



## Reader Digest

**Digested by Dr. Tarek Kandil, MD. ENT Consultant, students  
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### Introduction

This newsletter is intended to provide information that is useful to the student and specialist in the field of rhinology and allergic disorders.

The selected recent material represents important fundamental knowledge, current trends or recent developments in this field.

We hope that this newsletter will help the reader have a greater understanding of rhinology and allergic disorders

### **1. Evaluation of the factors affecting the necessity for revision surgery in choanal atresia**

[Levent Aydemir 1, Comert Sen 2, Hakan Kara 2, Saim Pamuk 2, Mustafa Caner Kesimli 3, Senol Comoglu 2, Meryem Nesil Keles Turel 2](#)

#### **Abstract**

**Objective:** This study aims to compare the effects of different surgical techniques for congenital choanal atresia (CCA), and particular emphasis is given to the analysis of the factors affecting the surgical outcome. The necessity for revision surgery and surgical outcomes were retrospectively investigated in patients undergoing revision surgery according to a recently proposed classification system.

**Material and method:** A retrospective study was conducted on patients operated for CCA between January 2007 and December 2018 at a university hospital. Data in the medical records, including patient age when the initial surgery was performed, gender, additional anomalies and medical conditions, the duration of gestation, side and type of atresia, type of surgery and need for revision surgery were reviewed.

**Results:** Forty-five patients treated for CCA in our university hospital were screened. The mean follow-up duration was 82.16 months. Revision surgery was required in 9 of 26 cases, which are included in the study (34.6%). Fourteen patients presented with bilateral CCA, while 12 were unilateral cases. Sixteen patients (61.5%) had comorbid medical conditions. While the removal of vomer and mucoperiosteal flap use affects successful surgical repair, no differences were



observed in choanal atresia type, laterality, use of stent and the presence of additional medical conditions.

**Conclusion:** The most important factors affecting surgical success for CCA are the removal of the vomer and closure of all bare bone tissues using a mucoperiosteal flap. Use of stents provides no additional benefit, apart from preventing synechiae formation

Int J Pediatr Otorhinolaryngol. 2021 Dec;151:110929.

## **2. A New Technique of Open Septal Reduction Using Polydioxanone Plates for Nasoseptal Fracture: Three-Dimensional Volumetric Analysis**

[Kyubeom Kim 1, Jaehoon Kim, Junhyung Kim, Insik Yun, Taehee Jo, Jaehoon Choi, Woonhyeok Jeong](#)

### **Abstract**

**Background:** In this study, we designed a new technique for open septal reduction using a polydioxanone (PDS) plate and compared it with closed reduction (CR).

**Methods:** This study included 19 consecutive patients with nasoseptal fracture: 10 receiving open reduction with a PDS plate (PDS group) and 9 undergoing CR group. Open septal reduction was performed after CR for nasal bone fracture. A mucoperichondrial flap was unilaterally elevated, and the deviated septal cartilage was reduced. The PDS plate was inserted horizontally above the vomerine suture. Surgical outcome was analyzed with three-dimensional volumetry and with a quality-of-life scale for nasal obstruction (Nasal Obstruction Symptom Evaluation scale).

**Results:** Complications included 1 case of septal perforation in the CR group and 1 case of PDS exposure and septal hematoma in the PDS group. In the three-dimensional volumetric analysis of the PDS group, the median value of the nasal cavity change significantly differed between 1.14 mL (interquartile range; 0.46-2.4) at the preoperative computed tomography scan and 0.33 mL (interquartile range; -0.22 to 1.29) at the postoperative computed tomography scan (\*\*P = 0.0039). The Nasal Obstruction Symptom Evaluation scale revealed significant improvement in nasal obstruction postsurgically (median value, 42.5-7.5; \*P = 0.0139) in the PDS group.

**Conclusions:** Polydioxanone plates potentially present a new concept of open septal reduction in terms of septal reinforcement compared with the subtractive approach of open septal reduction.

J Craniofac Surg. 2021 Sep 20.



### **3. Nasal Packing in the Emergency Department: A Practical Review for Emergency Providers**

[Quincy K Tran 1 2, Jeremy Barnett 3, Francis O'Connell 3, Brian D'Anza 4, Ali Pourmand 3](#)

#### **Abstract**

We performed a narrative review of epistaxis management in the emergency department. First, we examined the pathophysiology, the current types of treatment that are available to emergency clinicians. When nasal packing is indicated, we examined the efficacy of nasal packing in addition to other topical treatment such as tranexamic acid and the evidence of prophylactic antibiotics. We detailed current studies involving tranexamic acid and prophylactic antibiotics for nasal packing. Finally, we introduced an epistaxis clinical care pathway, based on current evidence, to aid emergency clinicians with their clinical decision-making processes. . Open Access Emerg Med. 2021 Dec 2;13:527-533

