



## Clinico- pathological profile of Sinonasal masses in a tertiary care hospital

### KEYWORDS

Otorhinolaryngology, Polyp, Papilloma, Squamous cell carcinoma

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**ABSTRACT** A mass in nasal cavity is a condition commonly encountered by the otorhinolaryngologist. A diverse group of lesions may present themselves as such masses. **Aims & Objectives:** To classify various types of non-neoplastic and neoplastic lesions histopathologically presenting as sinonasal mass. **Methodology:** Three years retrospective study of cases present with sinonasal mass, followed by surgical intervention & histopathology report confirmation. **Results :** The study included 206 cases. 150 (72.81%) cases were non neoplastic lesions, inflammatory polyps being most common lesion. 47 cases (22.82%) were benign neoplastic 9 (4.37%) were malignant tumours. Capillary hemangioma was the most common benign neoplasm & squamous cell carcinoma was the most common malignant neoplasm, where as olfactory neuroblastoma, MFH, adenoid cystic carcinoma are the rare malignant tumors. **Conclusion:** We concluded that for proper evaluation of a sinonasal mass, clinical, radiologic, and histopathologic evaluation should be carried out conjointly in all the cases. Histopathology always gives a confirmatory diagnosis but in few cases immuno-histochemistry becomes the ultimate diagnostic technique for correct and timely intervention.

### INTRODUCTION:

Sino nasal masses are fairly common presentation in the Otorhinolaryngology outpatient department. **The presenting features of sinonasal masses are nasal obstruction, rhinorrhoea, blood stained nasal discharge, epistaxis, facial swelling, orbital symptoms,** (epiphora, proptosis, diplopia and visual disturbances) & ear symptoms. Facial swelling, pain headache and snoring with sleep apnoic spells are not infrequent findings in patients with massive sinonasal masses.

Nasal cavity contains different kinds of tissues such as the epithelial (squamous, neuroendocrine, and olfactory) and the mesenchymal (bone, cartilage, muscle, vascular) and all of these may carry the risk for a variety of tumoral differentiation. Despite the wide range of diversity, the incidence of the nasal tumors are as low as 1/100,000<sup>[1]</sup>. Primary nasal malignancies consist of 0.2% - 0.8% of all the malignant tumors and 3.6% of the malignant upper airway tumors<sup>[1]</sup>. **Careful clinicopathological workup aided by various imaging is essential for a correct diagnosis and timely intervention & to lessen the morbidity & mortality. Sinonasal masses can be divided into two main categories: Non-neoplastic and neoplastic, which in turn, further divided into benign and malignant.** The most common sinonasal masses are polyps which have a prevalence of 4% in general population.<sup>(2)</sup> They are frequently allergic or inflammatory in origin.

The purpose of this study was to classify various types of non-neoplastic and neoplastic lesions histopathologically presenting as sinonasal mass and provide a clinico-pathological profile of sinonasal masses in our tertiary care hospital.

### METHODOLOGY:

A study of retrospective nature was conducted by department of Otorhinolaryngology in collaboration with departments of Pathology & Radiology from September 2013 to August 2016. Inclusion criteria of our study was entirely based on clinical signs & symptoms, laboratory tests, radiological investigation & histopathology report confirmation. Detailed history was taken considering the patient's complaints, mainly nasal obstruction, mass in nose, epistaxis, rhinorrhea, hyposmia, deformity of nose & face. Clinical

examination was carried out as per the standard protocols. All patients were subjected to nasal endoscopy, computed tomography of paranasal sinuses preoperatively. All cases required surgical intervention & the mode of approach external or endoscopic was entirely based on the extent of the lesion documented on CT Scan & also on gross pathology.

### OBSERVATION:

The three year study period included total 206 cases, with an age range between 8 years & 76 years & sex ratio (male: female) 1.45 : 1. Most predominant age of involvement was third decade followed by fourth decade. (Table no 1).

