



Reader Digest

**Digested by Dr. Tarek Kandil, MD. ENT Consultant, students
Hospital, Cairo University**

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. Features and Strategies in the Management of Choanal Atresia: A 6-Year Retrospective Analysis

[Zacharias Kalentakis 1, Sofia Stamataki, Vasileios Chalkiadakis, Nektarios Papapetropoulos](#)

Abstract

Introduction: Choanal atresia although rare, is the most common inborn nasal deformity and an important cause of newborn airway obstruction. This study aims to describe a single-center experience in the management of choanal atresia and emphasize the ambiguous issues regarding its surgical repair.

Patients and methods: The authors retrospectively analyzed the treatment strategy of 18 patients with choanal atresia and their outcomes during the follow-up period.

Results: Bilateral choanal atresia was diagnosed in 9 patients, 6 of those had mixed bony-membranous type (67% versus 33% who had pure bony type). Almost half of the 18 patients had a mixed bony-membranous type of atresia (56%). Interestingly, 89% of patients with bilateral atresia underwent transnasal endoscopic repair with stenting, compared to 44% of those with unilateral atresia ($P = 0.04$). A trend to preference of stent procedure in patients with bony type was also observed, in comparison with mixed bony-membranous type (89% versus 50%, $P = 0.09$). No significant difference in the need for revision treatment was noticed among the two treatment groups.



Conclusions: Both in our data and literature there is no clear supremacy of stenting. Considering the high incidence of re-stenosis, all patients should be under close follow up for a long-term period. Inevitably, further investigation is necessary to establish an ideal surgical procedure.

J Craniofac Surg. 2021 Mar 22.

2. Comparison of the outcomes of nasal bone reduction using serial imaging

[Cho Long Lee 1, Ho Jik Yang 2, Young Joong Hwang 1](#)

Abstract

Background: Nasal bone fractures are frequently encountered in clinical practice. Although fracture reduction is simple and correction requires a short operative time, low patient satisfaction and relatively high complication rates remain issues for many surgeons. These challenges may result from inaccuracies in fracture recognition and assessment or inappropriate surgical planning. Findings from immediate postoperative computed tomography (CT) scans and those performed at 4 to 6 weeks postoperatively were compared to evaluate the accuracy and outcomes of nasal fracture reduction.

Methods: This retrospective study included patients diagnosed with nasal bone fractures at our department who underwent closed reduction surgery. Patients who did not undergo additional CT scans were excluded from the study. Clinical examinations, patient records, and radiographic images were evaluated in 20 patients with nasal bone fractures.

Results: CT findings from immediately after surgery and a 1 month follow-up were compared in 20 patients. Satisfactory nasal projection and aesthetically acceptable results were observed in patients with accurate correction or mild overcorrection, while undercorrection was associated with unfavorable results.

Conclusion: Closed reduction surgery for correcting nasal bone fractures usually provides acceptable outcomes with relatively few complications. If available, immediate postoperative CT scans are recommended to guide surgeons in the choice of whether to perform secondary adjustments if the initial results are unsatisfactory. Based on photogrammetric data, nasal bone reduction with accurate correction or mild overcorrection achieved acceptable and stable outcomes at 1 month postoperatively. Therefore, when upward dislocation is observed on postoperative CT, one can simply observe without a subsequent intervention

Arch Craniofac Surg. 2021 Aug;22(4):193-198.



3. To Pack a Nose: High-Fidelity Epistaxis Simulation Using 3D Printing Technology

[Rebecca W Gao 1, Deborah Rooney 2, Rebecca Harvey 3, Kelly M Malloy 1, Kyle K VanKoevering 1 2](#)

Abstract

Background: Initial management and stabilization of epistaxis is managed by a diverse offset of clinical providers with variable levels of training.

Objective: To determine the anatomic and clinical fidelity and ease of use of a novel simulator for the training and assessment of epistaxis management skills.

Study design: Qualitative Research Study using expert questionnaire's for validation of a newly developed simulator.

Methods: We performed a quasi-experimental intervention with 22 otolaryngology faculty and 10 trainees who independently evaluated the simulator. Data were collected in three phases: phase 1 (preliminary evaluation), phase 2 (final expert evaluation), and phase 3 (trainee evaluation). We designed a three-dimensional (3D) printed model from a de-identified patient computed tomography scan. Artificial blood was circulated through catheters to simulate bleeding from three distinct sites (sphenopalatine, Kiesselbach's plexus, and anterior ethmoid). Four domains were assessed: "Physical and anatomic attributes," "Realism of experience," "Ability to perform tasks," and "Value and clinical relevance." Internal structure and validity were measured with Cronbach's alpha and item outfit mean-square statistics.