### **4. Olfactory Outcomes with Dupilumab in Chronic Rhinosinusitis with Nasal Polyps**

[Joaquim Mullol 1, Claus Bachert 2, Nikhil Amin 3, Martin Desrosiers 4, Peter W Hellings 5, Joseph K Han 6, Roger Jankowski 7, Jan Vodicka 8, Philippe Gevaert 9, Nadia Daizadeh 10, Asif H Khan 11, Siddhesh Kamat 3, Naimish Patel 12, Neil M H Graham 3, Marcella Ruddy 3, Heribert Staudinger 12, Leda P Mannent 11](#)

#### **Abstract**

**Background:** Loss of smell (LoS) is one of the most troublesome and difficult-to-treat symptoms of severe chronic rhinosinusitis with nasal polyps (CRSwNP).

**Objective:** To assess the impact of dupilumab on sense of smell in severe CRSwNP.

**Methods:** In the randomized SINUS-24 and SINUS-52 studies, adults with severe CRSwNP received dupilumab 300 mg subcutaneously or matching placebo every 2 weeks for 24 or 52 weeks, respectively. Smell was assessed using daily patient-reported LoS score (0-3) and University of Pennsylvania Smell Identification Test (UPSIT; 0-40). Data from the 2 studies were pooled through week 24. Relationships between patient phenotypes and smell outcomes were also assessed.

**Results:** We randomized 724 patients (286 placebo, 438 dupilumab); mean CRSwNP duration was 11 years; 63% had prior sinonasal surgery. Mean baseline LoS was 2.74. Dupilumab produced rapid improvement in LoS, evident by day 3, which improved progressively throughout the study periods (least squares mean difference vs placebo -0.07 [95% CI -0.12 to -0.02];



nominal  $P < .05$  at day 3, and  $-1.04$  [ $-1.17$  to  $-0.91$ ];  $P < .0001$  at week 24). Dupilumab improved mean UPSIT by 10.54 (least squares mean difference vs placebo 10.57 [ $9.40$ - $11.74$ ];  $P < .0001$ ) at week 24 from baseline (score 13.90). Improvements were unaffected by CRSwNP duration, prior sinonasal surgery, or comorbid asthma and/or nonsteroidal anti-inflammatory drug-exacerbated respiratory disease. Baseline olfaction scores correlated with all measured local and systemic type 2 inflammatory markers except serum total immunoglobulin E.

**Conclusions:** Dupilumab produced rapid and sustained improvement in sense of smell, alleviating a cardinal symptom of severe CRSwNP

J Allergy Clin Immunol Pract. 2021 Oct 7;S2213-2198(21)01104-1.

## **5. ENT Residents Benefit from a Structured Operation Planning Approach in the Training of Functional Endoscopic Sinus Surgery**

[Sven Becker 1](#), [Phillipp Gonser 1](#), [Magnus Haas 2](#), [Martin Sailer 1](#), [Matthias F Froelich 3](#), [Christian Betz 4](#), [Hubert Löwenheim 1](#), [Bernhard Hirt 5](#), [Wieland H Sommer 6](#), [Martin Holderried 7](#), [Benjamin P Ernst 8](#)

### **Abstract**

**Background and Objectives:** Preoperative planning utilizing computed tomographies (CT) is of utmost importance in functional endoscopic sinus surgery (FESS). Frequently, no uniform documentation and planning structures are available to residents in training. Consequently, overall completeness and quality of operation planning may vary greatly. The objective of the present study was to evaluate the impact of a structured operation planning (SOP) approach on the report quality and user convenience during a 4-day sinus surgery course. Materials and **Methods:** Fifteen participant were requested to plan a FESS procedure based on a CT scan of the paranasal sinuses that exhibited common pathological features, in a conventional manner, using a free text. Afterwards, the participants reevaluated the same scans by means of a specifically designed structured reporting template. Two experienced ENT surgeons assessed the collected conventional operation planning (COP) and SOP methods independently with regard to time requirements, overall quality, and legibility. User convenience data were collected by utilizing visual analogue scales. **Results:** A significantly greater time expenditure was associated with SOPs (183 s vs. 297 s,  $p = 0.0003$ ). Yet, legibility (100% vs. 72%,  $p < 0.0001$ ) and overall completeness (61.3% vs. 22.7%,  $p < 0.0001$ ) of SOPs was significantly superior to COPs. Additionally, description of highly relevant variants in anatomy and pathologies were outlined in greater detail. User convenience data delineated a significant preference for SOPs (VAS 7.9 vs. 6.9,  $p = 0.0185$ ). **Conclusions:** CT-based planning of FESS procedures by residents in training using a structured approach is more time-consuming while producing a superior report quality in



terms of detailedness and readability. Consequently, SOP can be considered as a valuable tool in the process of preoperative evaluations, especially within residency.

