits. Laryngozele sind seltene, benigne, luftgefüllte Schleimhautausstülpungen im Bereich des Ventriculus laryngis. Ätiologisch kann man in kongenitale und erworbene Laryngozele unterscheiden. Nach Ausschluss von Malignität stellt die operative Therapie, endoskopisch und/oder offen die Therapie der Wahl dar.

Schlussfolgerungen:

Laryngozele sind seltene Ausstülpungen des Ventriculus laryngis, welche bei zervikaler Schwellung einseitig und beidseitig differentialdiagnostisch in Betracht gezogen werden müssen. Selten kann das Auftreten einer Laryngozele durch Malignität hervorgerufen werden. Therapie der Wahl ist die chirurgische Exzision in toto.

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### **Gonococcal infection of the larynx**

François Voruz; PD Dr méd. Igor Leuchter

HUG Hôpitaux Universitaires Genève

Disseminated gonorrhoea is a rare manifestation of an infection with *Neisseria Gonorrhoeae*. We present a unique illustrated case of disseminated gonorrhoea with laryngeal involvement by a 25-year-old man, which was successfully treated with Ceftriaxone. Sexually transmitted infections should always be kept in mind in the differential diagnosis of unusual pharyngolaryngitis and patients should be screened.

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### **Management of Carotid artery involvement in Salvage Head & Neck Surgery**

Manuel Schoch; Dr. med. Robert Seelos; Gunesh Rajan  
Luzerner Kantonsspital (LUKS)

#### Management of Carotid artery involvement in Salvage Head & Neck Surgery

##### Introduction

Patients with advanced or recurrent head neck cancer can present with cancer involvement of the carotid artery system. Common or Internal carotid involvement represents a formidable challenge not only surgically but also neurologically. A reconstruction of the affected carotid vessel is highly desirable, we shall discuss the various techniques by which a revascularization can be achieved.

##### Material/methods

We present a case series with x patients with advanced head neck tumors with different types of carotid artery involvement which were treated with different reconstructive strategies. In addition we performed a literature review on the topic.

##### Results

A resection and reconstruction of the affected common or internal carotid artery was successful in all cases.

##### Conclusions

A reconstruction of the carotid artery involvement in advanced head neck cancer is possible in most cases. Careful multidisciplinary assessment of the type of the carotid artery involvement is crucial to determine the appropriate reconstructive strategy

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### **Giant Sialolith and Small Nephrolith – Case Discussion with Literature Review about the Association of Salivary and Renal Stone Disease**

\*Jonas Galli; Efterpi Michailidou; Dr. med. Markus Huth; PD Dr. med. Patrick Dubach  
Inselspital, Bern University Hospital, Switzerland; Bürgerspital Solothurn

#### Background:

Sialolithiasis is a common cause for sialadenitis. Patients may also suffer of other stone disease like nephrolithiasis.

#### Case presentation:

We report a case of a giant sialolith of the submandibular gland in a patient with 41 years old male caucasian suffering by nephrolithiasis in the past. The silalolith was successfully removed by elective submandibulectomy.

#### Method:

Case presentation with systematic Medline Review of the literature (PubMed) to identify articles reporting on association between nephrolithiasis and sialolithiasis.

#### Results:

We identified 6 major articles in the literature. Three articles could not identify an association and 2 articles described an association between both pathologies. Three pathophysiological mechanisms are described.

#### Discussion:

Despite the relative frequency of the diseases, comparative data is scarce and association in between sialolithiasis and nephrolithiasis is discussed contradictory and not proven.

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### **Maxillary bleeding after Le-Fort I fracture in an elderly patient a casereport**

Dr. med. Pascal Rüegg; Sinisa Milenovic; PD Yves Brand  
KSGR Chur

#### Introduction

Bleeding of the internal maxillary arterie is a rare but potentially severe complication after Le-Fort osteothomie or Le-Fort fractures of the midface. Patients most often present with recurrent epistaxis originating from the maxillary sinus, oral hemorrhage is rarely reported. As reported by the literature the most common treatment modality is endovascular clousure of the maxillary artery by the insertion of a coil.

