

## Abstracts 3<sup>rd</sup> Pan-Arab Rhinology Society Conference

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### Abstract Oral Presentation

#### Residency Revolution Reconstructing Surgical Education for the 21<sup>st</sup> Century

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I would hope to review the origins of medical and surgical education in particular, what we know about how humans best access/consider/apply new information and skills, implications of the technology revolution (positive and negative), impediments to change within our surgical education systems, and what our "guiding stars" should be as we look to prepare trainees for a future that is not completely predictable.

#### Anesthesia for FESS

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Poor hemostasis presents a specific hemodynamic risk to the patient during FESS. Additionally, poor hemostasis compromises visualization and increases surgeon frustration. This lecture explores the literature regarding techniques to achieve optimal surgical field during FESS.

#### Approaching the Frontal Sinus

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Because of the variable and complex anatomy as well as the acute angles of operation, safe surgical treatment of the frontal sinus is considered among the most difficult areas in FESS. This lecture explores the anatomical landmarks and relationship between them. Additionally, the hierarchy of surgical procedures available for treatment of the frontal sinus region is reviewed and an algorithm for surgical treatment of the frontal sinus is presented.

#### "Safety in FESS"

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Under the Hippocratic Oath, our first obligation is to "Do no harm". This lecture explores the intra-operative and peri-operative

techniques that can be employed to decrease patient risk during FESS.

#### FESS@teaching: a multicenter, participant-based survey of FESS- courses

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The aim of this multicenter study was to systematically analyse the strengths and weaknesses in the surgical training for endoscopic sinus surgery (ESS) and identify measures that may improve training.

Using a structured questionnaire, 133 participants of ESS courses in seven centers in Germany, Switzerland and Australia were asked about their experiences during their dissection courses and how they perceived their course could be improved. Gaining confidence in handling of instruments and endoscopes was only a problem for participants with little experience in ESS. The majority of the participants, independent from their level of training, considered infundibulotomy and anterior ethmoidectomy as the easiest dissection steps, whilst surgery of the frontal sinus posed a considerable challenge for many surgeons even those with a higher level of training. Participants with and without ESS experience thought that emphasis on anatomy was the most important improvement that could be made during their surgical training. Virtually all participants stated that the course improved their anatomical knowledge, their surgical skills and their confidence when performing ESS.

ESS dissection courses are considered beneficial by surgical trainees. Participants felt that more emphasis on sinus anatomy in conjunction with private study is essential to maximize their skills in surgical dissection. For beginners with ESS, an infundibulotomy and anterior ethmoidectomy were thought to be the best initial procedures to help develop endoscopic surgical skills.

#### FESS and mucocoeles: how to manage?

Prof. A. Leunig (Germany)

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This lecture describes the essentials of the endoscopic endonasal procedure for the successful marsupialization of paranasal sinus mucocoeles. Answers will be given to the following questions: what imaging? when navigation? what instruments and endoscopes? how to manage loss of bony support? what are the limits for the

endoscopic endonasal approach? A variety of HD-videoclips with instructive cases of all paranasal sinus mucocoeles will also be presented.

#### **Stepwise approach to frontal sinus ;basic and clinical exam**

Prof.A. Leunig (Germany), H. R. Briner (Switzerland)

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The endoscopic endonasal approach to the frontal sinus is the most difficult part of endoscopic sinus surgery due to its highly complex and variable anatomy of the frontal recess. Due to its close anatomical relationship with the anterior skull base and the orbit, thorough knowledge of the frontoethmoidal anatomy is key for safe surgery. This instructional course has its focus on indications for surgery of the frontal recess and sinus, the anatomy of the frontoethmoidal region with its anatomical variations and the relevant anatomical landmarks.

#### **Transnasal en bloc Resection of JNA Instrumentation, Lessons, and Pitfalls**

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The diagnosis of Juvenile Nasal Angiofibroma (JNA) has historically been one which has conjured realistic fears of substantial and alarming surgical mortality and morbidity. The advent of interventional endovascular embolization pre-operatively has transformed the surgical management of this disease such that early diagnosis and proper surgical planning are the paramount concerns. The logistics of proper instrumentation and complete resection through limited (transnasal) access are now the key factors in successful surgical management of these tumors.

Through a series of patients diagnosed and surgically managed at Tawam Hospital in the UAE and the Children's Medical Center of the Medical College of Georgia in the United States, this presentation will demonstrate the lessons learned in the technical and practical aspects of treating the young men who have this disease in the pre-, intra-, and post-operative phases of management. The various surgical instruments which have been proven effective will be demonstrated in use as will the surgical pitfalls inherent in each instrument's usage for the removal of these masses.

#### **Endoscopic Medial Maxillectomy in inverted Papolloma**

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This IC of cadaver dissection, aims at demonstrating the state of the art in how to perform medial maxillectomy transnasally without any need for adjuvant sublabial incision and/or septal transfixion. It begins by demonstrating MMA (middle meatal antrostomy) for CRS (Chronic Rhinosinusitis) with or without polyps, then extends to TPMM (transnasal partial medial maxillectomy) done. Lastly dissection proceeds to TEMM (transnasal endoscopic medial

maxillectomy) performed in cases of inverted papilloma originating from the maxillary sinus and other pathologies.

#### **Fronto-lateral approach to skull base**

Ossama Hamid

Egypt

Higher infratemporal lesions reaching and eroding the skull base are difficult to approach and usually are surgeon challenge, being centred around the internal carotid artery. The fronto-lateral approach to skull base thru fronto-orbitozygomatic osteotomies will give a wide, shallow and safe approach to this region. The article presents few cases discussing the advantages and limitations of this approach. We recommend team work formed of ENT and neurosurgeon to achieve better and safer results. We also urge training of ENT surgeons to be familiar with these approaches to the skull base.

#### **Osteoplastic flap in the era of endoscopic sinus surgery: modified technique and current indications.**

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Surgery of the frontal sinus continues to be an area of difficulty and challenge in otorhinolaryngology. The close relationship of the frontal recess to the fragile cribriform plate medially, orbit laterally and anterior ethmoid artery and skull base posteriorly makes dissection in this area difficult. The complex anatomy and variations in the arrangement of the fronto-ethmoid cells may lead to further difficulty in identifying the frontal recess.

Endoscopic sinus surgery has become the standard procedure for medically resistant frontal sinus disease. Procedures such as endoscopic median drainage surgery have further extended the range of what can be achieved endoscopically in the frontal sinus. In certain conditions however, an open approach such as an osteoplastic frontal sinus flap (OPF), may still be indicated. In general, these cases would seem to have more advanced pathology and the potential to carry higher failure and complication rates if performed endoscopically. The aim of this presentation is to describe modified technique and results of OPF in the era of endoscopic sinus surgery. Extensive clinical experience and evidence-based medical information from peer-reviewed journals will be used in a multimedia presentation to demonstrate fundamental points. Case and video presentations will be used to discuss and emphasize important elements in performing safe procedure as well as when to book patients for OPF. Audience participation will also be employed at multiple points throughout the seminar to explore important issues and controversies in management.

