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**Original Research Article**

# A study of clinical and histopathological correlation of sinonasal masses

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## ABSTRACT

**Background:** Nasal masses are finding in an ENT (Ear, nose, throat) outpatient department. Most patient present with complaints of nasal obstruction. Other symptoms are nasal discharge, epistaxis and disturbances of smell. Sinonasal mass may be neoplastic (benign or malignant) or non-neoplastic (congenital, inflammatory) in nature. It is difficult to determine actual pathology underneath every nasal masses so, histopathological evaluation is mandatory for definitive diagnosis.
**Methods:** The present study is prospective observational study of symptomatology, demographic profile and histopathological correlation of sinonasal masses in samplw size 80, these are the total number of patients presenting at tertiary health care centre from 1st Jan 2019 to 30th June 2020 (18 months) the study include, patients of any age and sex presenting with nasal symptoms
**Results:** Majority of patients with sinonasal masses where in the age group 2nd decade. Male female ratio was 1.28:1. Nasal obstruction was the most common presentation. Most common non neoplastic lesion was ethmoidal polyposis and most common benign lesion was hemangioma. Most common malignant lesion was squamous cell carcinoma.
**Conclusions:** Presenting features of all sinonasal masses may be indistinguishable and post diagnostic dilemma. Correlation of clinical and histo-pathological modalities is of utmost importance for accurate diagnosis

**Keywords:** Sinonasal mass, Nasal obstruction, Polyp, Squamous cell carcinoma

## INTRODUCTION

The nose is most important part of face with substantial, aesthetic and functional significance. Anatomy comical location of the nose and its passage have been regarded as direct avenue to the brain, man's source of intelligence and spirituality.

Nasal masses are finding in an ENT outpatient department. Most patient present with complaints of nasal obstarction.[1] Other symptoms are nasal discharge, epistaxis and disturbances of smell. A sinonasl mass can have various differential diagnosis. They may be non-neoplastic or neoplastic (benign or malignant). It is difficult to determine actual pathology underneath every nasal masses so, histopathological evaluation is mandatory for definitive diagnosis and histopathology is regarded as gold standard in the diagnosis every nasal mass.

Aim of our study is to study demographic profile of sinonasal masses, to study symptomatology of sinonasal masses and to study the histopathological presentation of sinonasal masses.

## METHODS

This is prospective observational study of the symptomatology, demographic profile and histopathological correlation of sinonasal mass in patients

presenting at our tertiary care centre. Sample size 80, these are the total number of patient of all age groups attending ENT outpatient department and casualty with various sinonasal masses during the period from 1st Jan 2019 to 30th June 2020 were included.

Patients with septal abscess, septal hematoma and vestibulitis were excluded.

Detail history of all patients were taken and a thorough clinical examination was performed and findings were confirmed with diagnostic nasal endoscopy. After that all patients were subjected to computed tomography of paranasal sinuses plain and contrast done if required.

After getting primary diagnosis patients were subjected for different operative procedure and specimen sent for histopathological examination and final diagnosis confirmed and report was correlated with clinical diagnosis. Ethical approval was obtained from institutional ethical committee of the medical college. Data was analyzed using Microsoft office excel.

## RESULTS

In our study out of 80 patients with sinonasal masses maximum number of patients were from 2nd and 3rd decade i.e., 23 (28.75%) patients and 21 (26.25%) patients respectively. Minimum number of patients were from 1stdecade with 4 (5%) patients. Youngest patient was 6-year-old male child and oldest patient was 79-year-old male. Mean age of presentation was 32.3±18.7 year. Non-neoplastic sinonasal masses were most common in 2nd decade with 20 (25%) patients. And least common in 5th decade with 3 (3.8%) patients. Benign neoplastic sinonasal masses were most common in the 3rd decade with the 4 (5%) patients shown in the Table 1.

In our study of 80 patients, sinonasal masses were most commonly seen in male i.e., 45 (56.25%). It shows male preponderance with male: female ratio 1.2:1 Non neoplastic sinonasal masses were most commonly seen in male i.e., 34 (42.50%) with male: female ratio 1.36:1. Benign sinonasal masses were most commonly seen in female i.e., 8 (10%) with male: female ratio 0.7:1. Malignant sinonasal masses were most commonly seen in male i.e., 7 (8.75%) with male: female ratio 2.5:1 (Table 2).