Age (years)	Freequency(%)
<10	08 (3.88%)
11-20	34 (16.50%)
21-30	61 (29.61%)
31-40	47 (22.82%)
41-50	28 (13.59%)
51-60	19 (9.22%)
>60	09 (4.37%)
<b>Gender</b>	
Male	122 (59.22%)
Female	84 (40.78%)

**Table 1. age & gender-wise distribution of cases**

In the present study nasal obstruction was the most common symptom (96%), followed by rhinorrhea (52%) The appearance of nasal mass was polypoidal in 145 (70.38%) cases, fleshy in 38 (18.45%) cases, ulceroproliferative growth in 6 (2.92%) cases, where as 15 (7.28%) cases showed septal bulge. and 2 (0.97%) had lateral wall bulge.

Unilateral nasal masses were observed in 172 (83.5%) patients, while remaining patients had bilateral masses, all being ethmoidal allergic polyps. Among the non neoplastic masses 86 (57.33%) were multiple & 64 (42.67%) were single. All the neoplastic masses were found to be single.

Most common site of origin of nasal masses was middle meatus 138(67%).followed by lateral wall of the nose -52 (25.24%). Other rare site were roof of the nose 12(5.82%) & nasopharynx 4(1.94%).

All clinically diagnosed non neoplastic & benign neoplastic masses are removed by various surgical procedures, like polypectomy by evulsion in 68 cases(33%),Caldwell-Luc operation in 2cases, (0.97%),excision of masses in 42 cases,( 20.39%) & Functional endoscopic sinus surgery(FESS) in 86 cases(41.76%). Whereas the clinically suspected malignant lesions 8 (3.88) are biopsied.

Category	Lesions	No.of cases	Percent age
<b>Non neoplastic lesions (72.81%)</b>	Allergic polyps	84	40.71 %
	Inflammatory polyps	60	29.12%
	Rhinosporidiosis	06	2.91 %
<b>Benign neoplastic lesions (22.82%)</b>	Hemangioma	26	12.62 %
	Angiofibroma	08	3.89 %
	Inverted papilloma	12	5.82 %
	Schwannoma	01	0.49 %
<b>Malignant neoplastic lesions (4.37%)</b>	Squamous cell carcinoma	06	2.91 %
	Adenoid cystic carcinoma	01	0.49 %
	Olfactory neuroblastoma	01	0.49 %
	Malignant fibrous histiocytoma	01	0.49 %

**Table. 2. Non neoplastic & neoplastic lesions presented as sinonasal masses**

Histopathological examination revealed 84 cases(40.71%) of allergic polyps, 60cases (29.12%) of inflammatory(antrochoanal) polyps, .Rhinosporidiosis was the other non neoplastic lesion seen in 6 (2.91%) cases. Among benign neoplastic lesions hemangioma was the most common ,26 cases (12.62%) followed by inverted papilloma,12 cases (5.82%), angiofibroma in 8 cases.(3.89%) & one case of schwannoma (0.49%). The malignant neoplastic masses were squamous cell carcinoma 6 cases(2.91%), one (0.49%) each cases of olfactory neuroblastoma, adenoid cystic carcinoma & malignant fibrous histiocytoma.

#### DISCUSSION :

Sino nasal masses form a complex group of lesions with a wide spectrum of clinical & histopathological features. Total number of 206 cases are included in our study. Sinonasal mass had predilection for males, demonstrating a male to female ratio 1.45 : 1.,correlated with study of A.Lathi,et.al<sup>(3)</sup> (1.5:1) & Zafar et.al<sup>(4)</sup> (1.7:1). The age range of patients was from 8years to 76 years. In our study 3<sup>rd</sup> decade,followed by 4<sup>th</sup> decade is the most common age group for sino nasal masses. Similar study was observed by A.Lathi,et.al<sup>(3)</sup> and Zafar et.al<sup>(4)</sup>. Nasal obstruction (96%) is the most common clinical presentation,followed by rhinorrhoea (52%). This finding is more or less comparable with other studies,<sup>(3),(4),(6)</sup>

