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**Dr. Dipti Khodabhai Zinzala**  
Post-Graduate Third Year  
Resident, Department of  
Pathology, BJ Medical Collage  
and Civil Hospital,  
Ahmedabad, Gujarat, India

**Dr. Hansa Goswami**  
Professor and Head,  
Department of Pathology, BJ  
Medical Collage and Civil  
Hospital, Ahmedabad,  
Gujarat, India

**Dr. Urvi Parikh**  
Assistant Professor,  
Department of Pathology, BJ  
Medical Collage and Civil  
Hospital, Ahmedabad,  
Gujarat, India

**Corresponding Author:**  
**Dr. Hansa Goswami**  
Professor and Head,  
Department of Pathology, BJ  
Medical Collage and Civil  
Hospital, Ahmedabad,  
Gujarat, India

## Histopathological study of sinonasal lesions over period of 12 months at tertiary care teaching hospital

**Dr. Dipti Khodabhai Zinzala, Dr. Hansa Goswami and Dr. Urvi Parikh**

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### Abstract

**Introduction:** Sinonasal lesions are commonly encountered in clinical practice and important from clinical and pathological perspectives as they have varieties of histological patterns. Aim is to find out frequency of inflammatory, benign and malignant conditions of sinonasal region and to compare it in relation to age and sex wise distribution.

**Methods:** The study was conducted at Histopathology department at tertiary care teaching hospital which involves total 106 specimens of sinonasal region received at histopathology department during period of 12 months from January 2021 to December 2021 which were then sectioned, processed and microscopic examination was done. Data analysis was done with Microsoft excel 2007.

**Results:** Out of 106 cases, 75% was male patients. Non-neoplastic was 90% followed by neoplastic lesions constituting 10% with benign 6% and malignant lesions constituting 4%.

**Conclusion:** On the basis of clinical picture various sinonasal lesions may mimic each other so histopathological diagnosis forms the mainstay of diagnosis in these lesions.

**Keywords:** Sinonasal lesions, histopathology, benign, malignant

### Introduction

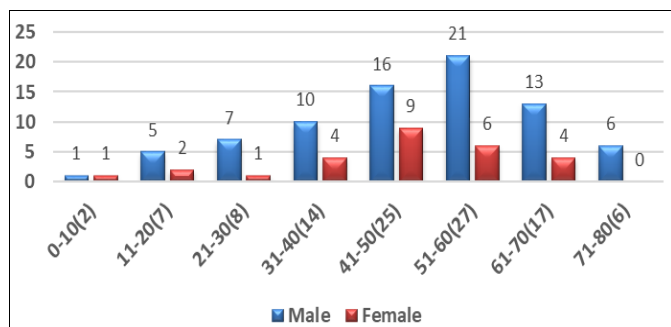
The nasal cavity, nasopharynx and paranasal sinuses form functional unit of nose <sup>[1]</sup>. The nasal cavity and paranasal sinuses are collectively referred as sinonasal tract. Sinonasal area is exposed to various infective agents, chemicals, antigens, mechanical and many other influences. These deleterious exposures lead to formation of tumour like and neoplastic conditions <sup>[2]</sup>. Most of these lesions in Otorhinolaryngology Department present as polypoid masses, making it difficult to distinguish benign from malignant lesion, clinically <sup>[3]</sup>. Benign tumours are relatively common, but malignant neoplasms are rare. Malignant tumours account for 0.2% to 0.8% of total malignancies and only 3% of all malignant tumours of upper aerodigestive tract <sup>[4]</sup>. These lesions vary widely depending on the age, occupation and addiction habits and other environmental factors related to the patients. Thus, they provide a challenging as well as interesting area for an in-depth study of these lesions <sup>[5]</sup>. These lesions vary widely depending on the age, occupation and addiction habits and other environmental factors related to the patients. Thus, they provide a challenging as well as interesting area for an in-depth study of the selections. Most of these patients present with complaints of nasal obstruction <sup>[6]</sup>. The presenting features and symptomatology and advanced imaging techniques help to reach a presumptive diagnosis but histopathological examination remains the mainstay of definitive diagnosis <sup>[7]</sup>. The present study was carried out to study the age and sex wise distribution of sinonasal lesions and to categorize them histopathologically.

### Materials and Methods

The study was conducted in the department of Histopathology at tertiary care teaching hospital over a period of 12 months from January 2021 to December 2021 retrospectively. Clinical data of patients were retrieved from histopathology requisition form/Laboratory Information System whose sinonasal lesion biopsy/surgical specimen were received. All the specimens were fixed in 10% formalin for 24 hours, processed in automated tissue processor, embedded in paraffin, sectioned at 5 $\mu$  and stained with hematoxylin and eosin. Special stains were used wherever required. Detailed microscopic study was done and then the final diagnosis was given. Data compilation and analysis was done with Microsoft excel 2007.