Medicina (Kaunas). 2021 Oct 4;57(10):1062.

## **6. The role of fungus in the pathogenesis of chronic rhinosinusitis**

[Sai D Challapalli 1, Sean McKee 1, Amber U Luong 1 2](#)

### **Abstract**

**Purpose of review:** The etiologic role of fungi in chronic rhinosinusitis remains controversial. The purpose of this review is to further our understanding of molecular immunologic pathways activated by fungi and clinical trials of antifungals in severe subtypes of asthma and allergic fungal rhinosinusitis.

**Recent findings:** Various fungal components such as protease and chitin are capable of eliciting a type 2 innate and adaptive immune response. However, definitive studies on the etiologic role of fungi in chronic rhinosinusitis (CRS) is dependent on the development of a fungi-induced murine model of CRS. Short of this model, extrapolations of observations and results from clinical trials in fungi-induced asthma subtypes support a key role of fungi in the pathophysiology of allergic fungal rhinosinusitis and possibly other CRS endotypes.

**Summary:** Fungi plays a key role in the pathophysiology of several subtypes of chronic inflammatory respiratory diseases. However, a fungi-induced murine model of CRS is needed to explicitly investigate the molecular pathways and potential therapeutic targets.

Curr Opin Otolaryngol Head Neck Surg. 2022 Feb 1;30(1):58-62.

## **7. Surgical Approach to Frontal and Ethmoid Sinus Osteomas: The Experience of 2 Metropolitan Italian Hospitals**

[Antonio Minni 1, Luca Roncoroni 2, Fabrizio Cialente 1, Federica Zoccali 1, Andrea Colizza 1, Angelo Placentino 2, Giorgio Ormellese 2, Massimo Ralli 1, Marco de Vincentiis 3, Alberto Dragonetti 2](#)

### **Abstract**

**Objectives:** The aim of this study was to report the surgical management experience of patients with osteomas of the frontal and ethmoid sinuses performed in 2 metropolitan Italian hospitals between 2012 and 2019.



**Methods:** A retrospective chart review of cases of frontal and ethmoid osteomas from the Ca' Granda Niguarda Hospital of Milan and the Policlinico Umberto I University Hospital of Rome was performed. All patients underwent preoperative computed tomography and, when orbital or intracranial extension was suspected, magnetic resonance imaging. Surgical treatment was performed according to Chiu classification.

**Results:** A total of 38 cases of frontal and ethmoid sinus osteomas were included in the study; 22 patients were men and 16 were women. The mean age at diagnosis was 49 years. Seven (18.4%) patients were treated using an open approach; 3 (7.9%) patients underwent open and endoscopic approach; the remaining 28 (73.7%) patients were treated with endoscopic approach. Seven (18.4%) patients had a cerebrospinal fluid leak intraoperatively and were treated with the placement of tissue graft through the defect. The mean follow-up time was 18 months; no recurrence was observed at 12-month follow-up.

**Conclusion:** Osteomas of the frontal and ethmoid sinuses can be treated using different techniques, mostly endoscopically. The choice of surgical approach (endoscopic vs open) depends on the location and size of the osteoma, anatomical size, characteristic of the sinus, surgeon's experience, and available existing technical facilities. Cerebrospinal fluid leak is a possible complication of surgery.

Ear Nose Throat J. 2021 Jun 28;1455613211016895.

## **8. Fluorescence grid analysis for the evaluation of piecemeal surgery in sinonasal inverted papilloma: a proof-of-concept study**

[J Vonk 1, F J Voskuil 1 2, J G de Wit 1, W T Heeman 3 4 5, W B Nagengast 6, G M van Dam 3 7, R A Feijen 8, Agw Korsten-Meijer 8, B van der Vegt # 2, Mjh Witjes # 9](#)

### **Abstract**

**Purpose:** Local recurrence occurs in ~ 19% of sinonasal inverted papilloma (SNIP) surgeries and is strongly associated with incomplete resection. During surgery, it is technically challenging to visualize and resect all SNIP tissue in this anatomically complex area. Proteins that are overexpressed in SNIP, such as vascular endothelial growth factor (VEGF), may serve as a target for fluorescence molecular imaging to guide surgical removal of SNIP. A proof-of-concept study was performed to investigate if the VEGF-targeted near-infrared fluorescent tracer bevacizumab-800CW specifically localizes in SNIP and whether it could be used as a clinical tool to guide SNIP surgery.