Results: Results from otolaryngology faculty showed very high median ratings for "Value of the simulator as a training tool" (4.0/4) and high ratings for "Relevance to practice" (4.0/4), and realism of experience (4.0/4). Responses from otolaryngology trainees demonstrated high value for clinical training (4.0/4) and high likelihood to recommend use for future trainees (4.0/4). Confidence in managing epistaxis before (1.0/4) and after (3.0/4) simulator use was statistically improved ($P = .03$).

Conclusions: Using 3D printing technology, we created a novel simulator for epistaxis management. Preliminary evidence suggests the model is cost-effective, anatomically realistic, relevant to trainees' educational needs, and valuable as a training tool.

Laryngoscope. 2021 Jul 17.



4. Meta-analyses of the efficacy of pharmacotherapies and sublingual allergy immunotherapy tablets for allergic rhinitis in adults and children

[E O Meltzer 1, D Wallace 2, H S Friedman 3, P Navaratnam 3, E P Scott 4, H Nolte 5](#)

Abstract

Background: Treatment options for seasonal and perennial allergic rhinitis (SAR/PAR) include pharmacotherapies and allergy immunotherapy. These meta-analyses evaluated the efficacy of pharmacotherapies and sublingual immunotherapy tablets (SLIT-tablets) versus placebo on nasal symptoms associated with SAR and PAR.

Methods: Randomized, double-blind, placebo-controlled trials were identified from systematic PubMed/EMBASE searches through 7/18/2019 (PROSPERO protocol CRD42018105632). The primary outcome was mean numerical difference in total nasal symptom score (TNSS; 0-12) between active treatment and placebo at the end of the assessment period. Random-effects meta-analyses estimated the mean difference for each medication group weighted by the inverse of the trial variance. Publication bias assessments and sensitivity analyses were conducted.

Results: Rescue symptom-relieving pharmacotherapy was prohibited in most pharmacotherapy trials but was allowed in all SLIT-tablet trials. For adult/adolescent SAR, the mean numerical difference (95% CI) in TNSS versus placebo was: intranasal corticosteroids (INCS)=1.38 (1.18, 1.58; 39 trials); combination intranasal antihistamine/INCS=1.34 (1.15, 1.54; 4 trials); intranasal antihistamines=0.72 (0.56, 0.89; 13 trials); oral antihistamine=0.62 (0.35, 0.90; 18 trials); SLIT-tablets=0.57 (0.41, 0.73; 4 trials); and montelukast=0.48 (0.36, 0.60; 10 trials). For adult/adolescent PAR, mean difference in TNSS versus placebo (95% CI) was: INCS=0.82 (0.66, 0.97; 14 trials); SLIT-tablets=0.65 (0.42, 0.88; 3 trials); and oral antihistamine=0.27 (0.11, 0.42; 3 trials). The number of eligible trials limited meta-analyses for pediatric SAR/PAR.

Conclusions: All treatments significantly improved nasal symptoms versus placebo. SLIT-tablets provided improvement in TNSS despite access to rescue symptom-relieving pharmacotherapy. Extensive trial heterogeneity and strong indications of publication bias preclude the comparison of treatment effects among treatment classes.

Rhinology. 2021 Aug 31



5. Value of Hounsfield Units in the Evaluation of Isolated Sphenoid Sinus Lesions

[Orhan Tunç 1, Alper Yazıcı 1, İsmail Aytaç 1, Koray Tümüklü 2, Melih Akşamoğlu 1](#)

Abstract

Radiologic findings of fungal sinus disease are generally opacification in paranasal computed tomography (CT) images. The Hounsfield unit (HU) is a standardized objective unit that is also suitable for measuring remodeling and opacifications on CT scans of bone sections of patients with chronic rhinosinusitis. We hypothesized that HU values could provide valuable information in isolated sphenoid sinus lesions before surgery. Between 2012 and 2019, 35 patients underwent functional endoscopic sinus surgery for sphenoid sinus lesions. Tissues obtained from the sphenoid sinus were divided into two groups, fungal and nonfungal, according to the findings of histopathologic examinations. HU values were measured in sphenoid sinus sections on paranasal CT scans of these two groups. Differences in mean and maximum HU values between the two groups were statistically significant ($p < .05$). The maximum HU values calculated from the sphenoid sinus were 435.08 and 196.23 ($p \leq .05$) in the fungal group and nonfungal group, respectively. The mean HU values calculated from the sphenoid sinus were 64.31 and 29 ($p \leq .05$) in the fungal and nonfungal groups, respectively. At the maximum cutoff value of 241, the sensitivity and specificity of the HU maximum were 84.6% and 77.3%, respectively. At the mean cutoff value of 41.5, the sensitivity and specificity of the HU mean were 76.9% and 86.4%, respectively. HU is an objective value used in radiographic density measurement. The HU values were higher in fungal lesions than in nonfungal inflammations, and they are useful in preoperative measurement

Allergy Rhinol (Providence). 2021 Aug 23;12:21526567211032560.

