

OTOLARYNGOLOGY

HEAD & NECK SURGERY

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Contents

Editorial

- GENETIC PREDILECTION IN ORAL SQUAMOUS CELL CARCINOMA** 01

Iqbal Hussain Udaipurwala
Karachi - Pakistan

Original Articles

- EMERGENCY MANAGEMENT OF TRAUMA (HEAD & NECK REGION)
IN AN OPERATIONALLY COMMITTED TERTIARY CARE HOSPITAL** 03

*Muhammad Waqar Khan, Syed Muhammad Asad Shabbir, Mian Amer Majeed,
Zaheer Ul Hassan, Furhan Haleem*
Peshawar Cantt. - Pakistan

- THE EFFECT OF HANDEDNESS ON INSERTION OF FOREIGN
BODY IN EAR AND NOSE** 06

Amer Sabih Hydri, Fatima Siddiqui, Shoaib Ahmed
Karachi - Pakistan

- THE EFFICACY OF ORAL STEROID THERAPY IN EARLY ETHMOIDAL
NASAL POLYPOSIS** 10

*Beenish Nisar Ahmed, S.M.Tariq Rafi, Sameer Qureshi,
Muhammad Waqas Nisar Ahmed, Arshi Imran*
Karachi - Pakistan

- RHINOLITH: AN OVERLOOKED CLINICAL DIAGNOSIS** 12

Fatima Siddiqui, Ali Iftikhar, Marvi Mahesari, Neha Khatri
Karachi - Pakistan

Case Reports

- ORBITAL COMPLICATIONS OF ENDOSCOPIC SINUS
SURGERY : A CASE SERIES** 16

Adnan Asghar, Muhammad Awais
Nowshera - Pakistan

- EPIDERMAL INCLUSION CYST IN BONY NASAL SEPTUM;
A RARE ENTITY** 19

*Iqbal A Muhammad Khyani, Atif Hafeez Siddiqui, Muhammad Paras Naseem,
Muhammad Yasir Nasir, M. Umar Farooq*
Karachi - Pakistan

Genetic Predilection in Oral Squamous Cell Carcinoma

Iqbal Hussain Udaipurwala

Oral squamous cell carcinoma (OSCC), is one of the most common human malignancies worldwide. It accounts for more than 95% of oral malignant lesions in the developing countries¹ and 16% to 40% of malignancies of the whole body². Furthermore, its incidence has increased markedly in the recent past³. The 5-year overall survival rate of this carcinoma is only 50%, which has remained unchanged for the last few decade⁴. The factors responsible for poor prognosis are mainly aggressive local invasion, early metastasis, frequent recurrence, lack of applicable markers for early detection and the failure of advanced lesions to respond to chemotherapy. In the analogous way, in Pakistan specially in Karachi, the prevalence of oral carcinoma has increases distinctly. According to one report, there has been a 60% increase in the cancer cases under 40 years of age over the past 30 years⁵.

Many studies have been published in the recent years showing the association of oral squamous cell carcinoma with familial predisposition and mutation of tumour suppressor genes. It accumulates genetic alterations including chromosomal aberrations, DNA mutations, amplifications, or deletions, and/or epigenetic alterations, such as changes in DNA methylation, which affect genetic regulation. These events are affected by exposure to environmental agents, including tobacco smoke, alcohol, and viruses (e.g. human papillomavirus), which are the major risk factors⁶. An optimal animal model would exhibit spontaneously occurring oral cancer; however, spontaneous OSCC is extremely rare in laboratory animals. Common genetic and acquired susceptibility factors are important in modulating risks associated with exposure to various carcinogens. There is now substantial evidence that inherited difference exists in individual capacity to enhance or detoxify carcinogens by existing enzyme systems. Specific carcinogen exposure appears to modulate risk and there is a complex interplay of genetic and environmental factors to cause oral squamous cell carcinoma. This phenomenon of genetic predisposition is pretty obvious in Karachi, which is the largest metropolitan city of Pakistan with population containing all the ethic and regional inhabitants. Tobacco which is the known carcinogen, is used in all its available forms in Karachi including chewable and smoked form. Smoking is used in the form of cigarettes, cigars, shisha, huqqa, chillum and berry while the chewable tobacco is used in the form of chewing with pan or gutka, stuffing tobacco between the cheek and the teeth, applying its paste in the mouth, sniffing via the nose etc. People of different ethnic origin use different forms of tobacco with its traditional background. Oral squamous cell carcinoma is noticeably more common in some ethnic group while less common in others. Naswar is a form of chewable tobacco and in Pakistan, more than 50 diverse types of naswar are available including green naswar, black naswar, dried naswar, sutwali naswar, bannu naswar, swabi naswar, chaman naswar etc. It is very frequently used by the Pathans, but the incidence of oral cancer is very low among them.

There are more than 30 known carcinogens in various tobacco products⁷. Three major classes include tobacco specific nitrosamines (TSNAs), Poly Aromatic Hydrocarbons (PAHs) and aromatic amines. These compounds are procarcinogens and need metabolism by Xenobiotic Metabolizing Enzyme Systems (XMEs) for conversion into carcinogens. XMEs such as Cytochrome-P450 (CYPs) are involved in their bio-activation to carcinogenic species while Glutathione-S-transferases (GSTs) cause their detoxification⁸. Oral squamous cell carcinoma is now considered as a multi-factorial disease with evolution of tumor as an outcome of cumulative molecular events. These events are influenced by both individual's genetic predisposition as well as exposure to chemical carcinogens with a predominant role of tobacco exposure. Due to variable expression profile for XMEs, polymorphisms of their

respective genes can alter the cancer risk posed by tobacco-related carcinogens. Interactions between genotype and environment exposures have long been postulated and studied. Over the last decade, a lot of interest has been generated in analyzing a large series of molecular events and proteins involved in oral cancer. Some of the main proteins in molecular biology are p53, Transforming Growth Factor- β (TGF- β), Epidermal Growth Factor Receptor (EGFR) and cyclins. Anaplastic Lymphoma Kinase (ALK), Wingless Homeobox Genes (WNT) and Mammalian Target of Rapamycin (mTOR) pathway/signature are the notable events that have been studied⁹. Oral carcinogenesis is a multistep process modulated by endogenous and environmental factors. Among these, a key role is played by tobacco and related products intake as well as by human papillomavirus (HPV). These predisposing factors may lead to a wide range of genetic and epigenetic events that promote genomic instability and tumor development and progression. The development and progression are not only caused by irreversible changes in DNA sequence, including gene deletions, amplifications and mutations leading both to oncogenes activation or tumor suppressor genes (TSGs) inactivation but also by changes in gene expression that are not encoded in the DNA sequence and are designated as epigenetic changes¹⁰. Human papillomavirus infection has been recently indicated as an independent risk factor for head and neck cancers especially oral squamous cell carcinoma. To conclude, there is certainly some genetic predilection in oral squamous cell carcinoma along with the use of different carcinogens. To prevent this morbid condition, following recommendations are strongly proposed for the regulating authorities, government agencies, health workers, media personals etc.:

- To create awareness in public regarding use of tobacco and other related product.
- In addition, awareness campaign is also required for genetic counseling for susceptible genotype persons.

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Emergency Management of Trauma (Head & Neck Region) in an Operationally Committed Tertiary Care Hospital.

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Mian Amer Majeed, Zaheer Ul Hassan, Furhan Haleem

ABSTRACT: The type of study is sequential case series. Setting and carried out at an operationally committed tertiary care Hospital, Combined Military Hospital Peshawar. Duration is from October 2014 to October 2016. Total number of cases were 45. The mean age was 23.62 +12.54 (S. D). The impact of IED blast injuries is very common in Head & Neck region in addition to other emergencies. The implications of such injuries are multi-dimensional and are being managed effectively on the basic principles of emergency surgical and timely effective management. The key step in any emergency is airway management. Most of the cases received with IED blast injuries, had associated head & neck injuries as well. Airway assessment was done in all the cases of blast injuries. A large number of tracheostomies were carried out along with a few emergency cricothyroidotomies, followed by formal surgical tracheostomies. Cases having stridor, low GCS score or deeply comatose patients were managed by emergency airway management followed by tracheostomy. The second important impact was due to multiple splinter & shrapnel injuries as well as fracture of nasal and facial bones along with life threatening nasal, antrochoanal and oro-pharyngeal bleeding. Special focus of investigations and management was rendered to acoustic trauma. The blast injuries had resulted in not only causing conductive hearing loss but also caused sensorineural hearing loss. **CONCLUSIONS :** Every doctor should perform emergency surgical cricothyroidotomies in trauma patients and 100% pure tone audiometry should be done within 14 days after sustaining head and neck trauma.

Key Words : Head and Neck Trauma, Airway management, Acoustic trauma.