#### Case presentation

A 73-year-old patient presented with massiv oral hemorrhage. Four weeks prior the the patient underwent osteosynthesis of a bilateral Le-Fort I fracture after a fall with multiple injuries. Already during this surgery hemorrhage from the sinus was only controllable by insertion of Tabotamp in the maxillary sinus.

Due to massiv bleeding from the former vestibular incision the wound was opened and massiv bleeding from the maxillary sinus identified. As there was already a rather easy access through the wound, we decided to take an endoscopic approach. This resulted in visualizing the maxillary artery as origin of the bleeding, which was closed by a vascular clip. After this the sinus was dry and no further bleeding occurred during the hospital stay nor follow-up.

#### Discussion/Conclusion

This case shows that additionally to the already proven endovascular treatment, an endoscopic transsinusal approach is feasible as well, especially if there is easy access through a former approach. We recommend decision making according to the specific situation of the patient as well as availability of an interventional radiologist or endoscopically skilled ENT-surgeon.

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### **EBV-related Dacryocystitis: diagnostic challenges and therapeutic pitfalls**

Dr méd. Jean-Matthieu Sternberg; Dr méd. Silvia Lambiel; Dr méd. Hélène Cao Van; Dr méd. Horace Massa; Basile N Landis

Department of Pediatrics, University Hospital Geneva, Switzerland; Department of Clinical Neurosciences, Oto-rhino-laryngology and cervico-facial surgery Unit, University Hospital Geneva, Switzerland ; Department of Clinical Neurosciences, Ophthalmology Unit, University Hospital Geneva, Switzerland

#### Objective:

Acute dacryocystitis is an atypical and rare manifestation of pediatric mononucleosis. Still unknown by many clinicians, we want to present a case to highlight the challenges and adequate treatments.

#### Case report:

A six year old girl with no ocular history was admitted to our hospital for intra-venous antibiotic therapy of a right pre-septal cellulitis. During hospitalization, she developed a fluctuating bump in the nasolacrimal region which clinically and radiologically looked like an abscess. Serology was positive for mononucleosis and we concluded to an acute EBV-related dacryocystitis. After multidisciplinary discussion, she was treated conservatively with digital lacrimal sac massages and intra-venous antibiotic therapy with an excellent result.

#### Discussion:

Precise diagnose was difficult because initial symptoms were unspecific (rhinitis, fever, edematous and sensible red eye lids, no purulent discharge and moderate bilateral cervical lymphadenopathy) and this presentation of EBV very uncommon and thus barely known. Nevertheless, making the difference between dacryocystitis and abscess is crucial to choose the appropriate treatment and avoid unnecessary and even potentially deleterious surgery. Conservative management of dacryocystitis is the gold-standard according to the scarce literature.

#### Conclusion:

Acute dacryocystitis in children free of ocular history should arise the suspicion of EBV primo-infection. With a conservative treatment, prognosis seems excellent and therefore surgery should be avoided as much as possible.

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### **Intraoperative Impedanz-basierte Schätzung der Einführtiefe von CI Elektroden**

PD Dr. med. Wilhelm Wimmer; Philipp Aebischer; Prof. Dr. med. Marco Caversaccio  
Insel Gruppe AG, Inselspital

Die Impedanz-Telemetrie ist ein routinemässige angewandtes Verfahren zur Überprüfung der Integrität von Cochlea-Implantaten (CI). Wir präsentieren einen Ansatz zur Abschätzung der linearen und angularen Insertionstiefe von CI Elektroden mittels der Transimpedanz-Matrix.

In einem Datensatz von 20 Patienten wurden die Elektrodenpositionen in postoperativen CT-Aufnahmen gemessen und die Gewebewiderstände mithilfe der Transimpedanz-Matrix aus intraoperativen Telemetriedaten ermittelt. Unter Verwendung eines phänomenologischen Modells wurden die Einführtiefen der Elektroden geschätzt. Mit dieser Methode war es möglich, die lineare Einführtiefen mit einem durchschnittlichen Fehler von  $0.76 \pm 0.53$  mm abzuschätzen. Des weiteren korrelieren die Telemetriedaten mit der angularen Einführtiefe der CI Elektroden und ermöglichen Schätzungen mit einer für klinische Anwendungen relevanten Genauigkeit.

