

## Histopathological Study of Lesions of Nose and Paranasal Sinuses

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### Abstract

**Introduction:** 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 J.L.N.M.C.H Bhagalpur over the period of August 2021 to March 2022.

**Material and Methods:** This was a prospective study of 60 cases of space occupying lesions of nasal cavity, paranasal sinuses and nasopharynx over the period of 6 months. All tissues after fixation in 10% buffered formalin, processed and then stained with Hematoxylin & Eosin to study various histopathological patterns.

**Results:** Among 60 cases, 49 were non-neoplastic and 11 were neoplastic. The commonest site was NC, followed by PNS. They occur commonly in second and third decades with predominance in males. Amongst the non-inflammatory lesion, nasal polyp is the commonest lesion followed by rhinoscleroma and rhinosporidiosis. The common age group is second and third decades, with male predominance. Amongst benign neoplastic lesions capillary haemangioma was common followed by inverted papilloma.

**Keywords:** Nasal mass, histopathology, Paranasal Sinuses.

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### Introduction

Various pathologies ranging from benign lesions to malignant nasal tumor may mimic a simple nasal mass. It is impossible to determine clinically what pathology lies underneath. Therefore, nasal endoscopy and histopathology are employed conjointly to help us to reach the diagnosis. The histopathological examination of the removed tissue provides the actual diagnosis of the varied conditions labelled as a nasal mass. 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 rarely seen in Americans and Western Europeans. 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. 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 rarely seen in Americans and Western Europeans. 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, histopathology has become indispensable in the timely diagnosis and treatment of these lesions.

The aim of this prospective study was to categorize these lesions into non neoplastic and neoplastic and to study their clinical and histopathological patterns and to compare their incidences.

### **Materials and Methods**

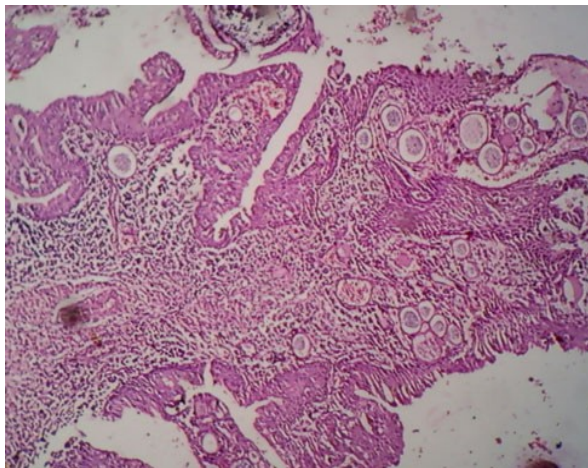
The prospective randomized study was conducted on 60 patients of nasal mass from the inpatient department of Otorhinolaryngology and department of Pathology, J.L.N.M..C.H BHAGALPUR.

Apart from routine work-up and investigations, CT scan nose and paranasal sinuses (axial and coronal cuts) or MRI nose and paranasal sinus (wherever required) was done. It helped to see the extent and type of pathology, expansion and destruction of sinuses and to look for the presence of any complications (orbital or intracranial extension). Functional endoscopic sinus surgery was done in all cases followed by histopathology of the removed tissue. 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.

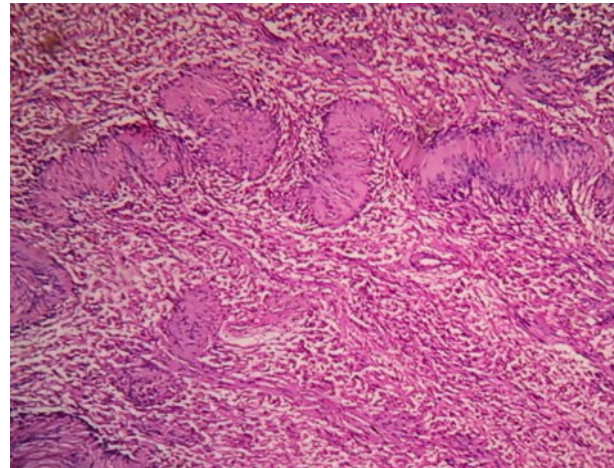
### **Observations**

A total of 100 cases of nasal mass were taken up for the study. The male to female ratio was 3:2. The mean age was 40.14 year.

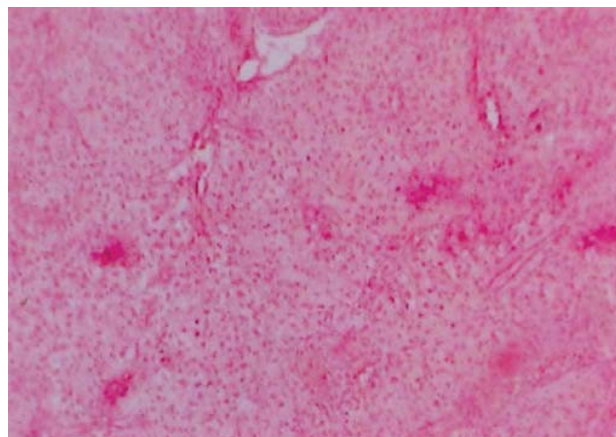
A diagnostic nasal endoscopy was performed on all patients before embarking on endoscopic sinus surgery. Clinically, most of our patients (72%) had ethmoidal polyps. Four percent were suspected to have an antrochoanal polyp and 14% presented with a nonspecific polypoidal nasal mass. Additional information acquired on endoscopy was the finding of cheesy debris in 31% of patients



**Figure 1: Microphotograph of rhinosporidiosis showing mature and immature sporangia with surrounding inflammatory cells (H&E 9400)**