INTRODUCTION : Head and neck region is the most important region of human body. The impact of IED blast injuries is very common in Head & Neck region in addition to other emergencies. The implications of such injuries are multi-dimensional and are being managed effectively on the basic principles of emergency management. Penetrating head and neck trauma represents approximately 5-10% of all trauma cases that present to the emergency department. About 30% of these cases are accompanied by additional injury, outside the neck zones as well. It involves a missile or shrapnel object penetrating the skin and platysma of the neck. It includes gunshot wound impalement injuries, IED blasts, splinters and puncture wounds^{1,2,3}. It seemed reasonable to explore the neck under general anaesthesia⁴. However, patients are categorized stable or unstable and with unstable patients transferred urgently and rapidly to the operating room⁷. Stable patients are kept under strict monitoring and radiologically evaluated. The key step in any emergency, especially in head and neck trauma is a quick and effective airway management. Surgical management of airway injuries by cricothyroidotomies and emergency tracheostomies are the only lifesaving procedures after failure of endotracheal intubation. Acoustic trauma leads to sudden sensorineural hearing loss along with discomfort, earache, tinnitus and depression^{5,6}. Khyber Pathunkhawa is the most disturbed province of Pakistan after the initiation of global war against terrorism. Combined Military hospital Peshawar is the main

hospital of Army in the province and managing the casualties of the most of the civilians and all the uniformed personnel especially in last 15 years. Objective of the study was to share the experience of the ENT surgeons of the hospital in last 2 years while managing the patients receiving trauma due to splinters, gunshot wounds and road traffic accidents.

MATERIAL AND METHODS : The type of study is descriptive, case series. Setting is Combined Military Hospital Peshawar. Duration is from October 2014 to October 2016. Approval from ethical review committee of the hospital was taken. All the patients with blast injuries of head and neck region were included. Both genders and all the ages were included. Injured persons not having head and neck injuries were excluded. Type of injuries was categorized. Descriptive statistics were applied and frequencies were analysed by using SPSS-21.

RESULTS : Total number of patients received with head & neck wounds were 45 (8.49%), out of 530 patients. The mean age was 23.62 +12.54 (S. D). Minimum age was 11 years and maximum was 63 years as shown in Table I. 37 patients were male (82.2%) and 8 were females (17.8%). Male to female ratio is shown in figure I. Penetrating neck injuries were 18 (40%), fracture nasal bones 9 (20%), acoustic trauma 7 (15.6%), epistaxis 7 (15.6%) and miscellaneous injuries 4 (8.9%). Types of injuries are shown in table II and in bar graph as in figure II. Tracheostomies were done in 17 patients (38%). Acoustic trauma led to conductive hearing loss in 3 and

sensorineural hearing loss in 4 patients⁶. (13.3%)patients could not survive and died in first month after sustaining trauma and 39(86.7%) showed good recovery. Pure Tone Audiometry was done in 51% of cases in first month. **DISCUSSION :** Statistically speaking 8.49% of the trauma cases received head & neck wounds in our study and this incidence was almost similar to other statistical data of tertiary care trauma hospitals of the world. Penetrating head and neck trauma can lead to further risks to the airway and breathing. Airway obstruction can even occur later, after a latent period, due to swelling or bleeding from oral cavity or nasal cavities⁸. The prognosis for penetrating head injuries varies widely⁹.In our study, the prognosis was good due to effective management of casualties by the team of highly qualified motivated, hardworking personnel. Mean age of the patients was 23.62 years.It was different from various studies and 33 years in a study¹⁰. The basic reason behind the relatively younger age is, that most of our available manpower consists of young age group and in a way more exposed to trauma. Gender

	Age	Gender
N	Valid 45	45
	Missing 0	0
Mean	23.6222	
Std. Deviation	12.54318	
Range	52.00	
Minimum	11.00	
Maximum	63.00	

Table-1 : Age of Patients (N 45).

Site Of Injury	Frequency	Percent	Valid Percent	Cumulative Percent
Penetrating neck	18	40.0	40.0	40.0
Fracture facial bones	9	20.0	20.0	60.0
Acoustic Trauma	7	15.6	15.6	75.6
Epistaxis	7	15.6	15.6	91.1
Misc	4	8.9	8.9	100.0
Total	45	100.0	100.0	

Table-2 : Types of Injury.

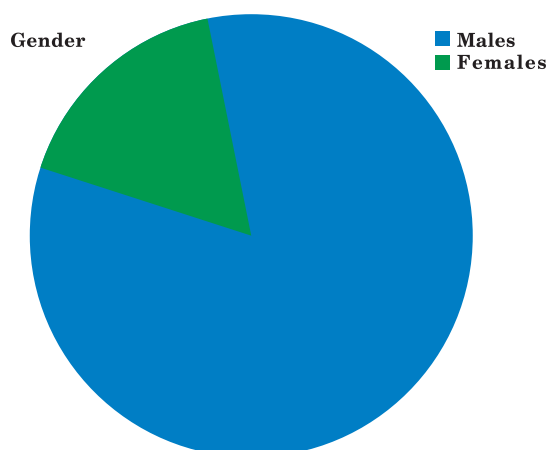


Figure 1 : Gender Distribution of Study.

distribution of our study was predominantly male as compared to other studies¹¹. The main reason was cultural practices and male population of Khyber Pakhtunkhwa is more prone to trauma incidents. Penetrating neck injuries were 40% and control of vascular injuries were complex and challenging. The study compared outcomes with Foley's catheter tamponade with those obtained with traditional use of external pressure. The study concluded that for penetrating neck and maxillofacial injuries especially in a combat environment, Foley's catheter balloon tamponade significantly reduced mortality when compared with direct pressure techniques to prevent both active and delayed bleeding¹². We used external pressure for control of bleeding. However epistaxis with posterior bleeding were managed by using Foley's catheter and specialized anterior nasal packing. Surgical airway was achieved mainly by tracheostomies and some by cricothyroidotomies and were done as per ATLS guidelines. About 80% of surgeons dealing with these cases were ATLS qualified and the rest of the team were PTC (primary trauma course) qualified. The ear by design is sensitive to barotrauma. The status of the tympanic membrane following exposure to a blast does not preclude the need for further investigations for a primary blast injury and the clinician needs to evaluate the patient dependent on their particular exposure to an explosion¹³. As a result, it is typically the first organ affected in primary blast injury¹⁴. The most common symptoms encountered include hearing loss, ringing sensation, associated pain and ear discharge. In our study, 15.6% of patients received acoustic trauma and evaluated by pure tone audiograms. It was common observation that in severe cases, the highest priority was appropriately directed towards diagnosis and treatment of life-threatening injuries; however, injury to the ears was missed frequently. As in our study 51% of trauma patients were screened by pure tone audiometry and it was revealed that 15.6% of patients were having hearing loss. We highly recommend that 100% of trauma patients must have Hearing Evaluation within 14 days of sustaining injury. With simple screening procedures, limited management, and appropriate

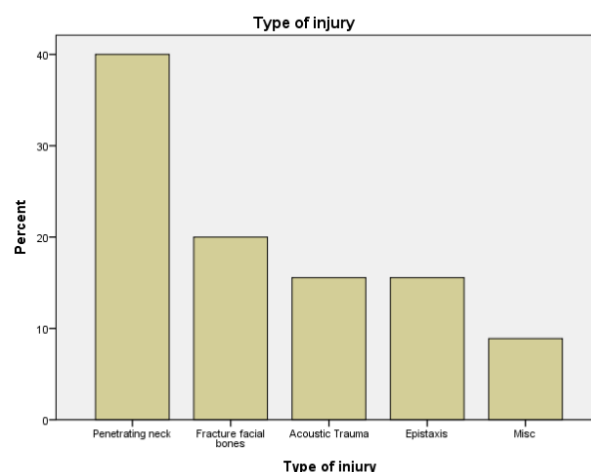


Figure 2 : Types of Injury.

otolaryngological referrals, acute and long-term morbidity can be averted for both critical as well as non-critical patients.

CONCLUSIONS : An ENT surgeon must manage the trauma patients with multidisciplinary team of doctors having expertise in general, trauma, neurosurgery, thoracic, maxillofacial surgery and advanced anaesthesia. He should perform emergency surgical cricothyroidotomies tracheostomies along with neck rather, head and neck wound explorations and surgical debridement. An early and initial hearing evaluation should be carried out within two weeks of sustaining the trauma. Junior doctors must also be trained and effectively taught to save precious lives, by effectively carrying out Lifesaving emergency surgical interventional procedures.

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The Effect of Handedness on Insertion of Foreign Body in Ear and Nose

Amer Sabih Hydri, Fatima Siddiqui, Shoaib Ahmed

ABSTRACT: *OBJECTIVE:* To observe and document any association of handedness on insertion of ear and nose foreign bodies. *Study Design:* Observational study. *PLACE AND DURATION OF STUDY:* Department of Otorhinolaryngology / Head and Neck Surgery, PNS SHIFA, Karachi; from Dec 2014 to May 2016. *METHODOLOGY:* Patients presenting with self-introduced or witnessed aural and nasal foreign bodies were enrolled in this study. All the enrolled patients were made to fill a structured questionnaire that included information regarding age, gender, handedness and socio-economic status; duration of foreign body in the ear/nose and the person who noticed or witnessed the foreign body insertion? etc. *RESULTS:* Out of 173 patients enrolled in this study. Nasal foreign bodies constituted 55 % (n=95) while aural foreign bodies were seen in 45% cases (n=78). Left-handed individuals were less than even 10% of the total. The right-handed individuals introduced nasal and aural foreign bodies in the ipsilateral and occasionally on the contra lateral side, while left-handed individuals inserted foreign bodies only in the ipsilateral side. *CONCLUSION:* The notion that left-handed individuals are ambidextrous was not corroborated in this study. Probably if a larger segment of left-handed individuals is studied the result would be different.

