

# Lesions of nasal cavity, paranasal sinuses and nasopharynx: a clinico-pathological study

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## Abstract

**Background:** A variety of non-neoplastic and neoplastic lesions of nasal cavity, paranasal sinuses and nasopharynx are commonly encountered in clinical practice. The aim of this study was to study clinical and histopathological profile of space occupying lesions of nasal cavity, paranasal sinuses and nasopharynx in a tertiary care hospital of Ranchi over the period of January 2011 to January 2012. **Materials and Methods:** This was a prospective study of 90 cases of space occupying lesions of nasal cavity, paranasal sinuses and nasopharynx over the period of 12 months. All tissues after fixation in 10% buffered formalin, processed and then stained with Hematoxylin & Eosin to study various histopathological patterns. **Results:** These 90 cases were broadly categorized in two categories, one category as nasal and paranasal sinus masses and the other as nasopharyngeal masses with 63 and 27 cases, respectively. These lesions were common in second and third decades of life with male predominance. Among nasal and paranasal sinus masses, there were 52 (82.2%) non-neoplastic and 11 (17.8%) neoplastic lesions. Inflammatory polyps (86.5%) were the most common among the non-neoplastic masses. Out of 27 nasopharyngeal masses, there were 23 (85.2%) non neoplastic and 4 (14.8%) neoplastic lesions. Majority of these i.e. 20 cases were of adenotonsillar hypertrophy. **Conclusion:** We concluded that complete clinical, radiological and histopathological correlation helps us to categorize these sinonasal lesions into various non-neoplastic and neoplastic types. But final histopathological examination provides a confirmatory diagnosis.

**Keywords:** Histopathological, Nasopharyngeal masses, Nasal and paranasal masses, Non-neoplastic, Neoplastic.

## Introduction

Nose is the most prominent part of face with great aesthetic significance and functional importance. Non-neoplastic and neoplastic lesions of nasal cavity, paranasal sinuses and nasopharynx are very commonly encountered in routine clinical practice [1]. They are a common finding in all the age groups. Common presenting symptoms of sinonasal lesions are nasal blockade, nasal discharge, epistaxis, facial swelling, orbital and ear symptoms [2]. Although, clinical complaint of a mass in nose seems to be a simple problem but it gives arise to a large number of differential diagnosis in the mind of treating physician and diagnosing pathologists. Sinonasal area is exposed to various infective agents, chemicals, antigens, mechanical and many other influences. These

deleterious exposures lead to formation of tumour like and neoplastic conditions [3]. They can range from simple nasal polyps to infective polypoidal granulomatous lesions to malignant lesions. Nasal polyps are the most common cause of nasal obstruction with 04% of prevalence rate [4]. Their exact pathogenesis is unknown but they have association with allergy, asthma, infections and aspirin sensitivity [4].

Benign lesions of sinonasal region are common and lack of appreciation of these lesions can lead to radical surgeries. They have long clinical history with frequent local recurrence and thus relatively significant morbidity. Malignant lesions in nasal cavity, paranasal sinuses and nasopharynx accounts for not more than 3% of head and neck malignancies and less than 1% of all the malignant tumours. Geographically, they have tendency for Africans, Japanese and Arabians and are

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rarely seen in Americans and Western Europeans [5]. Due to varieties of histopathological types and grades of malignancies, it is very important to study their clinical and pathological aspects. Coupled with radiological techniques, histo ENT has become indispensable in the

timely diagnosis and treatment of these lesions [6,7]. The aim of this prospective study was to categorize these lesions into non-neoplastic and neoplastic and to study their histopathological patterns.

## Material and Methods

This is a prospective study of 90 cases, conducted in the Department of ENT of a tertiary care Hospital in Ranchi, India, for the period of January 2011 to January 2012. Demographic data regarding age, sex, chief complaints, clinical examination and radiological investigations was retrieved from histopathology and OPD records.

The inclusion criteria for selection of cases was medically untreatable cases of masses in nasal cavity, paranasal sinuses and nasopharynx, requiring surgical treatment and are fit for surgery. All the received biopsies were fixed in 10% buffered formalin. After routine gross examination and processing, Hematoxylin & Eosin staining for histopathological examination was done. Immunohistochemistry was used wherever required.