#### **Endoscopic management of recurrent juvenile nasopharyngeal angiofibroma**

Abdelrahman Younes, M.D.

Juvenile nasopharyngeal angiofibroma (JNA) is a benign, highly

vascular tumour that often arises at the superior margin of the sphenopalatine foramen. It may extend from the nasal cavity to the nasopharynx, the paranasal sinuses, the orbit and the pterygopalatine fossa, and may even invade the skull base or extend intracranially. Affecting primarily male adolescents with mean age 15 years at time of diagnosis.

JNA is uncommon and accounts for approximately 0.5% of all head and neck neoplasms. Transnasal endoscopic resection in patients with extra cranial juvenile nasopharyngeal angiofibroma after proper preoperative embolization has a high cure rate even in recurrent cases.

**Methods:** A retrospective study was done on five patients presented to Kasr Alaini Hospital –Cairo university with recurrent angiofibroma without intracranial extension, previously treated by transnasal endoscopic resection.

**Aim of work:** The aim of this study to delineate the exact site that commonly harbors tumor remnants, in order to improve the operative techniques to decrease the rate of recurrence.

#### **New insight into non-invasive fungal rhinosinusitis**

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During the last 12 years, new evidence suggests that the role of fungi in the etiology of non invasive fungal rhinosinusitis may be different than previously supposed. So diagnosis is made difficult if fungus can be found throughout over the nasal mucosa in patients presenting with and without sinusitis and further compounded by difficulties associated with the histopathologic identification of fungi. Through our previous publications we observed that fungal culture had no correlation with cellular changes (local eosinophilia) and other clinical parameters. As lymphocytes are believed to play an important role in regulating the mucosal immune responses to foreign antigens and subsequently play a key role in disease presentation. It is therefore expected that immunophenotyping and characterization of the resident lymphocyte cell populations present in the sinonasal mucosa will reveal different lymphocyte populations associated with different forms of CRS (with and without fungal etiology). We report the results of the study on immunophenotyping differences between all categories of CRS with and without fungal etiology. Also we focus on other spectrum and categories of non invasive fungal rhinosinusitis. This will allow adequate classification, diagnosis, and subsequently adequate research layouts and treatment plans for non-invasive fungal diseases related to CRS.

#### **Outcomes of rhinoplasty in relation to variable factors: as prospective audit**

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**Back ground and objectives:** Rhinoplasty is considered as a one of the most difficult facial plastic surgeries. Although, there are multiple factors which may affect the results of this pattern of nasal surgery, but still the outcomes of this procedure cannot be predicted because in addition to the objective measurable factors there are also non-measurable subjective factors which may extend up to the psychological status of the patient and his\her cosmetic satisfaction, these last factors can be of more significant role as compared to the other objective factors. For this reason, this study was conducted prospectively to confirm the effect of different factors on results of this surgery.

**Patients and methods:** 35 patients aged 18-39 years of different types of external nasal deformities, namely crooked nose , deviated nose , and humped deformed nose, with and without DNS , presented at ENT department- Althowra central hospital at period in between September 2005 to April 2012 who operated by rhinoplasty as closed technique. The outcomes of the surgery were studied in relation to different demographic, anatomical, pathological as well as surgical factors, namely 1) patients age, 2) sex, 3) race, 4) familial nasal disfigurement background, 5) type of clinical presentation, 6) cause of the deformity, 7) type of DNS if present, 8) associated local pathology rather than DNS, 9) recurrent or first attempt of surgery, 10) associated oro-facial disfigurements, and 11) surgical technique which was performed. Patients postoperatively were followed and assessed for outcomes of the surgery.

**Results:** 80% of patients who underwent the rhinoplasty procedure got acceptable results with high patient's satisfaction. On the other hand 20% of the patients had residual external deformities and they are subsequently not satisfied with obtained results.

**Conclusion:** Generally speaking, the rhinoplasty is a difficult surgical procedure, its outcomes are very difficult to be suggested, because these outcomes can be subjective rather than objective form, and the satisfaction of the patient is considered as one of the most important factors which affect these outcomes.

**Keywords:** Rhinoplasty; Septo-rhinoplasty; External nasal deformities reconstruction.

#### **Long Nose [ARABIAN Nose], How to Manage**

*Dr. Tariq Ashour, MD*

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It is our pleasure to present our experience in King Fahd Hospital, Jeddah City in Saudi Arabia in managing various types of long nose (Arabian nose).

We can divide this type of pathology into 4 main parts:

1. Long nose due to forward displaced nasal tip
2. Forward displaced nasal tip with under projection

3. Forward displaced nasal tip with bony hump
4. Forward displaced nasal tip with bony and cartilaginous hump

During the last few years we manage this type of pathology, In my managing I am following the Endonasal Closed Technique delivery of both lower lateral cartilage (Goldman technique which was modified by many other like Simon, Tardy and many other).

The technique depend on delivery of both lower lateral cartilage after oblique division as Bipedicled chondro cutaneous flap.

#### *According to the pathology we are following 5 steps of managing*

1. Exposure of the cartilagenous part of the septum with trimming 2-3mm from the caudal part.
2. Lateral crura overlay of both lower lateral cartilage after oblique division to push back the nose.
3. Trimming and adjustment on the cartilagenous part of the dorsal hump under direct vision (Closed Technique)
4. Adjustment and removal of the bony hump under direct vision together with osteotomies.
5. The last step is to suture the medial crust to the remaining part of the Cartilaginous septum.

The aim of this technique is to elevate, upward rotated and project the nasal tip (shortened the nose).

#### **Management of Deviated Nose**

*Mohammed Sa'ad Eldin, MD, KAMC, KSA.*

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**Background:** Management deviated nose in which the nasal dorsum is deviated from the mid sagittal plane of the face. A variety of approaches like open or close techniques have been described for the correction. The utility of those surgical techniques based on the type of deviation. We use a close technique on most of our cases C & S shaped nose but in all deviation of the nose we use the open one.

**Methods:** A total of 26 cases were on rolled, C shaped nose about 20 cases, S shaped nose are 3 cases & complete deviation of the nose are 3 cases. 23 cases managed by close technique. 2 cases had S shaped & 1 case of total deviation managed by open technique.

**Results:** All 24 cases were satisfied from the results as the nose become in central position & there is symmetry in both sides. Nasolabial angle corrected, no nasal obstruction post operative, but edema take about 3 months to be subsided in close one, but in open ones take 1 month.

2 cases need revision to correct slight symmetry by close technique.

**Conclusion:** Close or open rhinoplasty for corrections of deviated nose depends on the type of deviation.

But we prefer to do close than open one in most of our cases.