Key Words : Ambidexterity handedness foreign body ear nose.

INTRODUCTION : Foreign bodies in ear, nose and throat are a frequent cause for consultation in Otorhinolaryngology¹ Mainly affected are children and mentally challenged adults/elderly². Their signs and symptoms determine the management protocol. Insertion of a foreign body may be voluntary or accidental. The voluntary insertion occurs mainly in children and the accidental is more common in adults. Children often introduce foreign bodies into the ear nose throat of their younger siblings or friends. The first decade of life for children is a phase of exposure, manipulation and interaction with the environment. They begin to have access to a large variety of objects, and curiosity prompts them to put them into more exposed orifice such as ear, nose and oral cavity. The spectrum of presentation of lodged foreign bodies varies from a minor irritation to a life threatening condition. Successful removal depends upon numerous factors, including site, size, shape of foreign bodies, previous attempts made, doctor's dexterity and patient's co-operation. If the facility is available it is always prudent to refer these patients to an Otolaryngologist^{3,4}. Quite often foreign bodies are easily removed in outpatient clinics; however a proportion of them may require expertise, such as tracheo-bronchial or impacted foreign bodies, and subsequent removal may warrant administration of a general anaesthetic⁵. Foreign bodies within the external auditory canal can be categorized into animate or inanimate. The most common inanimate foreign bodies found in ear are plastic beads, cotton plug, and beetle-nut. While the predominant complaints of aural foreign bodies are otalgia and otorrhoea, yet some may be asymptomatic and report to the hospital only because somebody noticed them inserting a foreign body. Common presentations of foreign

bodies in nose are unilateral foul smelling discharge, nasal obstruction, and epistaxis⁶. The term handedness means the preference of a person to use one hand for clearly identified activities requiring skill and coordination (e.g., writing, drawing, and cutting). Roughly 90% of humans are right-handed. Often left-handed children are forced to write with their right hand thereby developing the ability to write with both hands; this is termed as ambidexterity or balanced handedness⁷. An exhaustive search of the medical literature and Internet revealed several published articles describing aural and nasal foreign bodies and their management but work on handedness vis-à-vis insertion of foreign bodies is almost non-existent^{8,9}. One of them dealt with only aural foreign bodies while the other included purely paediatric patients. This paucity of medical literature prompted us to conduct the present study on patients of all ages. The objective was to determine the correlation of foreign body insertion, whether single or multiple, unilateral or bilateral into ear and nose with the patient's handedness (right handed or left handed).

METHODOLOGY: This Observational study was carried out over an 18 month period from Dec 2014 to May 2016 at the Department of Otorhinolaryngology/ Head and Neck Surgery, PNS SHIFA, Karachi, Pakistan; a tertiary care and University teaching hospital.

Approval of the protocol of this study was obtained from the hospital Ethical Committee. All the patients enrolled in this study gave Informed consent.

INCLUSION CRITERIA;

1. Both genders
2. No age limit
3. Right/left handed and ambidextrous individuals
4. Foreign bodies of Ears & Nose

5. Self-introduced or witnessed foreign bodies
6. Mentally healthy individuals

EXCLUSION CRITERIA

1. Individuals, in whom somebody else, inserted foreign body.
2. Aero digestive foreign bodies as the structures are in midline and handedness Couldn't be established.
3. Sub normal / mentally challenged individuals
4. Psychiatric patients.
5. Young children in whom the presence of a foreign body could not be explained.
6. Animate foreign bodies

Patients reporting with self-introduced aural and nasal foreign bodies were enrolled in this study. The patients reported either directly to the Otolaryngology department or were referred from the Emergency department. All the enrolled patients were made to fill a structured questionnaire. The information included Age, gender, handedness, socio-economic status, duration of foreign body in the ear/nose; the person who noticed or witnessed the foreign body insertion and associated complaints. Note was also made of Laterality and associated complaints.

Statistical analysis was performed using 'software package for statistical analysis (SPSS 20). Two-tailed Student t test was applied for calculating p value; and a value of less than 0.05 was considered significant. Mean values were documented as mean SD (standard deviation).

RESULT: We received a total of 271 cases of foreign body ear, nose and throat over an 18 months period in our Outpatient department (OPD). Majority of the patients reported directly to the OPD, 84% (n=228) or were referred through the Emergency department, 16% (n=43). Out of these 138 patients had a foreign body in the ear, 105 in the nose and 28 in their aero digestive tract. After excluding cases of foreign body ear/nose, which were introduced by others; aero digestive tract foreign bodies and cases of animate foreign bodies as per the exclusion criteria, the remaining 173 patients with 179 foreign bodies were finally enrolled for this study. The age range of patients with aural foreign bodies was 3 -30 years with a mean of 9.83 ± 5.57 years (Table 1). In the group having nasal foreign bodies the age range was 2 to 54 years, with a mean of 6.25 ± 7.83 . Thus although the majority of the patients belonged to the 1st decade of life, they were more prone to inserting foreign bodies in their nose rather than ear (94% vs. 76%), (Table 2). Out of the 78 patients with aural foreign bodies, 51.28% (n=40) were males and 48.71% (n=38) were females. M: F ratio being 1:1. Although the duration of foreign bodies entrapped ranged from 15 min to 1 month, yet majority of the patients reported within a day (Table 3). More than half of the patients 62.82% (n=49) were asymptomatic; but since the foreign body insertion had been noticed either by parents, elder siblings or friends, they reported earlier. The rest came with otalgia (n=25) and otorrhoea (n=4). The socioeconomic status was predominantly low 80.76% (n=63), followed by mid socioeconomic status 19.2% (n=15). Almost all the patients; 92.30% (n=72) were right handed and only 7.69% (n=6) were left-handed. Out of 72 right handed patients, almost 81% (n=63) foreign

Age in Decades	Percentage of Patients	Mean Age & Standard Deviation
0 - 10 years	(75.64%) n=59	7.52±1.91
11 - 20 years	(19.23%) n=15	13.93±3.71
21 - 30 years	(5.12%) n=4	28.50±3

Table-1 : Percentage of age in patients who inserted aural foreign bodies.

Age in Decades	Percentage of Patients	Mean Age & Standard Deviation
0 - 10 years	(93.68%) n=89	4.30 ± 1.91
11 - 20 years	(1.05%) n=1	11 ± 0
21 - 30 years	(1.05%) n=1	24 ± 0
31 - 40 years	(3.10%) n= 3	33 ± 1.73
41 - 50 years	(0%) n= 0	
51 - 54 years	(1.05%) n= 1	54 ± 0

Table-2 : Percentage of age in patients who inserted nasal foreign bodies

Duration	Percentage
15 minutes to 1 day	(67.9%) n=53
2 days to 7 days	(15.3%) n=12
8 days to 15 days	(8.9%) n=7
16 days to 1 month	(7.6%) n=6

Table-3 : Duration of foreign bodies entrapped in Ear.

Duration	Percentage
30 min to 1 day.	(27.3%) n=26
1 day to 3 days.	(43.1%) n=41
4 to 7 days.	(22.1%) n=21
8 days to 3 months	(7.3%) n=7

Table-3 : Duration of foreign bodies entrapped in Nose.

bodies were inserted only in right ear and only 4%(n=3) in left ear, while 8%(n=6) had bilateral foreign bodies, revealing that right handed patient inserted in left ear and bilaterally whereas all 6 left handed patients inserted in left ear only. Thus 81 foreign bodies were removed from these 78 patients. Aural foreign bodies inserted in right ear were (85.18%) n=69, and in left ear were (18.51%) n=15. The latter also included bilateral aural foreign body insertion. p=0.92 Out of 95 patients with nasal foreign bodies, males outnumbered females; 65.26% (n=62) males and 34.73% (n=33) females. M: F 1.8:1. Majority of the patients 82.10% (n=78), belonged to the low socioeconomic status, while a minority was from the middle socioeconomic segment 17.89% (n=17). This was comparable with the individuals having aural foreign bodies. Compared to the patients having aural foreign bodies in which more than half were asymptomatic, only 1/3rd i.e. 32.63% (n=31) were asymptomatic. Almost half the patients 48.42% (n=46) presented with the complaints of unilateral foul smell discharge and 18.94% (n=18) patients with epistaxis. Majority of the asymptomatic patients were noticed inserting foreign bodies in their nose by their parents or siblings and subsequently reported earlier. The duration of foreign bodies entrapped ranged from 30 min to 3 months; almost three times longer than that of the aural foreign body patients (Table 4). Out of the 95 patients with self-inserted nasal foreign bodies 91.57% (n=87) patients were right handed and 8.43% (n=8) were left handed. Out of the 87 right-handed patients, 88.50% (n=77) inserted foreign bodies in their right nostril while 11.49% (n=10) inserted in the left nostril. However all left handed patients, 100% (n=8)

inserted foreign bodies in the left nostril only. $P=0.99$ All the patients in this study were from low to mid socioeconomic strata as explained above, except a solitary exception. A pilot from the high socioeconomic group, who accidentally inserted an eraser into his ear.