**Figure 2: Microphotograph of schwannoma showing characteristic Verrocay bodies (H&E 9400)**



**Figure 3: HPE (10 × 10) showing angiofibroma with dense fibrous stroma with thin walled vessels**

**Table 1: Nasal endoscopic findings (At the time of surgery) (n = 60)**

Clinical findings	U/L		B/L		Total	% age
	Pts	% age	Pts	% age		
Ethmoidal polyp	16	30%	21	42%	37	61%
Maxillary polyp/mass	09	16%	—	—	11	16%
Posterior choanal polyp/mass	09	16%	01	02%	11	18%
Antrochoanal polyp	04	04%	—	—	04	04%
Cheesy debris	11	22%	04	09%	31	31%
Mucopurulent discharge	06	12%	04	04%	16	16%
Concha bullosa	02	04%	—	—	04	04%
Synechia	02	02%	02	02%	04	04%
Nonspecific nasal mass	07	14%	—	—	14	14%
Septal deviation	—	—	—	—	16	28%

**Table 2: Comparison of clinical and histopathological findings in patients included in our study (n = 60)**

Clinical diagnosis	No. of patients	Histopathology	No. of patients
		<i>Non-neoplastic (n = 49)</i>	
<b><i>Ethmoidal polyps</i></b>			
Allergic fungal polyp	12	Positive fungal hyphae	8 (38.10%)
		Eosinophil rich infiltrate	8
		Nonspecific/fungus negative	5
Nonspecific sinonasal polyps	30	Eosinophil rich infiltrate	14
		Nonspecific inflammatory	39 (71%)
		Other diagnosis (one inverted papilloma, two granulomatous TB)	2
Antrochoanal polyp	5	Nonspecific inflammatory	4 (100%)
Mucormycosis	4	Mucormycosis	4 (100%)
<b>Total consistent</b>			55 (65.48%)
		<i>Neoplastic lesions (n = 11)</i>	
<b><i>Benign</i></b>			
Inverted papilloma (Figs 1 and 2)	4	Inverted papilloma	3 (75%)
		Adenoid cystic carcinoma	1
Hemangioma	3	Hemangioma	3 (75%)
		Angioleiomyoma	1
Angiofibroma (Figs 3 and 4)	3	Angiofibroma	3 (100%)
<b><i>Malignant</i></b>			
Lymphoma	1	Lymphoma	2 (66.67%)
		Others (aspergillosis)	1
Nasal cavity carcinoma	1	Adenocarcinoma (Figs 5 and 6)	1 (50%)
		Rosai Dorfman disease	1
<b>Total consistent</b>			12 (75%)

## 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 1.98:1 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 81.6% of the total cases of nasal cavity, paranasal sinuses and nasopharynx 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%). In our study, five cases of fungal infection (5.49%) were seen in 3<sup>rd</sup> decade, comparable to Modh et al., [12]. During one year of study period, we found only one case of rhinosporodiosis (1.09%) similar to Pradhananga et al., [10] (0.69%). This is a chronic granulomatous lesion, caused by *rhinosporodiosis seeberi*. Nasal glioma is a congenital malformation of choristoma of mature glial tissue discontinuous with intracranial component and presents with respiratory abnormalities. It is a rare lesion, accounting for only one case, below one year of age, similar to as observed in a study from Nepal [13]. Rahbor et al., [14] observed in their review study of nine cases of nasal glioma that the mean age of presentation was nine months.

Nasal papilloma is said to be a commonly occurring benign neoplastic lesion. We have

observed five cases of inverted papilloma, forming 45.46% of all benign neoplastic masses, slightly higher from findings of Humayun et al., [15] (33.33%). We have reported two 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 18.18% of benign neoplasms as observed 19.4% by Modh et al., [12]. These lesions presented as bleeding nasal polyps. This neoplasm has been regarded as a hamartoma or malformation rather than a true neoplasm.

Schwannomas in the nasal cavity are rare. We encountered two cases both in females aged 15-27 y as observed by Modh et al., [12]. Histology revealed uniform spindle cells arranged in loose stroma (Antoni B) and palisading arrangement of nuclei (Verocay body).

Malignant lesions of sinonasal tract are rare [16]. Malignant polypoidal lesions masquerade as simple nasal polyps or chronic inflammatory masses, causing delay in the diagnosis. Squamous cell carcinoma is the commonest histological type [17]. In our study, squamous cell carcinoma constituted 46.15% comparable to modh et al., [12] and Panchal et al., [18]. It was more common in 6<sup>th</sup> and 7<sup>th</sup> decades of life as documented by Ghosh and Bhattacharya [19]. We encountered only one case of extramedullary plasmacytoma. They are uncommon tumours accounting for 1% of all head and neck tumours. Hemangiopericytoma is a rare angiogenic tumour constituting 7.69% of all malignant lesions which is slightly higher than that observed by Modh et al., (5%) [12]. In the present study, one case of non-Hodgkin's lymphoma was reported accounting for

7.69% of malignant tumours, confirmed by IHC. Olfactory neuroblastoma is a rare neuroectodermal tumour arising from olfactory sensory epithelium in upper nose. There was a single case of olfactory neuroblastoma in concordance with Parajuli S et al., [13] accounting for 7.69% of malignant tumours.

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., [20] 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 10 y.

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.

### Conclusion

Amongst the non-inflammatory lesion, nasal polyp is the commonest lesion followed by rhinoscleroma and rhino-

sporidiosis. The common age group is second and third decades, with male predominance.

Amongst benign neoplastic lesions capillary haemangioma was common followed by inverted papilloma. The common age group is second and third decades, with male predominance. Malignant lesions were comparatively less to that of benign lesions.

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