#### **The turbino reduction effect of submucosal diathermy in inferior turbinate hypertrophy**

*Prof. Abdul Aziz J. Ashoor*

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**Objective:** To evaluate the efficacy of the reduction effect of submucosal diathermy in inferior turbinate hypertrophy.

**Setting:** professor abdul aziz ashoor ENT-clinics

**Design:** Prospective study

**Method:** During four (4) years, eighteen (18) patients with inferior turbinate hypertrophy were diagnosed in my clinic and scheduled for submucosal diathermy (SMD). Before surgery each patient has to pass the decongestant test. Under local anesthesia the turbinate were cauterized at 4-5 spotted areas of the turbinate using a monopolar power with an isolated needle. Patients were followed up to one year.

**Results:** Eighteen patients 15 male and 3 female with a mean age of 34 year were included in this study. Fourteen had bilateral and 4 unilateral turbinate hypertrophy. Their main complaint was chronic nasal obstruction. The possible etiologies were vasomotor rhinitis, allergic rhinitis, idiopathic rhinitis or compensatory due to septal deviation. All patients underwent SMD under local anesthesia. After one month follow up 15 patients showed excellent improvement. The three with compensatory hypertrophy showed less improvement and they underwent a corrective surgery. Mean follow up was 6.5 months.

**Conclusion:** SMD is an effective technique to reduce turbinate hypertrophy. It is safe and has long term positive outcome.

#### **Augmentation Rhinoplasty – DCF technique**

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During last decade, the greatest advances have been in nasal dorsal augmentation. Many synthetic and autologous grafts are used for this purpose. The inherent risk of migration, rejection, visibility of sharp edges and warping are common with solid grafts. DCF technique (i.e. diced cartilage in fascia) is excellent & has revolutionized the dorsal grafting and augmentation rhinoplasty.

#### **Polybeak deformity**

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Poly beak deformity is a complication of rhinoplasty defined by the typical appearance of a dorsal nasal convexity resembling a parrot's beak. It is one of the most common complications of rhinoplasty. While it may be the result of technique, it may be an unpredictable complication even with the most experienced surgeons. Types have been described, which could be cartilaginous or soft tissue types.



This deformity can be suspected earlier based on skin type and sub-cutaneous tissue or can be expected post-operative by certain surgical techniques. Different types of management approaches are discussed.

**Keywords:** Polly beak; Nasal deformity; Rhinoplasty; Complication.

### Management of deviated Nose

Mohammed Saad Eldin.MD.

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**Background:** Management of deviated nose in which the nasal dorsum is deviated from the mid sagittal plane of the face which either c, inverted c, s shaped or all deviation.

A variety of approaches like external or internal techniques have been described for the correction. The utility of those surgical techniques based on the type of deviation.

We use an internal technique on most of our cases.

**Methods:** A total of 26 cases were done since one year work, C shaped nose about 20 cases, S shaped nose 3 cases, complete deviation of the nose are 3 cases.

20 cases managed by internal technique. 3 cases S shaped & 3 case of total deviation managed by open technique.

**Results:** 24 cases give excellent results as there is symmetry of the dorsum of the nose. Nasolabial angel in females about 110 degree ,in males about 90 degree, no nasal obstruction as we did septorhinoplasty in all our cases, but edema take about 3 months To be subsided in internal approach one one, but in external one take about 1 month.

2 cases need revision to correct slight asymmetry by revision external technique.

**Conclusion:** External or internal septorhinoplasty for corrections of deviated nose depend on the type of deviation.

But we prefer to do internal than external one of all our case.

*Endoscopic endonasal surgery of anterior cranial skull base:*

*Anatomical and clinical considerations*

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The anterior skull base extends from the posterior table of the frontal sinus to the planum sphenoidal. It is crucial for every surgeon who is going to deal surgically with skull base sinusitis, skull base defects or tumours to know the different anatomical variations of the skull base. This study describes the different suprabullar cells and their relation to the frontal sinus also, it demonstrates the different variations of fovea ethmoidalis and their impact on surgery of this area. It also shows the variability of the relationship of the posterior ethmoid to sphenoid sinus.

### Microdebrider-assisted partial inferior turbinectomy; Advantages over the conventional method

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**Objective:** To compare the safety and efficacy of microdebrider assisted partial inferior turbinectomy with the conventional surgical turbinectomy in patients with inferior turbinate hypertrophy.

**Study design:** Prospective randomized trial

**Setting:** Private Hospital (Saudi German Hospital)

**Subjects and Methods:** Sixty patients with nasal obstruction and bilateral hypertrophied inferior turbinates that was refractory to medical treatment were included. History taking, clinical assessment and CT scan of the paranasal sinuses were done for all patients. The patients were randomly assigned to receive microdebrider partial turbinectomy (n=30) or conventional surgical turbinectomy (n=30).

**Main outcome measures:** operative time, blood loss, subjective improvement of the patients symptoms and post operative complications

**Results:** The 2 groups were comparable in age and sex. The operative time and operative blood loss were less in the microdebrider group ( $p < 0.001$ ). Follow up visit after 3 months revealed improvement in 93.3% of the patients in the microdebrider group vs. 96.7% in the surgical group ( $p > 0.05$ ). There was no difference in the incidence of post operative complications between the 2 groups.

**Conclusions:** Partial turbinectomy with the microdebrider is as effective and safe as the conventional surgical turbinectomy with shorter operative time and minimal blood loss, so we recommend the routine use of microdebriders for all partial turbinectomy procedures

**Keywords:** Endoscopic; Microdebrider; Turbinectomy.

### Proposed protocol for treatment of spontaneous cerebrospinal fluid rhinorrhea increase with increase intracranial pressure by endoscopic skull base reconstruction and cerebrospinal fluid diversion

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Aim of the work to demonstrating the efficacy of our proposed protocol for treating spontaneous cerebrospinal fluid (CSF) rhinorrhea with increase of intracranial pressure (ICP) by endoscopic skull base reconstruction (ESBR) and CSF fluid diversion.

**Patients and methods:** Study Design: prospective. Setting: multi centers tertiary hospitals in Kingdom of Saudi and Egypt.

**Patient Data:** A study analyzing patient's history, preoperative nasal endoscopy, ophthalmic examination, imaging studies, surgical procedures, and CSF pressure data were performed on 30 patients with spontaneous CSF leaks with increase ICP, treated from 1999 to 2010.

**Surgical Management:** After CSF measurement all patients had ESBR using autologous nasal septal cartilage and/or middle turbinate tissues. When the CSF pressure below 350 mmH<sub>2</sub>O: temporary lumbar drains (LD) was inserted and patients offered acetazolamide therapy for their entire life. Patients who had CSF pressure above 350 mmH<sub>2</sub>O or recurrent spontaneous CSF leak have been offered lumboperitoneal (LP) shunt insertion. Patient was considered cured when CSF rhinorrhea ceased for a minimum of 2 years after surgery. The follow-up period ranged from 2 to 10 years.