DISCUSSION : Foreign bodies in the nose and ear are more common than in the aero digestive tract as evinced by Pecorari¹⁰ In his study of 338 paediatric patients. Our study concluded that more patients' inserted foreign bodies in their nose as compared to ear. This is corroborated by Mackle¹¹ in his study of 140 patients in which 58.57% patients presented with nasal foreign bodies compared to 41.42% with aural foreign bodies. Mukherjee¹² also confirms our findings of nose being the most favoured site of foreign body insertion. In contrast a study of 81 patients by Tiago¹³ reported a predominance of aural foreign bodies (70.37%). Shrestha¹⁴ also found foreign body of the ear to be most frequent (47.4%). Yet another study of 1037 cases by Endican¹⁵ reported a higher incidence of aural foreign bodies (68.6%) followed by nasal foreign bodies (24.9%). This is in contrast to our study, which had a predominance of nasal foreign bodies (54.91% compared to 45% aural foreign bodies). One explanation could be that, even in our study, initially we had more cases of aural foreign bodies reporting to our department but after excluding the foreign bodies that were inserted by others to evaluate handedness, the ratio changed in favour of nasal foreign bodies. Majority of studies document the time of foreign body removal to be within 24 hours in most of the cases. Mukherjee¹² claims removal of 57.03% foreign bodies within 24 hours. Similar findings are documented by Balbani et al¹⁶ i.e. the removal was performed within the first 24 hours after foreign body insertion in 45.85% cases. Tiago¹³ on the other hand documented that only 38.27% foreign bodies were removed within 24 hours, and the average time of therapeutic intervention was 18.36 days. Similarly Oreh¹⁷ noted delayed presentation (beyond 24 h) in (82.3%) patients. In our study almost 68% aural foreign bodies were removed within first 24 hours [Table 3] while almost the same percentage of patients with nasal foreign bodies (70%) took 72 hours to report to the hospital for removal of their foreign body [Table 4]. Foreign bodies in the ear and nose are predominantly seen in the paediatric male population; Studies that have included patients of all ages also report a male preponderance. In our study the age range was 2-54 years. The average age of patients with nasal and aural foreign bodies was 6.25 ± 7.83 and 9.83 ± 5.57 years respectively while male to female ratio in aural and nasal foreign bodies was 1.8:1 & 1:1 respectively. This is commensurate with Iseh who documented a male to female ratio of 1.5:1. Their ages ranged from 1 to 65 years with 61.8% being children under 10 years old. Similarly Tiago¹³ documented a marginal increase in male patients, 51.85% compared to 48.15% females. The average age he documented was 23 years. Shrestha¹⁴ also had a wider age group with a mean of 21.26 years with majority between 0-10 years (50.6%). He noted a male predominance of (58.97%). To the contrary Pecorari¹⁰ noticed a mean age of 4.2 ± 2.9 years. This is understandable as he was only conducting a study of paediatric patients while our study was not confined to

children. Olajide¹⁹, Mukherjee¹², Ologe²⁰, and Kumar²¹ all claim a male predominance while Oreh¹⁷ documented an equal representation of both genders. There are only two studies regarding handedness and foreign body insertion in ENT. The earlier study by Peridis 2009⁹ included 89 paediatric patients. He claimed that there is no correlation with the child's handedness and right/left nasal cavities FB insertion. On the other hand he did report a positive relationship between handedness and aural foreign body insertion i.e., Right handed children insert FB into their right EAC and left handed children into their left EAC. In the only other study by Afolabi 2010⁸, conducted on 78 patients with aural foreign bodies only, the results were similar, i.e. a positive correlation between handedness and the side of insertion. Our study revealed an interesting finding that the right handed patients inserted foreign bodies mainly on the ipsilateral side but also occasionally on the contralateral side, while the left handed patients only inserted foreign bodies on the ipsilateral side but never on the contralateral side. This finding differs from both previous studies yet a common feature in their results lends credence to our findings. Both^{8,9} recorded that the percentage of patients inserting foreign bodies on the contralateral side was more in the right-handed patients than in the left-handed patients. Moreover the only case with bilateral foreign bodies in Peridis's 2009⁹ study was right handed. Afolabi 2010⁸ recorded 4 patients whose handedness was unclear; two had right and two had left aural foreign bodies but none had any bilateral foreign bodies. Thus the notion that left handed patients are ambidextrous is also not substantiated in their studies. Finally regarding the socioeconomic background of these patients, Mukherjee¹² and Shrestha¹⁴, both complement our findings that patients presenting with foreign bodies are mainly from the low socioeconomic segment of the society.

CONCLUSION : The right-handed individuals introduced nasal and aural foreign bodies in the ipsilateral and occasionally on the contra lateral side, while contrary to the common belief of left handed individuals being ambidextrous, foreign bodies were only seen on the ipsilateral side only. The outcome could be different if a larger segment of left-handed individuals with foreign bodies are observed.

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The Efficacy of Oral Steroid Therapy in Early Ethmoidal Nasal Polyposis

Beenish Nisar Ahmed, S.M.Tariq Rafi, Sameer Qureshi,
Muhammad Waqas Nisar Ahmed, Arshi Imran

ABSTRACT: *OBJECTIVE:* Nasal polyps are benign growths of nasal mucosa or sinuses. The management of nasal polyps include surgical removal and medical polypectomy i.e. use of oral or topical corticosteroids. Literature showed evidence for the use of corticosteroids (systemic and topical) both as primary treatment and as postoperative prophylaxis. The aim of this study was to evaluate the influence of oral steroid therapy on patient with early ethmoidal nasal polyposis when the nose is free from any bacterial or fungal infection. Patients were treated with oral corticosteroids and post treatment results were evaluated. After the therapy, symptoms of patients improved. Of 78 patients, 88.46% showed polyp-free nasal cavity, 11.53% showed no response to the therapy in terms of disease free nasal cavity. Majority of patients showed improvement in symptoms clinically. There were statistically significant differences ($P < 0.001$) for symptoms and polyp size.

Key Words : Nasal polyps, ethmoid, corticosteroid, polyp free cavity.

INTRODUCTION : Nasal polyps are polypoidal masses arising mainly from the mucous membranes of the nose and paranasal sinuses. They are overgrowths of the mucosa that frequently accompany allergic rhinitis. They are freely movable and nontender. Nasal polyps typically start near the ethmoid sinuses (located at the top of the inside of the nose) and grow into the open areas. Large polyps can block the sinuses or nasal airway. People with aspirin sensitivity, asthma, chronic sinus infections, cystic and Hay fever (allergic rhinitis) are more likely to also have nasal polyps. Symptoms include: Sneezing, breathing, nasal, reduced or complete loss of sense of smell, runny nose. Headaches or pain are not common unless there is also a sinus infection¹⁻³. The management of nasal polyps depends upon the causative factors. Treatment options are surgical removal and medical polypectomy i.e. use of oral or topical corticosteroids. Oral corticosteroids are the most effective medical treatment for nasal polyps specifically for early polyps when there is no fungus and infection³⁻⁷. The nonspecific anti-inflammatory agent quickly and substantially reduces the size of inflammatory polyps and improves symptoms. Patients whose polyps respond to oral corticosteroids may be re-treated safely 3-4 times a year; especially if they are not candidates for surgery. A type of steroid medication called prednisolone is usually recommended. It is likely that it will be prescribed no more than three weeks worth of prednisolone. This is because using the medication for longer than this increases risk of developing side effects, such as

weakening of bones (osteoporosis), high blood pressure, diabetes and weight gain etc²⁻⁷. Nasal polyps can be classified clinically and radiologically in to different grades. Early ethmoidal nasal polyposis means nasal polyps with no fungus and infection. For early nasal polyps the treatment options include topical and oral corticosteroids. The aim of this study was to evaluate the influence of steroid therapy on patient with early ethmoidal nasal polyposis when there is no infection and fungus.

OBJECTIVE : To evaluate the efficacy of oral steroid therapy in early ethmoidal nasal polyposis

MATERIAL AND METHODS : Study was designed as Experimental. Total no of patients were calculated as 78. Study was done under duration of two years from January 2010 to January 2012 in JPMC hospital, Jinnah post graduate and medical center, Karachi. We included patients with age above 18 yrs male or female both. Diagnosis was confirmed on CT PNS as allergic nasal polyposis. According to Hadley's criteria, grade 3 size of nasal polyps were confirmed. The nose of patients were free from any bacterial or fungal infection. We excluded all the patients of age below 18 yrs. Patients with active sinus infections, on long term steroid therapy, allergy or sensitivity to steroids, fungal disease, extensive or late stage polyps and antrochoanal polyps were excluded from this study.