6. One year into the COVID-19 pandemic: What do we know so far from studies assessing risk and mitigation of droplet aerosolisation during endonasal surgery? A systematic review

[Stephen P Williams 1, Samuel C Leong 1](#)

Abstract

Objectives: As we pass the anniversary of the declaration of a global pandemic by the World Health Organisation, it invites us to reflect upon the inescapable changes that coronavirus has wrought upon ENT and, in particular, rhinological practice. As it remains unclear when we will globally emerge from the shadow of COVID-19, a critical analysis of the evidence base on both the assessment and mitigation of risk is vital for ENT departments worldwide. This article



presents a systematic review of the literature examining articles which consider either the quantification of risk or strategies to mitigate risk specifically in the setting of rhinological surgery.

Design: Systematic literature review.

Results: The literature search yielded a total of 3406 returns with 24 articles meeting eligibility criteria. A narrative synthesis stratified results into two broad themes: (1) those which made an assessment as to the aerosolisation of droplets during sinus surgery, further subdivided into work which considered macroscopically visible droplets and that which considered smaller particles; (2) and those studies which examined the mitigation of this risk.

Conclusion: Studies considering the aerosolisation of both droplets and smaller particles suggest endonasal surgery carries significant risk. Whilst results both highlight a range of innovative adjunctive strategies and support suction as an important variable to reduce aerosolisation, appropriate use of personal protective equipment (PPE) should be considered mandatory for all healthcare professionals involved in rhinological surgery given studies have demonstrated that close adherence to PPE use is effective at preventing COVID-19 infection

Clin Otolaryngol. 2021 Sep 2.

7. Proposal for staging of inflammatory lesions in the frontal region

[Galo S Soberón 1, Héctor M Prado 2, Andrés Sadek 1, Olga Plowes 1, José R Arrieta 1, Vladimir Figueroa 3](#)

Abstract

Frontal swelling can be due to multiple etiologies, including: mucocele, Pott's puffy tumor, fibro osseous lesions, benign and malignant neoplasms of the nose and paranasal sinuses, intracranial lesions, and metastasis. The objective of this study was to describe the clinical protocol used for the diagnosis of patients presented with frontal swelling and the proposal for staging of inflammatory lesions. We performed an observational retrospective analysis. We found 7 cases of patients with frontal swelling: 4 cases secondary to inflammatory pathology (3 Potts puffy tumors and one frontal mucocele), and 3 cases secondary to neoplasms (one benign and 2 malignant neoplasms). It's very important to consider the wide differential diagnosis that can present as frontal swelling, from inflammatory pathologies secondary to possible advanced infections of the paranasal sinuses to invasive malignant neoplasms. We propose a system of staging of frontal inflammatory lesions

Acta Otorrinolaringol Esp. Sep-Oct 2016;67(5):288-92.



8. Fibro-osseous Lesions of Paranasal Sinus and Craniofacial Region: A Retrospective Study of 282 Cases

[Dong Dong 1, Yue Wang 1, Chang Li 1, Hongyan Zhang 2, Yulin Zhao 1, Jinping Lai 3 4](#)

Abstract

Objectives: To compare the clinical characteristics of osteoma, ossifying fibroma (OF) and fibrous dysplasia (FD) in the paranasal sinus and craniofacial regions.

Methods: Totally 282 patients (112 males, 170 females) with osteoma (161), OF (44), and FD (77) involving the paranasal sinus, skull base and orbit treated surgically from January 2012 to August 2018 were analyzed retrospectively.

Results: For osteoma, OF and FD, the onset ages were 40.3 (6-75), 24.5 (5-62), and 15 (1-63) years, and the most common locations were ethmoid sinus (49.7%), maxilla (36.4%) and maxilla (49.4%), respectively. There were significant differences of the preoperative serum alkaline phosphatase (ALP) levels between patients with osteoma (65 [25,184] U/L), OF (85.5 [41,474] U/L), and FD (104 [39,362] U/L) ($Z = 44.9, P < .05$). The ALP levels of OF and FD patients were comparable between monostotic and polyostotic lesions ($P > .05$). The recurrent rates of osteoma, OF, and FD were 0%, 13.6%, and 15.6%, respectively. The recurrent OF cases had significantly higher ALP level than the primary ones (283.5 [108,474] U/L vs. 76 [41,348] U/L, $U = 14, P < .05$).