**Results:** LP shunts were inserted for 10 patients (33.3%) and temporary LD (3 days) for 20 patients (66.7%). There were no major operative or postoperative complications during follow-up period. Migration of the peritoneal catheter was noted in 1 patient in the first week postoperatively and was reinserted successfully. There was a case of CSF recurrence after 3 years who had ESBR and temporary LD. It was treated by another set of ESBR and LP shunts insertion.

**Conclusion:** This study demonstrated the efficacy of ESBR and CSF fluid diversion for cases spontaneous CSF and increase ICP. Another large prospective controlled study is needed to confirm the validity of our results.

#### Deeper view in the pathogenesis of what we claim it is vasomotor rhinitis

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**Objectives:** The treatment of vasomotor rhinitis either surgical or medical is not satisfactory in eliminating symptoms or elongating the relief period. Pathophysiology of vasomotor rhinitis had to be revised to try to know more about this disease.

**Design:** This is a prospective randomized study which was held at Benha Medical School a tertiary teaching hospital, in the period from January 2007 to November 2011.

#### Setting

**Study Group:** The patients were affected by typical symptoms of VMR, consisting of nasal obstruction, profuse watery rhinorrhoea, sneezing and an impaired sense of smell. Based on the personal history of the patients, these symptoms had been present for a period of at least 2 years (range 2-6 years). At anterior rhinoscopy, the turbinate were hypertrophied causing significant obstruction of the nasal cavities. (Clement, 1984).

**Control Group:** They are patients who were doing other ENT operations with no nasal complaints nor diseases.

**Participants:** It was conducted on 45 patients divided on two groups. The study was carried out in a group of 39 patients (21 males, 18 females; age range 25- 38 years) with VMR and 6 control patients (4 males, 2 females; age range 22- 34 years)

#### Main outcome measures

1- After their consent histopathologic examination and staining by haematoxylin and eosin dyes is done for the patients for both groups. Then examined by light microscopy.

2- Also electron microscopy was done for them. Specimens were fixed in cacodylate buffered formaldehyde glutaraldehyde-R. Post fixed in buffered 1% osmium tetroxide, dehydrated and embedded in spurris resin.

Ultrathin section were double stained by 10% Reynolds lead citrate.

Examination was done by TEM (philip4001)

**Results:** Electron microscopy figures were demonstrated and discussed.

**Conclusion:** We concluded that:

1- Reviewing the facts in our study we found that the pathology of the vasomotor rhinitis starts first in the submucosal vessels with angiopathy similar to the diabetic angiopathy then the epithelial changes take place. Surgical or Medical treatment directed to the sympathetic system may or may not improve the case. This depends mainly on how much the submucosal blood vessels are affected.

2- Presence of another type of secretory granules in the submucosal glands need more histochemical studies to know its nature

**Keywords:** Vasomotor rhinitis; Electronmicroscopy; Nasal mucosa; Submucosa.

#### Role of sino-nasal endoscopy in pediatric invasive and malignant lesions

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A variety of neoplasms, derived from a multitude of tissue types, can develop in the sinonasal tract of pediatric patients. Sinonasal neoplasms are classified as epithelial, mesenchymal Lymphoreticular or metastatic tumors. Many sinonasal malignant lesions might be so deep and inaccessible to get a specimen for tissue biopsy. Open transfacial, transcranial or sublabial incision approaches may be used to access these lesions, which may interfere with the facial skeleton growth. On contrary, the transnasal Endoscopic approach offers a direct easy access to reach such lesions even if they are within the paranasal sinuses, intraorbital, in the pterygopalatine or infratemporal fossa or even intracranial. Not only tissue biopsy is all what could be achieved, but, tumor debulking or even tumor removal in selected cases can be done. The added value of the computer navigation allows good control of the disease and avoids unnecessary morbidity associated with open procedures. We describe our experience in a variety of pediatric sinonasal invasive and malignant lesions.

## Endoscopic septoplasty how and when and why I do it

Mohamed Elsayed

Nasal obstruction is a very common complaint, which may be caused by various causes. But one of the most important causes is septal deviation. Many techniques have been described to correct these septal deviations since the middle of nineteenth century. There have been several modifications since its inception, starting from radical septal resection to mucosal preservation and subsequent preservation of the possible septal framework.

Septal pathology contributes to almost all nasal deformity. In a high percentage of rhinological practice, septal deformity is the main cause of functional complaints. Consequently, Correction of the septal deformity is one of the basic Procedures in functional reconstructive nasal surgery.

## Balloon Sinuplasty: A Conservative Tool for Sinusitis

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Paranasal balloon catheter represents a recently developed tool which enables surgeons to dilate the sinus ostia while maximizing tissue preservation. Material and methods: In this study 40 patients were divided into two groups: (A) and (B). Patients in group (A) (20 patients) were treated using balloon sinuplasty technique, while patients in group (B) (20 patients) were treated using the standard functional endoscopic sinus surgery. Pre and post-operative findings in each group regarding the symptoms and endoscopic findings were compared. A comparison between the postoperative results of both groups was done as well. Balloon sinuplasty was associated with a highly significant improvement of nasal symptoms. Comparable to FESS results, it showed a highly significant improvement in nasal discharge than that in FESS, while improvement in nasal obstruction and headache did not show any statistical difference from FESS results. Regarding the endoscopic findings, balloon sinuplasty showed improvement of the mucosal edema and the mucopurulent nasal discharge associated with CRS; however it showed no statistical difference from the endoscopic findings as regards the polyps, scarring, adhesions or crustation. In comparison to FESS and despite the improvement of the pre-operative endoscopic findings, balloon sinuplasty did not show any statistical difference from results of FESS. The 3 months follow up after balloon sinuplasty showed a patency rate for the frontal recesses 96%, 100% for the maxillary sinus ostia, while it was 100% for both sinuses which were treated with FESS. Balloon Sinuplasty proved to be safe and effective and shows improvement of symptoms and signs in patients with mild CRS with similar results to those of the conventional FESS. Concerning the cost-benefit ratio; being disposal with a relative higher cost than FESS hinders the publicity of the procedure, however, it is superior to FESS in being less invasive, having a relative shorter operative time, and that it can be done under local anesthesia as an office-based procedure.

## Computer-assisted surgery (CAS) in difficult sinonasal and skull base

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- Computer-assisted surgery during minimal invasive endoscopic sinus and skull base surgery enhances the surgeon confidence, allow more thorough surgical dissections and possibly reduce the complications of the procedure and improve the clinical outcome.
- Difficult lesions like revision sinus surgery, distorted sinus anatomy, frontal sinus surgery, pediatric extensive polyposis, fungal sinusitis with orbital and skull base erosions, lateral sphenoid lesions, complicated mucocoeles abutting the orbit and skull base, csf leaks with skull base defects, clivus and pituitary lesions, benign and malignant tumors will be presented and discussed.