METHOD : 78 patients fulfilling the inclusion criteria were treated with oral steroids for two weeks. Tablet prednisolone was given in a dose of 1 mg per kg starting and then tapering down. Capsule omeprazole was

given as stomach protective agent. Before and after the therapy results are confirmed with pre and post treatment CT scan of PNS. Patients were put on follow up for one year after therapy. Nasal symptoms and CT scan were the diagnostic tools for follow-up. Nasal symptoms including nasal patency, sneezing, olfaction, facial pain, nasal discharge and postnasal drip were assessed clinically both before and after the treatment.

DATA ANALYSIS : Data is analyzed on SPSS 16. Descriptive frequencies were calculated for pre and post treatment nasal symptoms and presence and absence of nasal polyps. P-value <0.001 is taken as statistically significant.

RESULTS : After the therapy, symptoms of majority of the patients are improved. Of 78 patients, 59 (75.64%) were male and 19 (24.05%) were females. 88.46% patients showed polyp-free nasal cavity and improvement in nasal symptoms. 11.53% patients showed no response to the therapy in terms of disease free nasal cavity and nasal symptoms. There were statistically significant differences ($P < 0.001$) for symptoms and polyp size.

DISCUSSION : Nasal polyps are soft, painless growths on the lining of nasal passages. They hang down like grapes. They result from chronic inflammation due to asthma, recurring infection, allergies, drug sensitivity or certain immune disorders¹⁻⁴. Small nasal polyps may not cause symptoms. Larger growths or groups of nasal polyps can block your nasal passages or lead to breathing problems, a lost sense of smell, sneezing and frequent infections¹⁻⁵. Nasal polyps can affect anyone, but they're more common in adults. Medications can often shrink or eliminate nasal polyps, but surgery is sometimes needed to remove them. Even after successful treatment, nasal polyps often return. Various methods of classification and categorization of nasal polyps have been attempted. These methods can be classified into: Questionnaire based categorization, CT based grading system, Nasal endoscopic scoring system, and Nasal functional scoring system. Hadley's clinical scoring system of nasal polyposis includes categorization of nasal polyps in relation to their sizes. These have been subdivided in four stages.

Grade 1: smallest size nasal polyps with in the middle meatus not reaching the inferior edge of the middle turbinate. Grade 2: polyps with in the middle meatus reaching to the inferior edge of middle turbinate. Grade 3: polyps extending in to the nasal cavity below the edge of middle turbinate but not below the inferior edge of inferior turbinate. Grade 4: polyps filling up the nasal cavity. Early ethmoidal nasal polyps means nasal polyps with no fungus and infection. For early nasal polyps the treatment options include topical and oral corticosteroids. The mechanism of action of corticosteroids is unclear. Corticosteroids induce apoptosis in inflammatory cells in human nasal polyps in vitro. Intranasal steroid sprays may reduce or retard

	Male	Females
N= 78	59	19
	75.64%	24.05%

Table-1 :

Nasal symptoms	Relieved	Not relieved
N=78	69	9
	88.46%	11.53%

Table-2 : p-value < 0.001

the growth of small nasal polyps, but they are relatively ineffective in massive nasal polyposis. Intranasal corticosteroid sprays reduce the growth of small intranasal polyps and are most effective in the postoperative period to prevent or retard regrowth of the polyps²⁻⁸. Rudmik et al conducted a meta-analysis that reviewed the effect of topical steroids (low-dose administration methodology) on symptoms in patients with nasal polyps. Results suggest topical nasal steroid therapy improves nasal symptoms in patients with chronic rhinosinusitis and nasal polyposis. The study did not look specifically at the effect on polyp size or regression, but rather only on whether or not the patients symptoms improved. In addition, most of the studies reviewed were from outside of North America⁶. Intrapolyp steroid injections have been shown to reduce polyp growth and nasal symptom scores compared with intranasal medical therapy and appear to be a safe alternative to surgery in select patients⁶⁻⁹. Other agents with a possible role in management of nasal polyposis are leukotrienes, antifungal, macrolides antibiotics, topical diuretic therapy, and intranasal lysine-acetylsalicylic acid. These agents are given according to the etiology, pathology and extent of disease⁸⁻¹¹. The objectives of the management of nasal polyposis are to eliminate or reduce the size of polyps, reestablish nasal breathing, reduce symptoms of rhinitis, restore the sense of smell, and prevent the recurrence of nasal polyps. Local or systemic steroids have been used in the treatment of nasal polyps, but efficacy of combined (local and systemic) steroids in nasal polyposis has been little investigated. The aim of this study was to evaluate the influence of steroid therapy on patient with early ethmoidal nasal polyposis when there is no infection and fungus and the results were significant showing prednisolone as good agent to remove the polyps and make patient symptoms free. Careful examination and CT scans will help out in finding the grade of polyps, stage of disease, presence and absence of infection and fungus thus make it easy to treat the disease effectively.

CONCLUSION : In this study we have used medical polypectomy as basic tool to treat early ethmoidal nasal polyps

Oral steroids can reduce early ethmoidal nasal polyps size and improve the symptoms almost completely. Prednisolone alone is very effective in controlling symptoms and reducing size of polyps if fungus and infection is not there.

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Rhinolith: An Overlooked Clinical Diagnosis

Fatima Siddiqui, Ali Iftikhar, Marvi Mahesari, Neha Khatri

ABSTRACT: *OBJECTIVE:* To analyse the varied presentation of a Rhinolith and determine what eventually clinches the diagnosis. *STUDY DESIGN:* Case series. *PLACE AND DURATION OF STUDY:* Departments of Otorhinolaryngology/Head and Neck Surgery Combined Military Hospital Peshawar, Military Hospital Rawalpindi and PNS SHIFA, Karachi, Pakistan from Jan 2004 to Apr 2016. *METHODOLOGY:* Data of 27 confirmed cases of Rhinolith was consolidated. A detailed proforma recorded the duration, location, side, presenting complaints, number of visits, radiological investigations, removal, anaesthesia administered, complications and chemical analysis if any. The modality that led to the correct diagnosis of a Rhinolith was also recorded. *RESULTS:* Rhinoliths are seen mainly in females. The left side is generally involved. The diagnosis is primarily clinical and removal is often under local anaesthesia. *CONCLUSION:* A methodical nasal examination is the key to diagnosing this uncommon pathology.

Key Words : Rhinolith Nasal obstruction Rhinoscopy Radiology.

INTRODUCTION : Rhinolith is a term used to designate a mineralized object in the nasal cavity, formed around an endogenous or exogenous nasal foreign body. The exogenous foreign bodies may enter the nasal cavity from the anterior nares while the endogenous nidus enters through the choana during sneezing or vomiting. The endogenous nasal foreign bodies constitute normal body materials such as blood clots, mucus, nasal crust, ectopic tooth or bony sequestra. The exogenous foreign bodies on the other hand are usually of nonhuman material such as plastic bead, button, fruit seed, grains, insect, glass, wood and others)¹⁻². Inflammation and suppuration evoked by the foreign material triggers the formation of a Rhinolith. Subsequent stagnation of nasal secretions, obstruction, precipitation of salts and secretomotor dysfunction play an adjunctive role in its formation. Eventually turbulent air currents concentrate and crystalize the mass. Rhinolith is hard in consistency, irregular in shape, often single, unilateral, and brownish black in colour. It invariably occupies the floor of the nasal cavity between the inferior turbinate and nasal septum. Since a Rhinolith takes considerable amount of time to form, the presentation is often insidious. When the symptoms do develop, often after several years, the common presentations are progressive unilateral nasal obstruction, purulent nasal discharge often foul smelling, rhinosinusitis⁵, epistaxis and septal perforation. Other less frequent symptoms include headache, facial pain and epiphora Varadharajan K, Stephens J, Madani G, et al. Rhinolith causing unilateral chronic maxillary rhinosinusitis⁶. Quite often it presents as an incidental finding in the outpatient department, however the diagnosis of a Rhinolith of any dimension requires a high index of suspicion; meticulous anterior rhinoscopy, probing the

mass with a metallic suction tip / metallic probe and rigid nasal endoscopy. Rarely radiological evaluation of nose and paranasal sinuses may provide a surprise finding of a rhinolith but generally only supplements the diagnosis. It however furnishes the extent of the calcareous mass, differential diagnoses and associated complications if any. Rhinoliths need to be distinguished from a calcified polyp, an osteoma, osteomyelitis and carcinoma. The treatment of choice is surgical removal. Generally, a trans-nasal removal is accomplished under local anaesthesia; with or without fragmentation of rhinolith. Larger ones however require a combination of nasal and oral removal under general anaesthesia.

METHODOLOGY : This case series was compiled at the departments of Otorhinolaryngology/ Head and Neck Surgery, Combined Military Hospital Peshawar, Military Hospital Rawalpindi and PNS SHIFA, Karachi, Pakistan from Jan 2004 to Apr 2016. Data of 27 confirmed cases of Rhinolith was collected by the primary author during his clinical practice at these hospitals. The consolidated data included the age, gender and socio-economic status of the patients. A detailed proforma recorded the duration, location, side, presenting complaints, number of visits, radiological investigations, removal, anaesthesia administered, complications and chemical analysis if any. The proforma also included the modality which led to the correct diagnosis of a Rhinolith? Was it radiologically assisted or on clinical examination alone-Results were documented in percentage and mean with standard deviation.