**Methods:** In five patients diagnosed with SNIP, 10 mg of bevacizumab-800CW was intravenously administered 3 days prior to surgery. Fluorescence molecular imaging was



performed in vivo during surgery and ex vivo during the processing of the surgical specimen. Fluorescence signals were correlated with final histopathology and VEGF-A immunohistochemistry. We introduced a fluorescence grid analysis to assess the fluorescence signal in individual tissue fragments, due to the nature of the surgical procedure (i.e., piecemeal resection) allowing the detection of small SNIP residues and location of the tracer ex vivo.

**Results:** In all patients, fluorescence signal was detected in vivo during endoscopic SNIP surgery. Using ex vivo fluorescence grid analysis, we were able to correlate bevacizumab-800CW fluorescence of individual tissue fragments with final histopathology. Fluorescence grid analysis showed substantial variability in mean fluorescence intensity (FI<sub>mean</sub>), with SNIP tissue showing a median FI<sub>mean</sub> of 77.54 (IQR 50.47-112.30) compared to 35.99 (IQR 21.48-57.81) in uninvolved tissue ( $p < 0.0001$ ), although the diagnostic ability was limited with an area under the curve of 0.78.

**Conclusions:** A fluorescence grid analysis could serve as a valid method to evaluate fluorescence molecular imaging in piecemeal surgeries. As such, although substantial differences were observed in fluorescence intensities, VEGF-A may not be the ideal target for SNIP surgery

Eur J Nucl Med Mol Imaging. 2021 Nov 5.

## **9. Evaluation of the incidence of inflammatory and tumor pathology of nose and nasal sinus region**

[Salah Nassrallah 1, Cristian Mircea Neagoș, Simona Liliana Mocan, Adriana Neagoș](#)

### **Abstract**

Inflammatory and nasal-sinus tumor pathology is a field of great interest in rhinology worldwide. The aim of the paper is to determine the prevalence of nasal and nasal-sinus inflammatory diseases, as well as nasal and nasosinus rhinosinusitis tumors, in association or not with inflammatory diseases, using histopathological (HP) examination. It is also desired to identify the association of chronic inflammatory pathology with the tumor one, considering inflammation and immunodeficiency as local susceptibility factors. A retrospective study was performed on a group of 254 patients hospitalized between 2018-2019 in Department of Otorhinolaryngology, Emergency County Hospital, Târgu Mureș, Romania. Based on the clinical and HP examination, the distribution by inflammatory pathologies was made as follows: 175 nasal polyposis, 108 chronic rhinitis, 39 sinusitis - strictly affecting the sinus and 28 chronic polyposis rhinosinusitis - nasal and sinus association. Considering the evaluation of the incidence of benign tumor pathology, the following were found: out of the total examined cases, 4% squamous papilloma, 4% exophytic papilloma, 44% Schneiderian papilloma, 4% benign fibrous histiocytoma, 18% hemangioma, 4% hamartoma, and 4% osteoma were identified. The incidence of malignant tumors is 26% squamous cell carcinoma, 12% intestinal adenocarcinoma,



2% nonintestinal type adenocarcinoma, 2% large B-cell lymphoma, 2% plasma cell, 2% olfactory neuroblastoma, 7% malignant melanoma, 16% basal cell carcinoma. The paper draws attention to the increased incidence of tumor and inflammatory pathology both individually and in combination, considering the involvement of the clinical correlation with the HP result completed, if necessary, with immunohistochemical examinations, for a precise diagnosis.

Rom J Morphol Embryol. Oct-Dec 2020;61(4):1295-1300.

## **10. Confocal laser endomicroscopy - first application and validation of malignancy criteria**

[Nina Wenda 1, Ralf Kiesslich 2, Jan Gosepath 1](#)

### **Abstract**

**Objectives:** Confocal laser endomicroscopy (CLE) is a method for real-time in vivo visualization of mucosal changes on a cellular level. First investigations on head and neck carcinoma described the oropharyngeal application. The aim of this investigation is to elucidate, based on the criteria validated in the oropharynx, whether these can be transferred to endonasal mucosa.

**Methods:** CLE was performed with intravenous fluorescein staining in endoscopic sinus surgery in one patient with sinonasal inverted papilloma and another with squamous cell carcinoma. We compared cellular visualization of pathological changes to those of healthy mucosa in the same specimen as well to our former findings in the oropharynx.

**Results:** Endonasal CLE proved to be well feasible in the surgical setting and the transfer of malignancy criteria in analogy to histological examination could be optically retraced. Furthermore, additional criteria for tissue dignity assessment were obtained.

**Conclusion:** Our results suggest that endonasal CLE represents a valuable extension of the diagnostic repertoire available to date by an additional real-time analysis of nasal mucosa. This is of particular value in surgically challenging anatomical areas such as the paranasal sinuses. Further investigation and validation will be necessary

Laryngorhinotologie. 2021 Oct;100(10):818-823.