## Nasopharyngeal angiofibroma- Technological Advances and Changing Trends in the Management

Dr. Salma Al Sheibani

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Juvenile nasopharyngeal angiofibroma (JNA) is a rare benign, vascular tumor. Its management has changed during the last decades but still continues to be a challenge for the multidisciplinary head and neck surgical team. Al Nahdha hospital experience and the new technological advances in the management of nasopharyngeal angiofibroma will be presented.

## Isolated mucocoeles of para nasal sinuses

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We present an assortment of three patients with isolated expansion of nasal structures and para nasal sinuses.

### Case 1

A 37 Year female presented with history of headache for last eight years. She did not give any history of symptoms of sinusitis except for non remitting dry irritant cough for last few years. Her nasal endoscopy did not add to clinical findings. Physician reference was not conclusive of any significant pathology. A CT scan of para nasal sinuses revealed a large opaque sphenoidal expansion with multiple spots of hyper dense material. MRI and HRCT were needed to map the exact boundaries of the pathology along with possible dural breaches. FESS was done under GA. She has been doing fine for last one year. Her symptoms of headache and dry cough have resolved since then.

### Case 2

A 9 year old female child presented with history of unilateral nasal blockage and recurrent nasal discharge for last few years. Nasal

endoscopic examination showed a large globular swelling blocking the nasal cavity. CT scan revealed it to be an expansile swelling limited to middle turbinate. FESS was done under GA with complete resolution of symptoms. Follow up period two year and six months.

### Case 3

A 40 year old female presented with history of diplopia and a small swelling above the medial canthus. CT scan revealed it to be an expansile swelling involving the frontal and ethmoid sinuses. A diagnosis of fronto-ethmoid mucocoele was made. FESS was done with complete resolution of symptoms. Follow up period one year.

### Orbital complications of sinusitis; diagnosis, differential diagnosis, and management

*Nassim Talaat M.D.*

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Although acute sinusitis is mostly a mild and self limiting disease, it may progress into severe and life threatening complications.

One of these complications is orbital where visual loss is a direct consequence.

If the diagnosis is established, conservative or surgical management are carried out according to certain parameters, but this is not the case in all patients, as the cause of orbital affection may not be clear, whether it is bacterial or fungal, acute or chronic, and even if this orbital affection is really due to sinus disease.

Computerized tomography is the most beneficial investigation for cause and course of orbital complications. However finding may not always explain the clinical condition.

This a retrospective study that included 62 patient diagnosed as having orbital complications of sinus origin and treated in the last 11 years, the aim of such study was to propose a proper and standardized protocol for management of these cases.

### Rhinology future and upcoming trends

*Dr. Rashid Al Abri, SQUH*

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The upcoming future trends in rhinology will be more use of minimal invasive surgery, computer aided surgery, navigation aided surgery, robotic surgery in field of surgical intervention. There will be also more research in field of better understanding of allergy, infectious diseases and early diagnosis of malignant lesion. More expansion of endoscopic skull base surgery is also a field which will draws a lot of attention. Hence, the sky is the limit.

### Anatomy of nasolacrimal system ENT surgeon perspective

*Dr. Mary Kurien, ENT SQUH*

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Endonasal endoscopic dacryocystorhinostomy (ENDO-DCR) for surgical treatment for epiphora has become preferred alternative to external dacryocystorhinostomy. For the rhinologist, the main

challenge is the determination of the place of the mucosal incision and lacrimal osteotomy. A comprehensive knowledge of the intranasal anatomy of the lateral nasal wall in relation to the nasolacrimal apparatus (duct and sac) is fundamental to the successful performance of dacryocystorhinostomy. The maxillary line and axilla of the middle turbinate are the most frequently used endonasal anatomical landmarks. However, not many cadaver studies have been performed on these landmarks and their relationship to lateral nasal wall and variations from the lacrimal sac. When one takes the anatomical variations into consideration, the performance of a mucosal incision and osteotomy in a safe area is essential for more reliable and functional results. Although surgeons perform identical incisions, osteotomies, and operations, these procedures may prove to be unsuccessful because of anatomical differences in patients. This study of ten adult cadaver's head sections (10 right and 10 left: i.e. - twenty nasolacrimal system) was thus undertaken to review the anatomy of the nasolacrimal apparatus in relation to the lateral nasal wall, to measure the distances of surgically important landmarks from relevant structures by cadaveric dissection and CT scans as a means for assisting the surgeon to grasp three-dimensional anatomy for performing Endoscopic-DCR.

### Migraines & Rhinologists

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In this brief presentation we shall see "HOW" & "WHEN" the 3 PAIN RECEPTORS (Chemical, pressure and thermal) give headaches /migraines. They are located ONLY in the skin, mucosa, arterial walls and the meninges. The nerve endings of mainly the trigeminal plus some input of autonomic ganglia, C1,C2,VII,X,IV& VI carry those stimulations. When Chemical receptors get stimulated with inflammation (Bacterial, viral ALLERGIC) the effect of the pressure and thermal receptors is DOUBLED. As in sunburn of skin touch becomes very painful. Why migraines/ headaches are intermitant, and are always accompanied with one or more of the Acephalgic Migraines e.g vertigo, tinnitus, photophobia, sensitivity to loud noise, gastritis etc. Finally the 3 steps that will insure correct diagnosis and successful treatment.

This presentation is explain why Rhinologists can be more effective than Neurologists in the treatment of chronic headaches and Migraines.

### Changing Trends in Rhinology

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Rhinology is one of the most ancient of the specialties in Medicine. Rhinology was practiced as early as 4000 B.C., which we know from an inscription on the tomb of Seklet-n-ankl, an old Egyptian physician, that "he healed the King's nostrils" (1). According to ancient history, reconstruction of nose which was done in India, by Sushruta, the Ayurveda Physician, around 600 BC, paved way



for the development of plastic reconstruction of nose and forehead flaps (2). Septal and Sinus surgery, when compared to rhinoplasty, did not develop until 17th century. In 18<sup>th</sup> century the empyema of maxillary sinus was drained through the tooth socket. However, the present knowledge of the anatomy of nose and paranasal sinuses was available only since 1870 AD from the basic work of Emil Zuckerkandl of Austria, which opened up an entire new field for scientific and surgical approach to the area (3).

The understanding of the mucociliary clearance of paranasal sinuses has contributed to a large extent in the changes that occurred in the medical and surgical approach to sinus disease (4). Examination of the nose and sinuses was done using various types of instruments, before the introduction of endoscope. Though, Hirschman performed the first endoscopic sinonasal examination with a modified cystoscope in 1901, it was Professor Walter Messerklinger of Graz Austria, in 1978, who advocated the use of the rigid telescope for sinonasal diagnosis and surgery for the treatment of rhinosinusitis (3). Subsequently, in the 80's Rhinology witnessed a dramatic rebirth through the lens of the rigid nasal telescope. The rod lens system enabled rhinologists to see around the corner into the sinuses. Nasal endoscopy thus became a major tool in the armamentarium of rhinologists for both diagnosis and therapy.