Telemetriedaten werden routinemässig während oder nach CI-Operationen aufgezeichnet, belasten Patienten nicht mit zusätzlicher Strahlung und erfordern keine spezielle Infrastruktur oder radiologische Expertise. Unser Methode könnte mehrere interessante Anwendungen ermöglichen, wie zum Beispiel die intraoperative Überprüfung der Einführtiefe oder patienten-spezifische, tonotopie-basierte CI-Anpassungen.

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### **Transvestibular Turbinoplasty: complete preservation of nasal mucosa**

Prof. Dr. med. Daniel à Wengen

ORL

To present a new surgical technique that relies only on resection of bone of the lateral nasal wall without incision or any other lesion to the nasal mucosa.

Incision in the skin of the nasal vestibule, preparation along the piriform aperture, chiseling away of the entire lacrimal bone including the anterior half of the bone of the lower turbinate. Visualization of the entire tear duct system. This approach can also be used for lacrimal duct surgery as well as for the prelacrimal approach to the maxillary sinus in functional endoscopic sinus surgery.

Patients profit from this preservation technique: significantly less bleeding and crusting, faster healing of the nose, reliable functional improvement of breathing

This technique could replace all other surgeries on the lower turbinate that generally include lesions to the mucosa.

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### **Hybrid positron emission tomography imaging for staging and re-staging of sinonasal tumors: prognosticators of treatment response and clinical impact**

Dr. med. Christian Meerwein; Dr. med. Alexander Maurer; Dr. med. Thomas Stadler; PD Dr. med. Michael Soyka; Prof. Dr. Dr. med. David Holzmann; PD Dr. med. Martin Hüllner  
USZ

Goals:

We aimed to assess hybrid positron emission tomography (PET) imaging in the staging and re-staging and outcome prediction of primary sinonasal malignancies.

Methods:

We performed a retrospective study on patients with primary sinonasal malignancies undergoing hybrid PET imaging for staging and re-staging.

Results:

Complete remission (CR) was achieved in 45 of 65 patients (69.2%). Overall sensitivity for detection of primaries using 18F-fluoro-deoxy-D-glucose PET (FDG-PET) was 95.4%, for lymph node metastases 100% and distant metastases (DM) 100%. On univariate analysis, PET parameter total lesion glycolysis (TLG) was associated with achieving CR after primary treatment ( $176.8 \pm 157.2$  vs  $83.7 \pm 110.8$ ,  $P = .03$ ). Multivariate logistic regression demonstrated that TLG adjusted for the T classification best predicted achievement of CR. Tumor entities displayed a heterogeneous profile of PET parameters SUVmax, TLG and PETvol, with an insignificant trend toward higher values for SNUC and olfactory neuroblastoma, compared to adenoidcystic carcinoma and adenocarcinoma. Overall, 45/96 (45.9%) of all PET examinations revealed additional radiological information, translating into a clinical impact in 32/96 (30.6%) of all examinations.

Conclusion:

Hybrid PET imaging yields an excellent sensitivity in detecting primary tumors, lymph node metastases and DM in sinonasal malignancies. Additionally, TLG of the primary tumor is an independent prognostic factor for achieving CR after initial treatment. Hybrid PET imaging yields clinical impact in a significant proportion of examinations.

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### **Titanium Batten Grafts to open the external nasal valve**

Prof. Dr. med. Daniel à Wengen

ORL

To present a new surgical technique that dilates and stabilizes the soft lateral nasal wall lateral to the lower end of the Lower Lateral Cartilage.

Incision in the skin of the nasal vestibule, preparation of the lateral piriform aperture, drilling of three holes for suture fixation of a modified Titanium Breathe-Implant with Prolen 4-0.

Patients benefit from a significant stabilization of the nasal vestibule in inspiration. Surgical details and functional results will be presented in detail including video instruction of important steps.

For more than five years this technique has proven safe and efficient in several hundreds of patients.

Disclosure: Royalty from Heinz Kurz, Germany

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### **A new tip suture to evert the caudal edge of the Lower Lateral Cartilage**

Prof. Dr. med. Daniel à Wengen

ORL

To present a new surgical technique of the Lower Lateral Cartilages (LLC) .

A modified mattress suture starting from the middle third of the scroll area over the cranial half of the LLC, into the LLC, out at the edge, in again at the edge, out in half of the LLC and into the scroll area again. The amount of eversion is controlled by the amount of pull on the suture. Unlike the Kovacevic suture which flattens the lateral LLC this suture is designed to rotate up the caudal edge.