RESULTS : There was a distinct female preponderance in our series of 27 patients with M:F = 1:4.4. (See Fig 1). The age ranged from 13-70 years with a mean of 35.48±10.59 years. Table 1. Shows the breakdown of

gender and age. The Rhinoliths were found mainly in the left nasal cavity. In the female patients this was the rule while in the males there was an almost equal distribution of both sides. (Table 2). The presenting complaints of the patients included nasal obstruction, foul smell, pain, epiphora, epistaxis and dacrocystitis. (Table 3). Nasal obstruction, Foul smell and pain were the commonest combination of complaints in 12 patients (44.44%). Duration of symptoms ranged from one month to 120 months (10 years) with a mean of 15.62 ± 21.38 months. Surprisingly there was no recollection by any patient regarding foreign body insertion in the nose.

Majority of the patients, $n=21$ (77.77%) belonged to the low Socioeconomic strata. X-Ray PNS was ordered in all but three patients. Two Rhinoliths were removed straightaway thereby precluding any radiological investigation, while one was accidentally discovered following correction of a grossly deviated nasal septum. The radiological investigations ordered were as follows: Plain radiology alone: $n=18$ (66.66%) Plain radiology + Computerised tomography (CT) scan: $n=6$ (22.22%) CT scan alone: $n=0$. No radiological investigation: $n=3$ (11.11%). CT scan was ordered in cases where the stone was not completely visualized or was obscured by granulation. Majority of the Rhinoliths were lodged in the middle part of the nasal cavity, $n=17$ (62.96%),

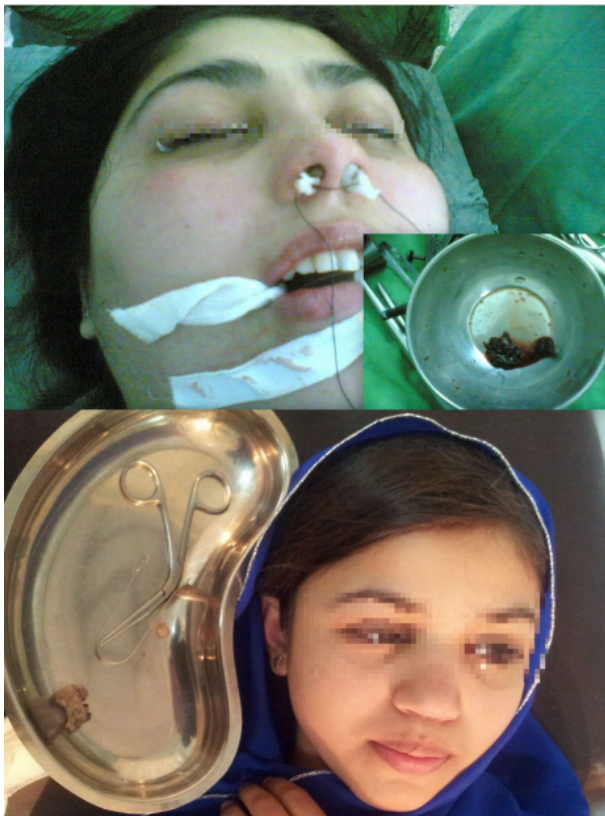


Figure 1 : Removal of Rhinolith under general and local anesthesia

Gender	Number of patients	Age range (in years)	Mean & standard deviation
Male	$n=5$ (18.51%)	26-45	38.20 ± 7.19
Female	$n=22$ (81.48%)	13-70	34.86 ± 11.27

Table 1: Gender and age distribution.

Right nasal cavity $n=8$ (29.62%)	Left nasal cavity $n=19$ (70.37%)
Female= 6 (75%)	Female= 16 (84.21%)
Male= 2 (25%)	Male= 3 (15.78%)

Table 2: Gender and side distribution.

Symptoms	Number of Patients
Nasal obstruction	23
Foul smell	18
Pain	15
Epiphora	5
Epistaxis	5
Dacrocystitis	3

Table 3: Breakdown of symptoms in patients of Rhinolith.

Gender	Total Number	Local Anaesthesia	General Anaesthesia
Female	$n=22$	17 (77.27%)	5 (22.72%)
Male	$N=5$	2 (40%)	3 (60%)

Table 4: Gender and type of anaesthesia.

followed by larger Rhinoliths in the middle and posterior nasal cavity $n=7$ (25.92%); while Rhinoliths in the anterior nasal cavity were seen in only three patients (11.11%). Isolated posterior nasal cavity Rhinoliths were not encountered in this study. The impaction was always noticed to be between the inferior turbinate and the nasal septum. No palatal or septal perforation was observed due to pressure exerted by the Rhinolith; however, bowing of the nasal septum to the contralateral side and deflection of the inferior turbinate was seen in larger Rhinoliths. The Rhinoliths were mostly extracted painlessly under local anaesthesia $n=19$ (70.37%), while only 8 patients (29.62%) required general anaesthesia. The latter included all seven patients who required a combination of removal through both the oral cavity and the nose due to either the sheer size or posterior placement of their Rhinoliths. One additional female patient had requested for general anaesthesia for fear of witnessing the procedure, despite being counselled about the painless removal under local anaesthesia. Surprisingly the most elderly patient of our series, a 70-year-old female, diagnosed with a Rhinolith in the outpatient clinic, had it removed conveniently and painlessly under local anaesthesia in the same visit. The breakdown of gender and type of anaesthesia administered is shown in Table 4. The largest Rhinolith was 7 cms in length and weighed 20.8 Gms. The smallest was 1.6 cms in length, weighing 34mg. All patients gave a history of previous visits (average 2-3) to the general outpatient department. Amazingly five patients (18.51%) had two, while two patients (7.40%) had three previous fruitless visits to the ENT Outpatient department. The correct diagnosis was

eluded as symptomatic treatment was instituted without a detailed nasal examination. Almost all the patients were immunocompetent. Only one patient had Diabetes mellitus. There was no patient with ciliary dysfunction. Majority of the Rhinoliths (74.07%), were extracted trans-nasally while seven (25.93 %) were removed piecemeal employing a combined anterior nasal/ per-oral approach. Chemical composition of the Rhinoliths revealed: Calcium oxalate, Calcium phosphate (Whitlockite), ammonium phosphate, magnesium and uric acid. Only three stones were examined for a nidus; revealing Maize germ, Gram seed and metallic piece of a nose pin. There were minimal complications while extracting a Rhinolith; n=9(33.33%). The breakdown is as follows: bruising of post pharyngeal wall: n=4(44.44%); mild turbinal mucosal bleeding n=3(33.33%) and septal laceration n=2 (22.22%).

DISCUSSION: In 1654 Bartholin described the first case of a Three hundred and sixty-two years later, armed with a plethora of investigative tools, it remains primarily a clinical diagnosis. Rhinolith is a relatively uncommon disease and the lack of a high index of suspicion by the primary physician renders it even rarer. Most published reports are therefore single case reports and relatively larger published studies don't even run into double figures-2,⁹⁻¹⁰. Our study is by far the largest with 27 cases in twelve years. The age range in our study is 13-70 years, yet age as young as 4 years 12 and as old as mid 80s 1 has been documented. There is no specific predilection of gender in single case reports of Rhinoliths; however, there was a distinct female preponderance in our series of 27 patients. This is commensurate with the largest published study 10. In our series, the left nasal cavity was predominantly involved (70.37%). In the published literature, however both sides have been documented^{4,9,12}. The Rhinoliths are generally located in the middle and posterior part of the nasal cavity 2, which is consistent with our findings. Larger ones may get lodged in the posterior part of the nasal cavity. It takes several years for a Rhinolith to form and thus the symptoms may be very vague. The longest history of nasal symptoms in our series is 120 months (10 years), although in the published literature a Rhinolith had an unusually long history of being undetected for 80 years¹. This does not however imply that the duration of symptoms and the formation of a Rhinolith is the same. The commonest complaint elicited was nasal obstruction, while the least common complaint was dacrocystitis. The Commonest group of complaints was nasal obstruction and foul smell from the nose and mouth. Majority of the published studies^{2 4} corroborate this. The first radiological description of rhinolith was furnished by Macintyre in 1900. The typical radiological features are radio-opacity with central translucency. The appearance on CT scan is

that of a homogenous, high-density lesion with smooth mineralization. CT scan cannot discriminate a rhinolith from any other calcified mass, but has the ability to detect the related complications of rhinoliths. Furthermore, CT scan is performed to assess the size and extent of the Rhinolith[Thiagarajan B. Huge rhinolith nasal cavity an interesting case report and a review of literature. In our study although majority of the patients (88.88%) underwent a radiological investigation, it was either to rule out the differential diagnoses, assess the extent, and visualize the associated complications. The diagnosis of a Rhinolith was already established clinically. Predominantly Rhinoliths are removed under local anaesthesia, and only large ones or those impacted posteriorly are removed under general anaesthesia. 9, 12 Our study shows similar results. while Appetite $\text{Ca}_5(\text{PO}_4)_3(\text{OH}, \text{F}, \text{Cl})$ & dahllite $[\text{Ca}_5(\text{PO}_4)_3\text{CO}_3]$ are also present. This is commensurate with the chemical composition of our series of Rhinoliths where Whitlockite was the second most common constituent. Rhinoliths usually go undetected due to the lack of proper nasal examination. This is corroborated by the findings of our study, where almost all patients had been reporting for their nasal symptoms, yet the diagnosis was missed initially. The ultimate diagnosis was however made mainly on clinical examination supplemented by radiological investigations. This is in accordance with the published literature^{7,8,9,10,12}. Rhinoliths have been detected coincidentally during examination or on radiological investigation being carried out for some other reason; as in one of our patients where a small rhinolith was noticed per-operatively, after correcting a gross deviated nasal septum. A similar scenario is portrayed in a case series 2.