Polypoidal masses in nasal cavity form a complex group of lesions with a wide spectrum of histopathological features. In our study we observed high proportion of (72.81%) of non neoplastic lesion, which is comparable with the observation by A.Lathi et.al,<sup>(3)</sup> Zafer et.al<sup>(4)</sup>. Nasal polyp was the most common non-neoplastic mass and it was similarly documented by those authors. In our study 58% of nasal polyps were bilateral which is comparable with the study of Seema K. Modh et.al<sup>(7)</sup>

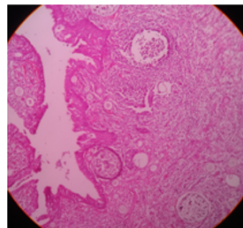
Rhinosporidiosis was the other non neoplastic nasal mass encountered in our study. We observed 6 cases of rhinosporidiosis, comprising 2.91% of total sinonasal masses.(Fig.1) This observation is matching with the studies of Seema K.Modh et. Al<sup>(7)</sup> (1.82%). whereas Bjerregaard et al<sup>(8)</sup> observed 3.3% cases of rhinosporidiosis in their study. In this study majority of patient with rhinosporidiosis gave the history of epistaxis, which was similar with study of Abu Hena Mohammad Parvez Humayun. et.al<sup>(9)</sup>. This chronic gra-

ulomatous disease caused by Rhinosporidiosis seeberi often present as polypoidal mass from nasal mucosa.

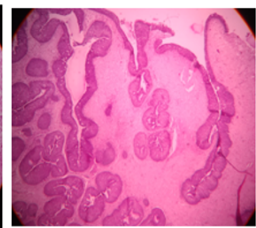
Benign neoplastic lesions constituted (n=47)22.82% of total sino nasal masses in our study.Hemangioma(n=26)was the predominant lesion comprising 55.3%. All cases were capillary hemangiomas. (Fig.3). Most of them (n=21) were found to be arising from Nasal septum. This finding corresponds to the observation of A.Lathi et.al,<sup>(3)</sup> & Pradhananga et.al<sup>(10)</sup>. Remaining cases of hemangioma (n=5) were arising from inferior turbinate.

We observed 12 cases of inverted papilloma comprising 5.82% of total sinonasal masses. & 25.5% of benign neoplastic lesions. This observation is slightly higher than the study of N. C. Lyngdoh et.al.<sup>(11)</sup> Inverted papilloma of the nose and paranasal sinuses is recognized as a neoplastic growth of the epithelium that inverts into the underlying stroma rather than proliferating outward from the surface. (Fig. 2) The neoplasm is characterized by its capacity to destroy, tendency to recur after removal and its association with malignancy<sup>(12)</sup>

**Fig.1.Rhinosporidiosis**



**Fig.2.Inverted papilloma.**



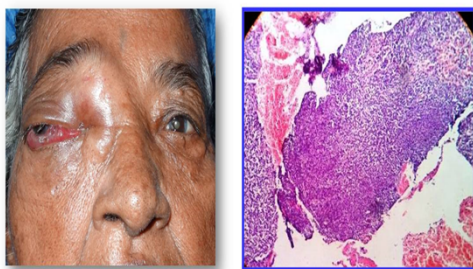
Angiofibroma (n=8) constituted 3.89% of total sinonasal masses in our study and occurred in age group of between 12 & 22 years. Histological sections from surgical specimen demonstrated variably dense fibro vascular Stroma containing numerous angular, irregularly shaped gaping vessels. The vessels are lined by thin endothelial cells and are supported by a collagenous stroma containing numerous spindle to stellate shaped fibroblasts.

Schwannomas of the Sino nasal tract are very infrequent, representing less than 4% of the schwannomas of the head and neck<sup>(13)</sup>We encountered one case of schwannoma,in a 37 years male patient. presented as mass in left nasal cavity. The mass was removed by endoscopy in pieces. Histopathological examination revealed classic features of schwannoma showing Antoni A and Antoni B areas with Verrocay bodies. The mitotic index was low (average of less than 1/10 HPF). Immunohistochemically, the tumor cells were strongly and diffusely positive for vimentin and S-100 staining

Among malignant neoplasms (n=9) squamous cell carcinoma (n=6) is the most common lesion in our study. Comparable findings were observed by Seema K.Modh et.al<sup>(7)</sup>The age of occurrence is between 50—70 years, with male to female ratio 2:1. This observation is matching with the study of Saurin Sanghvi et al<sup>(14)</sup>. All the tumours originated in the maxillary sinus.