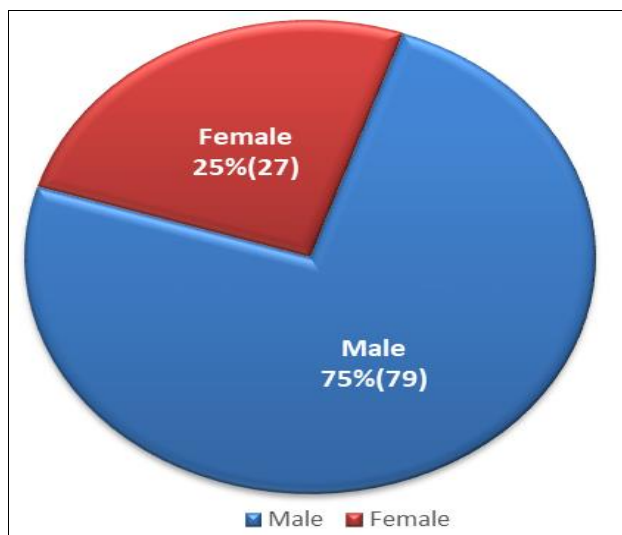
**Results**

The present study was conducted for period of 12 months in Department of Pathology at tertiary care teaching hospital with following observations in 106 cases.



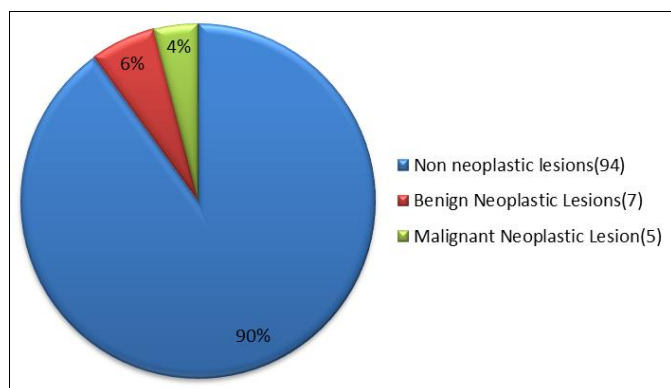
**Fig 1:** Distribution of patients according to age

In the present study age of the patients ranged from 0-80 years. Maximum number of cases (25.47%) was seen in the 6<sup>th</sup> decade followed by (23.58%) 5<sup>th</sup> decade. (Figure 1).



**Fig 2:** Gender Wise Distribution of cases

A male predominance was seen in the present study with 75% being males with male to female ratio was 3:1 (figure 2).



**Fig 3:** Distributions of Cases according to type of lesion

The present study was included total 106 cases of sinonasal lesions. Out of these, 90% were non neoplastic and 10% neoplastic lesions, out of which and 6% was benign 4% malignant lesions. (Figure 3).

**Table 1:** Distribution of various sinonasal lesions in males and females

Histopathological Diagnosis	Male	Female	Total	Percentage
Non-Neoplastic Lesion	68	26	94	88.7%
Angiomatous polyp	1	0	1	0.94%
Inflammatory polyp	3	1	4	3.77%
Nonspecific Inflammation	25	6	31	29.24%
Fungal Infection	39	18	57	53.76%
Rhino sclerosis	0	1	1	0.94%
Neoplastic Benign Lesions	6	1	7	6.6%
Angiofibroma	4	0	4	3.77%
Fibrous Dysplasia	1	0	1	0.94%
Inverted papilloma	1	0	1	0.94%
Nasal Encephalocele	0	1	1	0.94%
Malignant Neoplastic Lesions	5	0	5	4.7%
Nasal Glioma	1	0	1	0.94%
Sin-nasal keratinizing Squamous Cell Carcinoma	1	0	1	0.94%
Sino-nasal Teratocarcinoma	1	0	1	0.94%
Sinonasal Undifferentiated anaplastic carcinoma	1	0	1	0.94%
Undifferentiated carcinoma	1	0	1	0.94%
<b>Total</b>	<b>79(75%)</b>	<b>27(25%)</b>	<b>106</b>	<b>100%</b>

Among 94 cases of non-neoplastic sinonasal lesions, fungal infection due to Mucormycosis was the most common comprising 57(53.76%) cases in which all the cases were having history of COVID-19 virus infection., followed by 31(29.24%) cases with diagnosis of nonspecific inflammation. Maximum numbers of Mucormycosis infection seen in age group of 51-60 years with 17 cases, followed by 15 cases in 41-50 years age group. Out of total 57 cases of Mucormycosis infection, 39 were male patients and 18 were female patients. Other non-neoplastic lesions include single (0.94%) case of Angiomatous polyp, 4(3.77%) cases of inflammatory polyp and 1(0.94%) case of Rhino sclerosis. (Table 1)

Out of total 7 cases of benign lesions, 4(3.77%) cases were Angiofibroma with single cases of Inverted Papilloma (0.94%) and Nasal Encephalocele (0.94%). Out of 4 cases of Angiofibroma, 3 cases were in age group of 11-20 years of age. (Table 1)