**Observations-** In the present study, the age distribution of patients ranged from less than 1 to 72y (mean age – 32.1 y). Patients in second and third decades are commonly affected with male to female ratio of 1.6:1. The most common presenting symptoms were nasal obstruction in 82 patients (91%) followed by nasal discharge in 63 patients (70%). Other less common complaints were headache due to sinusitis, sneezing, nasal bleeding, change in voice, decreased sense of smell and facial swelling.

Among total 90 cases, there were 63 cases of nasal and paranasal sinus masses and 27 cases of nasopharyngeal masses. Nasal and paranasal sinus masses- Histopathological examination revealed that out of total 63 nasal and paranasal sinus masses, there were 52 (82.2%) non-neoplastic and 11 (17.8%) neoplastic lesions. Among the 52 non-neoplastic lesions, inflammatory polyp was the commonest one with 45 cases (86.5%) followed by fungal infection in 5 cases (9.6%), rhinosporidiosis in 1 case (1.9%) and one case of glioma (1.9%). **Table no. 1**

**Table No-1: Histopathological diagnosis of non-neoplastic lesions of nose and paranasal sinuses**

Non-neoplastic lesions	Number of cases	Percentage (%)
Inflammatory Polyp	45	86.5
Fungal infection	5	9.6
Rhinosporidiosis	1	1.9
Nasal glioma	1	1.9
<b>Total</b>	<b>52</b>	<b>100</b>

Inflammatory polyp was the most frequently encountered in sinonasal region with a peak in second and third decades of life. Microscopically, these polyps comprised of loose mucoid stroma and mucous glands lined by respiratory epithelium. Inflammatory infiltrate of lymphocytes, plasma cells, neutrophils and eosinophils was noticed in this loose stroma. Allergic polyps show more eosinophilic infiltrate as compared to other inflammatory cells.

Fungal infections were seen in third decade, presented with foul smelling discharge and on microscopy exhibited inflammation of neutrophils and histiocytes in the granulation tissue. The culture was positive on Sabouraud's dextrose agar medium, confirming its fungal origin. Aspergillosis was the commonest fungal infection.

Rhinosporidiosis was seen in fifth decade and in microscopic examination, showed many diagnostic globular sporangia containing numerous spores.

Out of 11 neoplastic lesions, there were 6 (54.5%) cases of benign tumours and 5 cases (45.5%) of malignant tumours.

## Table No. 2

**Table No- 2: Histopathological diagnosis of benign and malignant neoplastic lesions of nose and paranasal sinuses**

<b>Benign neoplastic lesions</b>	<b>no.</b>	<b>%</b>
Inverted papilloma	4	66.7
Angiofibroma	1	16.7
Capillary hemangioma	1	16.7
<b>Total</b>	<b>6</b>	<b>100.0</b>
<b>Malignant lesions</b>		
Squamous cell carcinoma	3	60.0
Primitive neuroectodermal tumour	1	20.0
Basal cell carcinoma	1	20.0
<b>Total</b>	<b>5</b>	<b>100.0</b>

Nasopharyngeal masses – The age of patients ranged from 1-10 y. Out of total 27 nasopharyngeal masses, there were 23 (85.2%) non-neoplastic and 4 (14.8%) neoplastic lesions. Among the 23 non-neoplastic lesions, majority comprised of 20 (86.9%) cases of adenotonsillar hypertrophy and only three case (13.1%) of inflammatory polyp. Out of 4 neoplastic lesions, there were two case each of adenocarcinoma and leiomyosarcoma. Microscopically, adenocarcinoma revealed a well differentiated seromucinous composition with tubulopapillary architecture. Leiomyosarcoma showed typical histomorphology.

## Discussion

Masses in nasal cavity, paranasal sinuses and nasopharynx form a heterogeneous group of lesions with a broad spectrum of histopathological features. A variety of these non-neoplastic and neoplastic lesions are quite impossible to differentiate clinically and they are mostly clinically diagnosed as nasal polyp [8]. They are frequently neglected by the clinicians as infective or allergic aetiology. Benign sinonasal disorders account for a major proportion of visits to hospital. The lack of differentiation of benign and malignant disorders at initial presentation leads to significant delay in the initial diagnosis and therapy.