Rhinologic procedures are among the common otorhinolaryngology surgeries performed all around the world (5). "Few medical specialties had suffered as many changes and scientific developments in these last decades as Otorhinolaryngology had, with the advantage of incorporating technologies such as endoscopy, radiology, microsurgery and information technology" (6). Radiology has progressed from plain radiography to CTs MRIs and PET scans. Advent of computerized tomogram has revolutionized the understanding of the anatomy and pathology of the paranasal sinuses (7). Electron Microscopy has allowed us to discover the "biofilm" which has defied even intense medical therapy in chronic rhinosinusitis (8).

Medical and surgical methods have changed tremendously in the past few decades. This scientific and technological evolution brought in tremendous change in practice of rhinology. Antral lavage using Litchwitz's trocar and cannula has more or less been replaced by endoscopic surgeries and balloon sinuplasty. Caldwell-Luc surgery is almost a thing of the past, though in selected cases one has to approach the maxillary sinus through canine fossa. Professor Messerklinger's work in Graz Austria, which has transformed our understanding of anatomy and physiology of paranasal sinuses, revolutionized the management of chronic rhinosinusitis. We are now able to access almost all sinuses with the advent of compact multi angled telescopes. Thus, management of nasal polyposis which was limited to a 'blind simple polypectomy' has been transformed to meticulous removal of the polyps with preservation of normal functional sinus mucosa (9). CSF Rhinorrhea surgery is now being done almost exclusively by Otolaryngology surgeons. Rhinologists are increasingly doing pituitary surgery, though in the past it was in the domain of Neurosurgeons. Extended endoscopic approach

to skull base has enabled the Neurosurgeons and Rhinologists to excise even large tumors of anterior and middle cranial fossa with repair of the skull base defect endoscopically (10). Neuro-navigation has allowed the surgeons to approach the skull base and beyond with greater confidence. Open Surgery was the mainstay of treatment in Juvenile Nasopharyngeal Angiofibroma; however, the last couple of decades have witnessed endoscopic removal of Stage I, II & IIIa tumors (Fisch), which have greatly reduced morbidity and complications (11). DCRs which were in the domain of Ophthalmologists have moved almost fully into the realms of Rhinology, with even better cosmetic appeal.

Therefore, the scientific advancement and technological innovations and better understanding of the anatomy and physiology of nose and sinuses resulted in changing trends in rhinology.

### Knowledge gaps in Rhinology

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In medical literature in general there are a lot of knowledge gaps, which researchers globally are striving to fill. The Knowledge gaps may be related to disease evolution, pathogenesis, diagnosis, therapy or prognosis.

The clinicians are interested in translational research, gaps in therapy and surgical prognosis. The presented talk specifically reports results from two Knowledge gap studies conducted at SQUH Oman, and briefly reports on some knowledge gaps in Rhinology in general. Overall objective is to develop insights and direction to future clinical rhinology research.

**Methods:** Primary research articles and meta-analysis evaluated for this knowledge gap study were identified through MEDLINE search of English language literature published between 2000-2011. The search targeted systematic reviews and metanalysis, diagnostic studies, prevalence studies. The search also included hand search of the literature in the most recent otolaryngology text books. Knowledge gaps were identified.

**Results:** For the knowledge gap study; n-115 Medline titles were reviewed; 34 systematic reviews, and 43 research papers were reviewed. The text of 2 recent text books of otolaryngology was also reviewed.

**Conclusion:** Many knowledge gaps exist in Rhinology literature with relations to pathogenesis, clinical and laboratory diagnosis, surgical outcomes of many common conditions

**Results:** The knowledge gap study revealed no study of the prevalence of Allergic Rhinitis in Adults in Oman found however the prevalence in children has been studied. Although there is some literature on association and influence of allergic rhinitis on asthma there is a gap on influence of allergic rhinitis on sinusitis and polyps. Allergic rhinitis exacerbations e.g Rhinovirus needs investigation. Pathophysiology of allergic rhinitis influencing sinusitis, Otitis media, pharyngitis in terms of airway remodeling needs to be investigated. The Role of surgery for mucosal affects of allergic and Non allergic rhinosinusitis also needs to be studied.

There is a paucity of outcome research with reference to Allergic rhinitis surgical treatments e.g. submucosal diathermy, turbino-plasty etc.

### 23 years of Endoscopic Sinus Surgery in Oman

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First endoscopic sinus surgery in Oman was performed on 22<sup>nd</sup> October, 1989. Since then, in last 23 years, what progress we have made? This presentation takes you through a nostalgic journey of these years.

### Image-guided Surgery of the Sinuses and Skull Base

Mark Samaha, MSc, MD, FRCSC

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The use of image guidance is widely used by surgeons performing surgery on the sinuses and skull base. Image guidance technology is very accurate and has progressively become more user-friendly and widespread in the last decade. The objective of this presentation is to describe the technology of image-guidance, discuss its applications, benefits, and pitfalls. The speaker will also offer a personal perspective on the optimal use of image guidance in sinus and skull base surgery.

### Endonasal rhinoplasty under local anesthesia: A personal approach

Mark Samaha, MSc, MD, FRCSC

Rhinoplasty, with or without septoplasty, is one of the most commonly performed procedures by the otolaryngologist, for both cosmetic and functional indications. However, because of its complexity, it is also one of the most challenging, with a steep learning curve.

### Abstract Poster presentations

#### Sphenochonal Polyp: A Surgical Review

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A sphenochonal polyp is a rare lesion that originates in the sphenoid sinus and protrudes through the choana into the nasopharynx. It can occur at any age but is especially common in adolescents and young adults. We present a case of a sphenochonal polyp in a seven-year-old girl who presented with bilateral nasal obstruction

and an altered voice. The presentation of a sphenochonal polyp is similar to that of the more common antrochoanal polyp, but the two can only be differentiated on cross-sectional imaging (computed tomography and/or magnetic resonance imaging). Endoscopic sinus surgery allows for complete removal and minimizes the risk of recurrence

### Prevalence and Clinical Profile of Non Allergic Rhinitis in Oman

Deepa Bhargava; Kamlesh Bhargava; Ahmed Al-Abri; Wameedh Al-Bassam; Rashid Al-Abri

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**Background:** Although Nasal symptoms induced by Nonallergic rhinitis| (NAR) are a cause of wide spread morbidity the disease is trivialized. There is a lack of Epidemiological studies on prevalence of different types of non allergic rhinitis. In spite of being one of the commonest conditions presenting to the General practitioner and otolaryngologists the clinical profile, diagnosis, and management outcomes are unknown. The objectives of the study were to study the prevalence and clinical profile of Non allergic rhinitis in Oman. Secondary objective was to identify Knowledge gaps in literature with aim of directing future research.