In total 5 cases of malignant lesions, single cases of Sino-nasal keratinizing Squamous Cell Carcinoma (0.94%), Sino-nasal Teratocarcinoma (0.94%), Sinonasal Undifferentiated anaplastic carcinoma (0.94%), Nasal Glioma (0.94%) and a case of Undifferentiated carcinoma (0.94%). This entire malignant lesion was seen in age group of 31-70 years of age. (Table 1)

**Discussion**

**Table 2:** Comparison of gender wise distribution and male to female ratio of present study with other studies.

Study	Male	Female	No. Of Cases	Male to Female Ratio
Vijaya v mysorekar <i>et al.</i>	85	60	145	1.42:1
T. Dinesh singh <i>et al.</i>	20	15	35	1.33:1
S. R. Dafale <i>et al.</i>	45	25	70	1.8:1
Harshad's study	35	17	52	2.06:1
Present study	79	27	106	3:1

Studies conducted by Vijaya v mysorekar *et al.* [8], T. Dinesh singh *et al.* [9] and S. R. Dafale *et al.* [10] reported

male to female ratio almost similar while Harshad's study [11] reported male to female ratio of 2.06:1 which were also in accordance with the present study having male predominance with a male to female ratio of 3:1 (Table 2).

**Table 3:** Comparison of age wise distribution of nasal lesions in the present study with other studies.

Age in years	Vijaya v Mysorekar <i>et al.</i>	T. Dinesh singh <i>et al.</i>	Parajuli & Tuladhar's study	Present Study
0-10	06(4.13%)	02(5.71%)	21(14.18%)	2(1.88%)
11-20	41(28.27%)	12(34.28%)	37(25%)	7(6.6%)
21-30	27(18.62%)	10(28.57%)	35(23.64%)	8(7.54%)
31-40	25(17.24%)	05(14.28%)	22(14.86%)	14(13.2%)
41-50	21(14.48%)	04(11.42%)	18(12.16%)	25(23.58%)
51-60	17(11.72%)	02(5.71%)	09(6.08%)	27(25.47%)
61-70	07(4.82%)	0(0%)	06(4.05%)	17(16.03%)
71-80	01(0.68%)	0(0%)		06(5.67%)
Total	145	45	148	106

Studies were done by Vijaya v mysorekar *et al.* [8], T. Dinesh singh *et al.* [9] and Parajuli and Tuladhar's [12] in which maximum patients were seen in age groups of 11-20 years. In the present study, the majority of the patients were in the age group of 51-60 years(25.47%), closely followed by 41-50 years (23.58%) which was slightly differed from above studies. This can be explained by maximum number of cases in our study are consisting of fungal infection resulted from COVID 19 pandemic. (Table 3).

**Table 4:** Comparison of numbers of neoplastic and non-neoplastic lesions of nasal lesions in the present study with other studies.

Study	Dasgupta <i>et al.</i>	Khan <i>et al.</i>	Kulkarni <i>et al.</i>	Mane <i>et al.</i>	Present Study
Non-neoplastic lesions	50.71%	60%	86%	83.33%	90%
Neoplastic lesions	49.30%	40%	14%	16.67%	10%

Studies done by Dasgupta *et al.* [13] and Khan *et al.* [14] have shown number of neoplastic and non-neoplastic lesions being almost equal. While in our study, highest Cases (90%) are of non-neoplastic lesions, which is almost similar with studies done by Kulkarni *et al.* [15] and Mane *et al.* [16]. Possible reason for this much difference in number of neoplastic and non-neoplastic reason in our study is that we are having Gujarat cancer research Institute in same campus. (table 4).

**Table 5:** Comparison of numbers of Mucormycosis cases in the present study with other studies

Study	Vijaya v Mysorekar <i>et al.</i>	S. R. Dafale <i>et al.</i>	Chopra H <i>et al.</i>	T. Dinesh Singh <i>et al.</i>	Present study
Mucormycosis cases	1.96%	3.23%	4.76%	00.00%	51.88%

Proportion of fungal infection cases with Mucormycosis were compared to studies done by Vijaya v Mysorekar *et al.* [8], T. Dinesh singh *et al.* [9], S. R. Dafale *et al.* [10] and Chopra H *et al.* [17] which was much lower in compare to our study. This is may be due to COVID-19 pandemic which is being risk factor for increased in number of cases with Mucormycosis infection. (table 5).

## Conclusion

During the present study, it was evident that number of fungal infection particularly with Mucormycosis was almost half of total number of cases which is due to COVID-19 pandemic. Sino-nasal lesions comprise of wide spectrum of lesions but their presenting clinical manifestations are very limited. Hence, on the basis of clinical picture various non neoplastic, benign and malignant lesions may mimic each other. Histopathological diagnosis thus forms the mainstay of diagnosis in these lesions.

## Conflict of Interest

Not available

## Financial Support

Not available

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