CONCLUSION: A methodical and meticulous nasal examination precludes misdiagnosing a Rhinolith. Radiology generally has an adjunctive value.

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Orbital Complications of Endoscopic Sinus Surgery : A Case Series

Adnan Asghar, Muhammad Awais

ABSTRACT: **BACKGROUND:** Endoscopic sinus surgery has become a preferred modality for management of various nasal and sinus disorders. Orbital complications, though rare, are reported amongst patients undergoing ESS. **STUDY DESIGN:** Case series. **METHODS:** A retrospective review was undertaken of four cases of orbital complications during endoscopic sinus surgery. **RESULTS:** Two patients suffered from periorbital haematoma and subconjunctival haemorrhage. One patient developed subcutaneous emphysema and numbness of lower eyelid and cheek. One patient got oedema of lower eyelid. **CONCLUSION:** Ophthalmic complications occurring during ESS should be timely and properly addressed. By having sound knowledge of anatomy of nose, paranasal sinuses and orbit and detailed preoperative assessment, chances of orbital complications can be lessened.

Key Words : Endoscopic sinus surgery, Orbital haematoma, Lamina papyracea,.

INTRODUCTION : Endoscopic sinus surgery (ESS) is an unquestionable advancement in the surgical management of chronic infectious sinusitis and has a growing role in the management of many sinus, orbit, and skull base diseases¹. However this new modality entails risk of orbital and ocular complications because of the intimate relation between the paranasal sinuses and the orbit. These complications can be as trivial as ecchymosis, pain and subconjunctival haemorrhage. But devastating complications like cerebrospinal fluid leak (rhinorrhea), damage to optic nerve and extraocular muscles and even loss of vision is also reported². By meticulous preoperative assessment and careful surgical technique, these complications can be circumvented. Here we present a series of four cases that developed ocular complications during ESS, but these were promptly diagnosed and appropriately managed.

CASE REPORTS :

Case 1 : A 28 year old male patient was diagnosed a case of Deflected Nasal Septum to the right side, reduced nasal patency and left maxillary sinusitis. He underwent

endoscopic septoplasty, left middle turbinoplasty and left middle meatus antrostomy. Approximately one hour after surgery, he developed left peri orbital haematoma extending over the cheek. His thorough ocular examination by ophthalmologist revealed subconjunctival haemorrhage and mild chemosis. However there were Snellen visual acuity of 6/6, normally reacting pupil, normal ocular motility and intraocular pressure within normal range. Peri orbital swelling worsened in next 24 hours causing complete closure of eye lids (Fig. 1). Patient was observed closely and his vision, pupillary reactions and intra ocular pressure were periodically checked. Conservative medical management was begun with elevation of the head of the bed and iced compresses. He was advised to abstain from sneezing and coughing. After 5-7 days, peri orbital swelling started resolving. Repeat evaluation 3 weeks after surgery showed no residual ophthalmic problems.

Case 2: A 43 years old male patient underwent bilateral endoscopic middle meatus antrostomies, bilateral partial



Figure 1 : Peri orbital haematoma, chemosis and subconjunctival haemorrhage.



Figure 2 : Haematoma of lower eyelid and subconjunctival haemorrhage.

inferior turbinectomies and middle turbinoplasty on right side. While performing uncinectomy, a breach of approximately 5 mm size in the left lamina papyracea was noticed and orbital fat was visible protruding through this defect into the nasal cavity. Remaining part of the surgery was performed with utmost care. Few hours after surgery, he developed left peri orbital subcutaneous emphysema and palpable crepitus. There was no complaint of diplopia or reduced vision. Complete ocular examination was performed by an ophthalmologist. His visual acuity, ocular movements and pupillary reactions were normal. Conservative management was instituted and patient was followed closely. This peri orbital swelling gradually subsided over a period of two weeks. Subsequent ocular examination revealed numbness left lower eye lid, cheek and left side of upper lip. Rest of the examination was normal. Severity of numbness decreased over 2 months time.

Case 3 : A 31 year old male, after undergoing clinical examination and relevant radiological investigations, was diagnosed a case of massive hypertrophy of left inferior turbinate with S shaped deflected nasal septum, opaque left maxillary sinus and significant enlargement of right middle turbinate. By endoscopic sinus surgery, his bilateral middle and inferior turbinoplasty and left middle meatus antrostomy was performed. After uncinectomy a defect was noted in lamina papyracea.

Post operatively, patient developed left lower eyelid haematoma and subconjunctival haemorrhage (Fig. 2). Ophthalmological examination revealed normal visual acuity, pupillary reactions and intra ocular pressure. Conservative management was begun by elevating head end of bed, cold compresses and topical mild steroid and artificial tear eye drops. The swelling gradually reduced over a period of three weeks.

Case 4 : A 23 year old male underwent bilateral middle meatus antrostomies for chronic maxillary sinusitis. Post operatively he developed oedema and subcutaneous emphysema of right lower eye lid. Ocular examination showed normal visual acuity and ocular motility. He was managed conservatively and after one week his eyelid oedema and emphysema subsided.

DISCUSSION : The introduction of endoscopic sinus surgery (ESS) in 1985 has modified the way surgery is performed on the paranasal sinuses. Surgeons prefer this modality for the treatment of chronic rhinosinusitis (CRS), sinonasal tumors, cerebrospinal fluid (CSF) leaks, encephaloceles, orbital endocrinopathy, nasolacrimal duct obstruction, epistaxis and other pathologies in the nose and sinuses³. In 1994, a revolutionary powered cutting instrument, termed the "hammer" or "microdebrider," was introduced which further increased popularity and usage of ESS⁴. Unfortunately ESS is not devoid of its complications. As per a recent survey conducted on 62,823 endoscopic sinus surgery cases in the US, the overall major complication rate was 1%, of which orbital injury was observed in 0.07%⁵. Orbital injury is a well-recognized complication of endoscopic sinus surgery. Reported orbital complications include periorbital ecchymosis, proptosis, retrobulbar hemorrhage, nasolacrimal duct injury, damage to the medial rectus (MR) muscle,

central retinal artery occlusion and injury to the optic nerve². The newer powered devices used for endoscopic sinus surgery have a greater potential to damage extraocular muscles when accidentally misdirected and may cause permanent strabismus and troublesome diplopia^{2,6}. These mechanised systems extract tissue very rapidly and provide no tactile feedback to the surgeon about the type of tissue being removed⁷. It is extremely important that the surgeon be well schooled in radiologic and endoscopic nasal, sinus and orbital anatomy. The medial orbital wall is composed of four bones: ethmoid (lamina papyracea), maxillary, lacrimal and sphenoid bones. The lamina papyracea constitutes the thinnest portion of the medial orbital wall and it separates the contents of the medial orbit, in particular the medial rectus muscle, from the ethmoid air cells. The lamina papyracea, especially at the extremes of age, is extremely thin and may be incomplete in some patients; such a thin or incomplete wall presents an almost imperceptible boundary during sinus surgery⁷. The risk of breach is probably also greater when there are anatomical variants in the sinuses. Orbital haemorrhage manifests as peri orbital ecchymosis and subconjunctival haemorrhage, as reported in our case no 1 and 3. However if not timely observed and adequately managed, it can cause proptosis, firm orbit and compressive optic neuropathy leading to blindness⁸. Orbital haematoma results from damage to either orbital veins or arteries. Venous orbital haematoma results when veins that supply the lamina papyracea, periorbita, and/or orbital fat are traumatized and bleed into the orbit. The other kind of orbital haematoma occurs when anterior or rarely the posterior ethmoidal artery is traumatized⁹. It retracts into the orbit and continues bleeding. As little as 5 mL of blood accumulation in the orbit or periorbital space can raise intraorbital pressure to dangerous levels³. So whenever breach of lamina papyracea and inadvertent orbital entry is suspected, the surgeon or his assistant must uncover the patient's eye and observe any movement of eyeball, proptosis, firmness of globe, periorbital swelling and dilation of pupil. In surgery, the key to preventing orbital injury is identifying the lamina papyracea, which is present just superior to the maxillary antrostomy¹⁰. Surgery without detailed knowledge of anatomical structures and their visualization during procedure is fraught with hazard and increases the risk of orbital complication. The useful way to identify any opening in the lamina papyracea is to use simultaneous endoscopic exam and eye palpation, the so-called bulb press test [11]. Another useful test is "fat float" test. Fat floats in water, tissue sinks-as a way to identify orbital fat, which endoscopically appears yellow and greasy³. The test identifies fat when the result is positive. If negative, the tissue present can be nerve or muscle, not just disease. As noted, time is of the essence when dealing with increased intraorbital pressure, more so with an acute arterial hematoma. The reversal of critical pressure is the key to success. When suspected, intra ocular pressure should be immediately checked with a portable tonometer like Tonopen or Pekin's tonometer or at least digital tonometry should be done. Ocular