In the present study, these masses had predilection for males demonstrating a male to female ratio of 1.6:1 similar to a study by Zafar et al., [1]. A Nigerian study revealed female preponderance with opposite M: F ratio of 1:1.2 [9]. The common presentation of sinonasal masses were rhinorrhea, headache, nasal obstruction comparing favorably with other studies [8–10].

Regarding age, current study revealed 2<sup>nd</sup> and 3<sup>rd</sup> decades of life were the most vulnerable period as observed by Bakari et al., [9] and Zafar et al., [1]. Malignant lesions have been generally reported in 6<sup>th</sup> - 7<sup>th</sup> decades in concordance with Patel et al., [11]. Non-neoplastic lesions made 82.2% of the total cases of nasal cavity and paranasal sinuses in our study.

Similarly a high proportion of non-neoplastic lesions are also reported in the study by Zafar et al., [1] revealing 89% of non-neoplastic lesions in their study.

Nasal polyps are the commonest lesion of nasal cavity. Its exact pathogenesis is not known but they have strong association with allergy, asthma, aspirin sensitivity and infection. Among, masses of nasal cavity and paranasal sinuses, the incidence of nasal polyp was 65.9% in concordance with Tondon et al., [6] (64%) and Dasgupta et al., [8] (62.5%).

Nasal papilloma is said to be a commonly occurring benign neoplastic lesion. We have observed four cases of inverted papilloma, forming 66.7% of all benign neoplastic masses, higher from findings of Humayun et al., [12] (33.33%). We have reported one cases of angiofibroma in adolescent males, presenting with profuse recurrent epistaxis as the chief complaint, comparable to the finding of three cases by Parajuli S et al., [13]. They are typical lesions reported in young people with histological findings of blood filled spaces separated by fibrous tissue. Capillary hemangiomas constituted 16.7% of benign neoplasms as observed 19.4% by Modh et al., [14]. These lesions presented as bleeding nasal polyps. This neoplasm has been regarded as a hamartoma or malformation rather than a true neoplasm.

Malignant lesions of sinonasal tract are rare. Squamous cell carcinoma is the commonest histological type. In our study, squamous cell carcinoma constituted 60% comparable to Modh et al., [14] and Panchal et al., [15]. Nasopharyngeal masses are not an uncommon entity. Such masses either arise from nasopharynx or from neuroectoderm or nose and paranasal sinuses and present as mass in nasopharynx.

Such patients present with nasal obstruction, mouth breathing, epistaxis and earache. In the present study, majority of nasopharyngeal masses were of adenotonsillar hypertrophy in contradiction to Biswas et al., [16] reporting antrochoanal polyp as the commonest nasopharyngeal masses although they have reported that in the patients of age group of 0-10 y, 86% cases were of adenotonsillar hypertrophy in concordance to present study with majority of cases in age group of less than 10y.

In the present study, various lesions were distributed into non-neoplastic and neoplastic lesions and compared with previous studies. A high incidence of malignant lesions was observed in our study.

Among non-neoplastic lesions, inflammatory polyp was the most common lesion. Among benign neoplastic lesions, inverted papilloma was the commonest one and squamous cell carcinoma was most common malignant lesion.

Surgical excision is the main modality of treatment in most of non-neoplastic and benign neoplastic masses and wide surgical excision, radiotherapy or chemotherapy in malignant masses. Regular follow up is necessary for early detection of recurrence or metastases.

## Conclusion

Masses of nasal cavity, paranasal sinuses and nasopharynx are a common problem in today's environment as diagnostic and therapeutic dilemma. Due to the overlapping presentation of lesions of this region with more commonly encountered inflammatory and infectious diseases, role of histopathological examination needs to be understood and is mandatory for proper and early treatment of the patient.

The purpose of present study is to present various differential diagnoses of sinonasal masses with their histopathological correlation.

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