Functional and aesthetic results as well as surgical details of this new technique will be presented in detail.

This technique helps to evert the caudal edge in a reliable and easily reproducible manner.

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### Electrode migration after cochlear implantation

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#### Objective:

To investigate impedance change of cochlear implant (CI) electrodes from CochlearTM in patients with straight and precurved electrodes, and to determine if impedance change of the basal electrodes are indicative for cochlear electrode migration.

#### Methods:

Retrospective case series at an academic tertiary referral center. Five hundred sixty patients (414 precurved, 146 straight) received a CI from CochlearTM between January 2010 and August 2018. Electrode impedance measured intraoperatively and during follow-up has been assessed. In case of impedance change of the 3 most basal electrodes a computer tomography (CT) scan has been performed. Cochlear position of the electrode array has been determined and compared to the one day postoperative electrode position (plain radiography).

#### Results:

Changes in electrode impedance in the basal electrodes occurred in 2.1% ears (n = 12). CT scan was available in 9 patients and revealed a migration of the electrode array in 6 patients. Straight electrode types showed a significantly higher migration rate than precurved electrode types (4.1% vs 0%).

#### Conclusions:

Electrode impedance is a useful tool to investigate electrode array integrity as well as to raise suspicion of possible electrode migration. Patients implanted with a straight electrode from CochlearTM array might benefit from lead wire fixation.

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### **Pathophysiology and therapy of endolymphatic hydrops (ELH) and Menière's Disease (MD)**

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Endolymphatic hydrops (ELH) is the histopathologic marker for MD, but not the cause of the attacks, because ELH can be produced in animals but they don't get attacks. It is believed that there are several different pathophysiologic pathways which could lead to MD. I will present a new hypothesis of one pathway that could explain development of ELH and Menière-attacks as well as it's correlation with migraine symptoms. CGRP is the neuronal transmitter actually thought to be the main reason of migraine attacks. CGRP is also an important regulator of Acetylcholin (ACH) i.e. the main transmitter in the olivo-labyrinthic efferents. It is also a very strong vasodilator. Thus, it may cause dilation of vessels in the stria vascularis and lead to ELH and it could also cause attacks with all Menière-symptoms by steering cochlear and vestibular efferents. Since treatment of MD very difficult and Betahistine is not more effective than placebo as demonstrated in the largest RCT sofar this hypothesis might also lead to a new therapy based on the pathogenesis of MD. This hypothesis and possible new therapy-options will be explained in the presentation.

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### Development of patient-specific drug-releasing round window implants for the treatment of inner ear diseases

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#### Motivation

The modern therapy of inner ear disorders is increasingly being determined by local drug delivery. Access to the inner ear is usually found via the round window membrane (RWM). The RWM is located in the bony round window niche (RWN), which allows local deposition of drugs. For safe and controlled drug delivery optimal fitted drug-implants designed for the individual shape of the niche have to be developed. We report about our preparatory work on the patient specific anatomy and model of the RWN.

#### Material/Methods

Cone beam computed tomography (CBCT) images of 50 patients were analyzed. Based on the reconstructed 3D volumes, the individual structures of the RWN were determined by segmentation using 3D slicer. A custom build plug-in was used, which allows the determination of the midmodiolar axis and defining a coordinate system relative to the cochlear so that quantities like depth and volume of the RWN, the length of the bony overhang and area of the RWM could be determined in comparable directions.

#### Results

A large individual anatomical variability of the RWN with a mean volume of 4.54 mm<sup>3</sup> (min 2.28mm<sup>3</sup>, max 6.64mm<sup>3</sup>) was detected. The area of the RWM ranged from 1.30mm<sup>2</sup> to 4.39mm<sup>2</sup> (mean: 2.93mm<sup>2</sup>). The bony overhang had a mean length of 0.56mm (min 0.04mm, max 1.24mm).

#### Conclusion

Our data prove that there is a need for individually shaped RWN implants due to clinically relevant differences in the volume and shape of the niche.

Outlook: Such an individualized, novel implant for minimally-invasive local delivery to the inner ear should be biodegradable and may be produced by different additive manufacturing processes.