massage should be started as a first step. If the eye is persistently hard and tense or pressure continues to be elevated, a lateral canthotomy preferably with cantholysis should be performed. An incision into the eyelid skin crease(s) and evacuation of haematoma from the orbital fat can also be tried⁷. If above methods fail, a medial decompression taking down the lamina papyracea externally or endoscopically should be considered³. A transcaruncular orbitotomy can be used to identify ethmoid artery bleeding and complete a medial wall decompression¹². Ophthalmologist consultation should be requested to check vision and assist in further treatment. Opening of the lamina papyracea, even a slight crack or dehiscence, may allow outside air to get into the orbital tissues causing subcutaneous emphysema as noted in case no 2. Air accumulates usually as a result of vigorous straining such as occurs during awakening from anaesthesia, sneezing and vomiting. Eye exam reveals a characteristic “crunchy” crepitus which usually resolves in 7-10 days¹³. Facial numbness was also observed in case no 2. It is caused by injury to the infraorbital nerve and it can be avoided by taking care while performing surgery in midline superior maxillary sinus³. Blindness though not reported by any of our patients, is a dreaded complication of ESS. It results either because of ignored or improperly managed fast growing orbital haemorrhage, direct injury to optic nerve or damage to vascular supply of optic nerve. Damage to ocular muscles particularly medial rectus muscle is high when middle to posterior portion of lamina papyracea is breached because medial rectus muscle is in contact with lamina here. Chances of damage to medial rectus are high when using microdebrider¹⁴. Cerebrospinal fluid leak or rhinorrhea can occur during instrumentation, including probes, suction, microdebriders, drills with diamond or cutting burrs, suction cautery, and curettes. Chances of rhinorrhea are high when disease is extensive or revision surgery is being performed^{15,16}.

CONCLUSION : All surgeons performing endoscopic sinus surgery should be well conversant with the anatomy of nose, sinuses and orbit. Good preoperative work up with the aid of radiological investigations is a prerequisite for a successful surgical outcome. Frequent orbital checks must be performed during surgery. The surgeon doing ESS must be able to perform

canthotomy and cantholysis procedures and must not spend time in waiting for ophthalmologist, in cases of orbital haematoma and a proper postoperative eye examination should be performed in the recovery room.

CONFLICT OF INTERESTS: The authors declare that they have no conflict of interests.

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Epidermal Inclusion Cyst in Bony Nasal Septum; A Rare Entity

Iqbal A Muhammad Khyani, Atif Hafeez Siddiqui, Muhammad Paras Naseem,
Muhammad Yasir Nasir, M. Umar Farooq

ABSTRACT: Epidermal inclusion cysts are the benign lesions that usually arise after trauma resulting in implantation of epidermal elements in the dermis. These rarely occur deep in the bone. Diagnosis based on histopathology mainly and these cysts are managed surgically by complete excision. We present the unusual case of a 18-year-old boy with inclusion cyst in bony nasal septum. The lesion at this site was not found on meticulous literature search.

Key Words : Epidermal cyst, Inclusion cyst, Bony nasal septum.

INTRODUCTION : There are various terms used for epidermoid cysts, including follicular infundibular cysts, epidermal cysts, and epidermal inclusion cysts. Specifically epidermal inclusion cyst refers to a type of epidermoid cyst that is the result of the implantation of epidermal elements in the dermis¹. Usually there is history of trauma as precedence. Although they can be found anywhere, they are typically located on the scalp, face, neck, trunk, and back¹. Rarely they can be seen within the bones representing as intraosseous epidermoid cyst². In the pediatric population, they often present in the periorbital region. They are generally divided into deep and superficial lesions with deep lesions presenting later in life³. Epidermoid cysts are benign lesions; however, rare associations with malignancies have been reported¹. We report an unusual case of epidermoid inclusion cyst in bony nasal septum which to the best of our knowledge have never been reported yet. On meticulous literature search, this site of the lesion for epidermoid cyst was not found.

CASE SUMMARY: 16 years old male with no known

co-morbidities came to us with the complaint of nasal obstruction occurring in episodes since 2 years. He also complain of frontal headache and heaviness at root of nose. He had a past history of traumatic accident being struck to face 3 years ago, resulting in trauma to nose with epistaxis for which anterior nasal packing was done. On inspection there is broadening of nose and partially compromised bilateral nasal patency. On anterior rhinoscopy there is biconvex bulging of nasal septum, initially we suspected an organized septal haematoma, due to prolong history of over 3 years duration we decided to carry out CT-scan before attempting to drain. Patient was subjected to CT-scan of nose and paranasal sinuses which revealed polypoidal soft tissue attenuation area within nasal cavity causing partial nasal obstruction. Nasal endoscopy performed with zero degree endoscope under local anesthetic spray, There is bulge on nasal septum posteriorly just above the middle turbinate, globular appearance and approximately occupying 2 cm area. It is smooth, soft in consistency. Patient undergone trans-septal endoscopic



Figure 1 : There is broadening of nasal radix (Pre-operative photograph of patient).

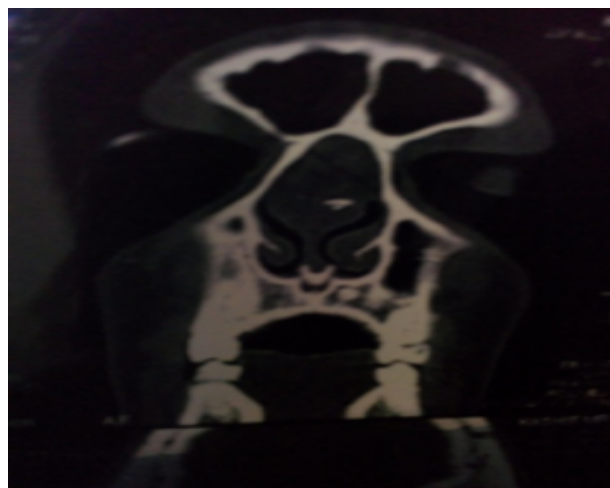


Figure 2 : CT-scan shows soft tissue attenuated area, (On coronal view).



Figure 3 : Histopathology report.

surgery under general anesthesia (GA). On endoscopy the bulge identified in posterior part of nasal septum, all other anatomical structures were normal. Killians incision given on septum, Mucoperichondrial flap raised and septal cartilage removed. There was a cystic mass with cheesy / whitish creamy type debris seen at bony nasal septum. Debris was cleared, cyst was identified in the area just behind the bony bridge of nose, it was attached to the bone and the neighboring areas, attachments cleared through gauze dissection and cyst was completely excised from the bone and specimen sent for histopathology. Mucoperichondrial flap sutured and splint placed. BIPP pack was placed for 48 hours. Pack removed after 48 hours. Patient was treated with systemic antibiotics, analgesics, 0.9% saline nasal douches, decongestant and antiseptic ointment. Patient called for splint removal and endoscopic examination after 10 days which was normal at that time. Histopathology report show feature suggestive of epidermal inclusion cyst with no fungal element. Patient was followed-up for six months afterwards at monthly interval. Nasal patency was satisfactory and patient was symptom-free.

DISCUSSION: Dermoid cysts present in three primary locations in head and neck region, the fronto-temporal region, the periorbital region, and the nasoglabellar region⁴. Lesion at these sites usually present to otolaryngologists, neurosurgeons, plastic surgeons, and ophthalmologists. At times, this calls for a

multidisciplinary approach for complete resection. Epidermal inclusion cyst in the the bone is infrequent finding, mostly cases report location in flat calvarial bones and phalanges. Occasional cases from different areas of skull were reported too, that include sites as temporal, sphenoid and maxillary bones, one rare case report cyst in styloid process, so reporting from unusual sites continue to be published¹¹. We report another case of epidermal cyst with an unusual anatomical site of bony nasal septum, cyst at that site have never been reported so far. Dermoids in deeper anatomical areas are rare and grow indolently, presenting in the teenagers and beyond^{3,6}. Deep lesions are more likely to present with adjacent bony changes. Nugent et al reviewed 17 CT scans of orbital dermoids. Eleven of 13 patients with deep orbital dermoids showed thinning or notching of adjacent bone. In three patients, the bony lesion eroded through the full thickness of the adjacent bone⁸. Complete surgical excision is curative. In our case we perform endoscopic septoplasty for approaching bony nasal septum. Cyst has no intra-orbital or intra-cranial extension and we remove it completely by trans-septal endoscopic approach.

CONCLUSION: Epidermoid inclusion cyst is a rare presentation in the region of bony nasal septum, to the best of our knowledge no case report in literature is available pertinent to this anatomical location. It should be considered in differential diagnosis of the lesion at this site.

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