Conclusion: There are differences in the onset age, location, and recurrence rate among osteoma, OF and FD involving the paranasal sinus and craniofacial region. Osteoma most commonly occurs in the ethmoid sinus, while OF and FD involve the maxilla most and are more likely to involve the orbit and the skull base, respectively. Endoscopic surgery is currently the main method for treatment, but individualized treatment regimen should be developed for patients.

Laryngoscope. 2021 Jan;131(1):E1-E7.

9. Twenty Years of Experience in Juvenile Nasopharyngeal Angiofibroma (JNA) Preoperative Endovascular Embolization: An Effective Procedure with a Low Complications Rate

[Andrea Giorgianni 1, Stefano Molinaro 1, Edoardo Agosti 2, Alberto Vito Terrana 1, Francesco Alberto Vizzari 1, Alberto Daniele Arosio 3 4, Giacomo Pietrobon 5, Luca Volpi 6 7, Mario Turri-Zanoni 3 8, Giuseppe Craparo 9, Filippo Piacentino 10, Paolo Castelnuovo 3 4 8, Fabio Massimo Baruzzi 1, Maurizio Bignami 6 7](#)



Abstract

Juvenile nasopharyngeal angiofibroma (JNA) is a benign tumor of the nasal cavity that predominantly affects young boys. Surgical removal remains the gold standard for the management of this disease. Preoperative intra-arterial embolization (PIAE) is useful for reductions in intraoperative blood loss and surgical complications. In our series of 79 patients who underwent preoperative embolization from 1999 to 2020, demographics, procedural aspects, surgical management and follow-up outcome were analyzed. Embolization was performed in a similar fashion for all patients, with a superselective microcatheterization of external carotid artery (ECA) feeders and an injection of polyvinyl alcohol (PVA) particles, followed, in some cases, by the deployment of coils. Procedural success was reached in 100% of cases, with no complications such as bleeding or thromboembolic occlusion, and surgical intraoperative blood loss was significantly decreased. In conclusion, PIAE is a safe and effective technique in JNA treatment, minimizing intraoperative bleeding

J Clin Med. 2021 Aug 31;10(17):3926.

10. Targeted gene expression profiling of inverted papilloma and squamous cell carcinoma

[Charles C L Tong 1](#), [Mateusz Koptyra 2](#), [Pichai Raman 2](#), [Komal S Rathi 2](#), [Namrata Choudhari 2](#), [Xiang Lin 3](#), [Tyler Seckar 1](#), [Zhi Wei 3](#), [Michael A Kohanski 1](#), [Bert W O'Malley 1](#), [Noam A Cohen 1](#), [David W Kennedy 1](#), [Nithin D Adappa 1](#), [Erle S Robertson 1](#), [Esther Baranov 4](#), [Edward C Kuan 1](#), [Peter Papagiannopoulos 1](#), [Jalal B Jalaly 4](#), [Michael D Feldman 4](#), [Phillip B Storm 2](#), [Adam C Resnick 2](#), [James N Palmer 1](#)

Abstract

Background: Inverted papilloma (IP) is a sinonasal tumor with a well-known potential for malignant transformation. The purpose of this study was to identify the genes and pathways associated with IP, with progression to carcinoma-in-situ and invasive carcinoma.

Methods: To determine genes and molecular pathways that may indicate progression and correlate with histologic changes, we analyzed six IP without dysplasia, five IP with carcinoma-in-situ, and 13 squamous cell carcinoma ex-IP by targeted sequencing. The HTG EdgeSeq Oncology Biomarker Panel coupled with next-generation sequencing was used to evaluate 2560 transcripts associated with solid tumors.

Results: Progressive upregulation of 11 genes were observed (CALD1, COL1A1, COL3A1, COL4A2, COL5A2, FN1, ITGA5, LGALS1, MMP11, SERPINH1, SPARC) in the order of invasive carcinoma > carcinoma-in-situ > IP without dysplasia. When compared with IP without dysplasia, more genes are differentially expressed in invasive carcinoma than carcinoma-in-situ



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samples (341 downregulated/333 upregulated vs. 195 downregulated/156 upregulated). Gene set enrichment analysis determined three gene sets in common between the cohorts (epithelial mesenchymal transition, extracellular matrix organization, and coagulation).

Conclusions: Progressive upregulation of genes specific to IP malignant degeneration has significant clinical implications. This panel of 11 genes will improve concordance of histologic classification, which can directly impact treatment and patient outcomes. Additionally, future studies on larger tumor sets may observe upregulation in the gene panel that preceded histologic changes, which may be useful for further risk stratification

Int Forum Allergy Rhinol. 2021 Sep 12.