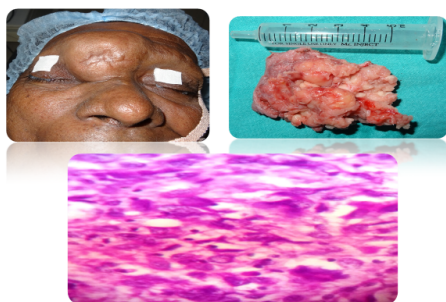
One case of adenoid cystic carcinoma is included in our study. A male person of 55years, presented with left nasal obstruction& facial pain. Endoscopic examination revealed pinkish polypoid mass arising from left middle meatus. CT scan revealed a heterogeneously enhancing infiltrative lesion occupying left maxillary sinus extending into middle meatus with erosion of sinus wall. Endoscopic biopsy was taken. The biopsy material was two grey white soft tissue bits each measuring 1x 0.8 x0.5 cm. H & E stained sections revealed proliferating basaloid neoplastic cells arranged in acinar & cribriform pattern. Mucoid & hyaline material stroma was seen in between cells. There was evidence of perineural invasion. IHC studies with PAS & Mucin were positive.

Fig.3. Olfactory neuroblastoma



Olfactory neuroblastoma is an uncommon malignant neoplasm, representing 2-3% of sinonasal tract malignancies. It is a malignant neuro ectodermal neoplasm arising from the olfactory neuro epithelium found in the upper 1/3 to 1/2 of the nasal septum, the cribriform plate and the superior medial surface of the superior turbinate.<sup>(15)</sup> We encountered one case of olfactory neuroblastoma in a 68 year old woman, who presented with swelling over medial side of right eye & mass in right nasal cavity.& visual symptoms. CT scan revealed a right paranasal sinus lesion occupying the right maxillary, ethmoidal region with intraorbital extensions. MRI revealed a right nasal mass with erosion of the medial orbital wall. Greyish red polypoidal mass was removed by external approach. Histopathological sections revealed cells are arranged in clusters separated by vascularised fibrous stroma ,clusters composed of uniform small round blue cells with round nuclei scanty cytoplasm, indistinct nuclear membrane present in a neuro fibrillary back ground. (Figure.3) IHC : positive for chromogranin, CD 56, S 100.

Fig.4.malignant fibrous histiocytoma



Malignant fibrous histiocytoma (MFH) is a pleomorphic sarcoma characterized by partial fibroblastic & histiocytic differentiation<sup>(16)</sup> Only .3%-10% of MFHs occur in head & neck region<sup>(17)</sup>, accounting for less than 0.5% of all head & neck malignancies. We encountered one such case in a 55 year old male person. The patient presented with swelling below right eyebrow, defective vision in right eye & dull aching pain in right fronto orbital region. (Figure. 4) Ultrasound showed a heterogeneously echogenic mass lesion in fronto ethmoidal region with mild vascularity. CT scan demonstrated enhanced soft tissue mass lesion of size 5cmx3.5cmx2.5cm with erosion of anterior & lateral wall of frontal sinus. Mass was removed by combined external frontoethmoidectomy & endonasal approach. Histopathology showed epithelioid/spindle cells having eosinophilic cytoplasm with hyperchromatic pleomorphic nucleus. These cells arranged in fascicles & storiform pattern. There were numerous multinucleated giant cells, increased mitosis & areas of necrosis.

#### CONCLUSION:

The presenting features of sinonasal lesions may be indistinguishable & therefore represent diagnostic & therapeutic dilemma. Correlation of clinical, radiologic & pathologic modalities is of utmost important for accurate diagnosis. A thorough histopathological evaluation is an essential part of workup of patients with sinonasal mass so that a correct & timely intervention can be made.

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