**Methods:** A cross sectional study of 610 consecutive patients is presented in this paper. The patients were diagnosed at Sultan Qaboos University Hospital in a step wise fashion excluding other causes of non allergic rhinitis literature was reviewed to identify knowledge gaps.

**Results:** Forty six patients with NAR were studied out of a total of 610 patients seen in ENT clinic. The prevalence was NAR 7.5 % in overall and among the rhinitis population was n=46 (57%). The major presenting symptoms included nasal obstruction n=43 (93%), postnasal drainage n=36 (78%), and rhinorrhoea 29 (62%).

**Conclusion:** This study demonstrated that the overall prevalence of NAR in Oman is 7% in Otolaryngology clinic and 57% of rhinitis patients may suffer from it. There are no specific diagnostic tests for non allergic rhinitis; a through case history is the best diagnostic tool to date. Many knowledge gaps exist in literature with relations to pathogenesis, clinical and laboratory diagnosis and there is a large knowledge gap with reference to medical as well as surgical outcomes. Finally prognosis of NAR and surgical and medical management outcomes need to be further studied with larger study group.

**Keywords:** Nasal obstruction; Non allergic rhinitis; Seasonal rhinitis; NANIPER; NARES; Idiopathic rhinitis.

### Clinically Significant Anatomical Variants of the Para nasal Sinuses in Omani population

Deepa Bhargava, Wameedh M. Al-Bassam, Sukhpal Sawhney, ShazaIdris, Rashid Al-Abri

Chronic rhino sinusitis is one of the commonest illnesses of our times and is a condition that is increasing in epidemic proportions

throughout the world.<sup>1</sup> High Resolution Computed topography (HRCT) of the Para nasal sinuses is required for the diagnosis and subsequent treatment of sinusitis as underlying anatomical variations could possibly be a cause for sinonasal symptoms.

The treatment of chronic sinusitis is functional Endoscopic sinus surgery (FESS). HRCT demonstrates the extent of disease, significant anatomical variations that may predispose to rhino sinusitis and nearby vital structures so that iatrogenic damage can be avoided.<sup>2</sup>

Understanding the complex anatomy of the skull base is crucial for the safe endoscopic sinus surgeon. Inadvertent violation of the cribriform plate may cause CSF leak, direct penetration trauma to the dura, serious intracranial and intracerebral complications.<sup>3,4</sup>

Preoperative HRCT scan evaluation of patients undergoing FESS is mandatory. The radiologists normally focus on pathological abnormalities without paying attention to the anatomical variations and abnormalities.

This study aims to identify the anatomical variations of the Para nasal sinuses in the Omani population, knowledge of these will be useful for future endoscopic surgeons for understanding the pathogenesis of sinusitis and avoiding iatrogenic injury due to these anatomical variations. Anatomic structural variations of the Para nasal sinuses have a practical surgical significance during surgical procedures conducted on the sinuses by otolaryngologists.

**Methods:** A prospective analysis of 435 High resolution computed tomography (HRCT) examination of adult Omani patients was conducted to evaluate the prevalence of clinically significant anatomical variations of the paranasal sinuses. 360 HRCT scans were included.

**Results:** The study showed abnormal Agger nasi cells in 48.7% of cases (95% CI 43.6-53.6%), concha bullosa in 49% (95%CI 43.8-54.2%), Haller cells in 24% (95%CI 17.8-30.9%), asymmetry in anterior ethmoidal roof 32% (CI 29.2-36.8%), onodi cells in 7.5% (CI 4.8%-10.2%). Type of skull base; Type 1- 30% (n-107), (95% CI 25.3-34.7%), Type 2 -34% (N- 123) (95% CI 29.1-38.9), Type 3-36% (N-130), (95% CI 31.04-40.96%). Many other surgically significant anatomical variations in small numbers (1-3) were incidentally identified.

**Conclusions:** Knowledge of the presence of anatomical variations of the sinuses has a clinical significance as it minimizes the potential for surgical complications.

There is an ethical variation in the prevalence of anatomical variation. Further studies of anatomical variations with clinical disease correlation are needed.

**Keywords:** Anatomical Variations Para nasal sinuses; Haller cell; Onodi cell.

## Deviated Nasal Septum, Nasal obstruction, Evidentiary testing for the Diagnostic Accuracy; A cross sectional Study

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**Background:** Nasal obstruction is a very common complaint in otolaryngology. Deviated nasal septum was thought to be one of the usual causes of nasal obstruction. Over 100 years ago Mackenzie studied more than 2000 skulls and found that the nasal septum was straight in only 23%. The clinical impact of the deviated nasal septum as the cause of nasal obstruction is surprisingly remains controversial as it was noticed that patients reported minimal improvement in their health related quality of life following nasal septal surgery.

**Methods:** This research was conducted to study the diagnostic value of deviated nasal septum as a cause of nasal obstruction by reviewing evidence based concepts. A cross-sectional study of 383 consecutive adults was performed and data pertaining to nasal septum collected and analyzed using the concepts of evidentiary testing.

**Results:** The clinical demographics of 383 patients study participants; age 18 yrs- 83 yrs, 210 males and 173 females were included. Many patients had other diagnosis, co morbidities besides the target condition (Nasal obstruction, DNS). The overall prevalence of DNS was 89% in 160 patients complaining of nasal obstruction and 90% in 223 patients with out nasal obstruction. There was no age or sex related associations in both groups Sensitivity- .91= 91%, Specificity- .098 = .10= 10%, Positive predictive value= .42 = 42%, Negative predictive value= .63= 63%, Positive likely hood ratio= 1.01, Negative likely hood ratio= 0.9, Pre test odds =0.72, Post test odds=0.72.

**Conclusions:** Deviated nasal septums are equally common in patients complaining of nasal obstruction and in those who do not complain of nasal obstruction. The diagnostic value of deviated nasal septum as an cause of nasal obstruction is low and inaccurate. The implications of the findings of the study suggest we could be over diagnosing and over treating DNS. Further studies focusing on Kapa index are needed.

## Putting Research Findings into Clinical Practice

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**Objectives:** A perception exists that clinicians in Oman are reluctant to adopt evidence-based practice (EBP). This pilot study was undertaken to study the feasibility of using EBP pathways at the point of care in otorhinolaryngology head and neck surgery. The ultimate aim was to facilitate EBP with the probability of developing a new system for implementing research findings/translational research at the clinical point of care.

**Methods:** A cross-sectional prospective questionnaire pilot survey of clinicians at Sultan Qaboos University Hospital (SQUH), Oman, a tertiary care medical centre, was undertaken. Respondents

included 135 physicians and surgeons with between 3 months and 25 years of clinical experience and included personnel ranging from interns to senior consultants, in areas ranging from primary care to specialist care.

**Results:** Of those polled, 90% (95% confidence interval (CI) 85-95%) either strongly agreed or agreed that evidence-based practice protocols (EBPP) could help in decision making. A total of 87.4% of participants (95% CI 81.8-93%) either strongly agreed or agreed that EBPPs can improve clinical outcomes; 91.8% of participants (95% CI 87.2-96.4%) would use and apply EBPP in day-to-day care if they were available at the point of care and embedded in the hospital information system.

**Conclusions:** The perception that clinicians at SQUH are reluctant to adopt EBP is incorrect. The introduction of EBP pathways is very feasible at the primary care level. Institutional support for embedding EBP in hospital information systems is needed as well as further outcome research to assess the improvement in quality of care.

**Keywords:** Otorhinolaryngology; Surgery, head and neck; Evidence based practice; Clinical protocol; Clinical practice guidelines; Decision making; Oman.

### **Integrated Evidence Based Practice pathway and Checklist for Comprehensive diagnosis in patients with Carcinoma of Maxilla**

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**Back ground:** Integrated care pathways (ICP) are pre-defined plans of patient care relating to a specific diagnosis, or intervention, with the aim of making the management more structured, consistent and efficient.<sup>1</sup> The difference between ICP and Evidence Based Practice Pathways (EBPP) is that with EBPP the level of evidence and grade of recommendation is mentioned. A search of recent literature reveals that although ICP are recent innovations, they are being adopted by clinicians in many specialties, like primary acute, cancer, and gynaecological care; research has shown that using ICP with a multidisciplinary team approach to care significantly improves risk management, reduces health care costs and the length of hospital stays, and leads to increased patient and staff satisfaction.<sup>2-5</sup>

**Methods:** We present case presentation of ca maxilla and after literature review we develop evidence based Practice Pathway and a diagnostic check list for ca maxilla which include history, location, presentation as well as TNM staging to develop a complete, comprehensive and systemic method for diagnosis of patient with ca maxilla. The paper describes the details of this checklist.

**Summary:** This EBPP and checklist can help to avoid delaying of ca maxilla diagnosis and treatment. It is comprehensive so it prevents any clinical findings from being looked over. EBPP are preferable to routine protocols as they provide a rigorous and acceptable framework for making complex decisions at the point of care; embedding EBPP in hospital information systems would enhance Evidence Based Practice (EBP) at the point of care and improve

the quality of patient care. EBP requires institutional support by way of specialist skills, a supply of evidence, and embedding EBPP in hospital information systems, and further outcome-based research is needed to study the degree of quality improvement after implementing the described EBPP.

### **Diagnosing nasal valve compromise; a cross-sectional study**

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**Background:** The nasal valve has been described anatomically as the cross-sectional area of the nasal cavity with the greatest overall resistance to airflow,<sup>1</sup> thus acting as the dominant determinant for nasal inspiration. The diagnosis of nasal valve insufficiency can be made by observing the movement of the lateral wall during quiet and forced inspiration and by the diminishment of nasal obstruction by lateralization of the collapsed segment. This lateralization can be done either with the classic Cottle's maneuver which lateralizes the entire lower two thirds of the nasal wall or more specifically by intra-nasally supporting and/or lateralizing the collapsing segment with a fine instrument.<sup>2</sup> Nasal endoscopy, CT<sup>3</sup> scan and MRI<sup>4</sup> are test used to assess the nasal cavities, helping in the diagnosis of anatomical variations associated with nasal disorders. The diagnosis of nasal valve compromise (NVC) is primarily based on the subjective feeling of nasal obstruction<sup>1</sup> associated with specific findings on the physical examination. With regard to these tests in the evaluation of NVC, currently there is no gold standard<sup>1</sup> test to diagnose nasal valve compromise. Manually elevating the cheek to restore nasal patency by indirectly widening the nasal valve has been traditionally used to diagnose this condition (Cottle's maneuver) but there remains doubt over its specificity.<sup>4</sup>

**Knowledge gaps:** NVC is a distinct and primary cause of symptomatic nasal airway obstruction, yet there remain ambiguities and disparities in the diagnosis and management. Other etiologies for nasal airway obstruction, either structural or inflammatory, may coexist or mimic the symptoms caused by Nasal valve compromise.<sup>3</sup> More research is needed on the subjective measures of nasal airflow through the nasal valve region as nasal symptoms pertaining to this area is extremely important for patient satisfaction when treating patients with nasal valve abnormalities.

**Objectives:** To determine the nasal valve compromise in Omani populations using modified Cottle's test and to determine sensitivity and specificity of cottle's test.

**Methods:** In this cross-sectional study of consecutive patients we will investigate volunteers who attend otolaryngology clinic in Sultan Qaboos University Hospital regardless the presenting complain in three months period (January 2013 to March 2013). The evaluation is composed of Rhino-hygmometry, Anterior Rhinoscopy, Nasal Endoscopy, Cottle's test, and modified Cottle's test. Literatures were reviewed to identify knowledge gaps.

**Keywords:** Nose; Nasal cavity; Nasal valve compromise; Nasal obstruction; Cottle's; Modified cottle's.



### **Prevalence of Allergic Rhinitis as compared to Non Allergic Rhinitis in Oman**

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D Bhargava, Rashid Al Abri, From Sultan Qaboos University  
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**Background:** There is a paucity of literature regarding the prevalence of Allergic rhinitis in Oman. The Primary objective of the study was to determine the prevalence of allergic rhinitis and allergic rhinosinusitis, in Oman and compare the figures with prevalence of Non allergic Rhinitis in Oman.

**Methods:** A prospective cross sectional study of 887 consecutive patients is presented. The patients were diagnosed in a stepwise fashion excluding other causes of rhinitis.

**Results:** Out of a total of 887 patients seen in ENT; age range 18-51 years. Prevalence of AR in otolaryngology was 6.9%. Among the

non-infective rhinitis population (n-127) the prevalence of allergic rhinitis was (n-61) 48 % (95%CI 39.3-56.7) as compared to Non allergic Rhinitis (n-66) 52% (95% CI 39.3-56.7). The prevalence of allergic rhinosinusitis based on positive CT findings was (n-21) 34.4% (95%CI22.5-46.3). Prevalence of perennial allergic rhinitis was (n-51) 84% (95%CI74.8-93.2) as compared to seasonal (n-10) 16% (95.%CI 6.9-25.2)

**Conclusion:** In Oman non-allergic rhinitis is more common than allergic rhinitis however this difference is not statistically significant. In Oman the prevalence of Allergic Rhinitis in tertiary care was found to be 6.9 % as compared to 7.5% Non allergic rhinitis in tertiary care Otolaryngology clinics. The otolaryngologists should be able to diagnose nasal allergy on the basis of typical history and confirm its presence by skin testing. They need to differentiate Allergic rhinitis from non allergic rhinitis. There is a need to study various allergic rhinitis exacerbates and associations with NAR. Outcome studies are needed on management.