In our study out of 80 patients of sinonasal masses, majority of patients were farmer i.e., 33 (41.25%) by occupation.

In our study of sinonasal masses, most common presenting symptoms was nasal obstruction in 73 patients i.e., (81.25%). Nasal discharge was 2nd most common presenting symptom in seventy patients i.e., (87.50%) shown in the Table 3.

In our study, most common sinonasal mass was ethmoidal polyposis in twenty-eight patients i.e., (35.00%) followed by antrochonal polyp in twenty-five patients i.e., (31.25%). Least common sinonasal mass was nasolabial cyst in one patient i.e., (1.25%) shown in the Table 4.

In our study of sinonasal masses, non-neoplastic sinonasal masses (73.75%) were most common than neoplastic sinonasal masses (26.25%).

Out of fifty-nine patients having non neoplastic sinonasal masses, most common mas was ethmoidal polyposis i.e., 26 (44.07%) followed by antrochonal polyp 25 (42.37%). Least common non neoplastic masses were rhinosporidiosis, granulomatous diseases and nasolabial cyst in one patient each (1.25%) shown in the Table 5.

Out of fourteen patients with benign sinonasal masses most common was hemangioma in 9 (64.3%) followed by inverted papilloma in 3 (21.4%) patients. Least common benign sinonasal mass was angiofibroma in 2 (14.3%) patients shown in the Figure 1.

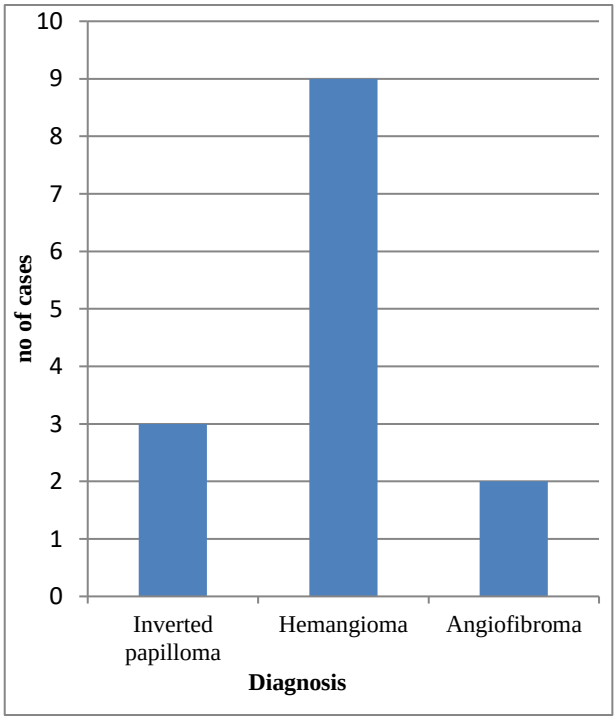


**Figure 1: Distribution of patients having benign sinonasal masses, (n=14).**

Out of 7 malignant sinonasal masses most common malignant mass was squamous cell carcinoma in 4 (57.1%), followed by anaplastic carcinoma in 2 (28.6%) patients. Least common malignant sinonasal mass was olfactory neuroblastoma in 1 (14.3%) patient (Figure 2 and 3).

Table shows clinical diagnosis differ from histo-pathological diagnosis in 6 patients. Among 6 patients, 2 patients were clinically diagnosed as ethmoidalpolyposis were histopathologicaly diagnosed as rhinosporidioses and hemangioma. The 2 patients were clinically diagnosed as inverted papilloma were histopathologicaly diagnosed as granulomatous disease and olfactory neuroblastoma. One patient with hemangioma histopathologicaly diagnosed as anaplastic carcinoma.1 patient with squamous cell carcinoma histopathologicaly diagnosed as anaplastic carcinoma (Table 6).

Thus, out of 80 patients of sinonasal masses 74 (92.5%) patients shows clinical and histopathological correlation (Table 7).

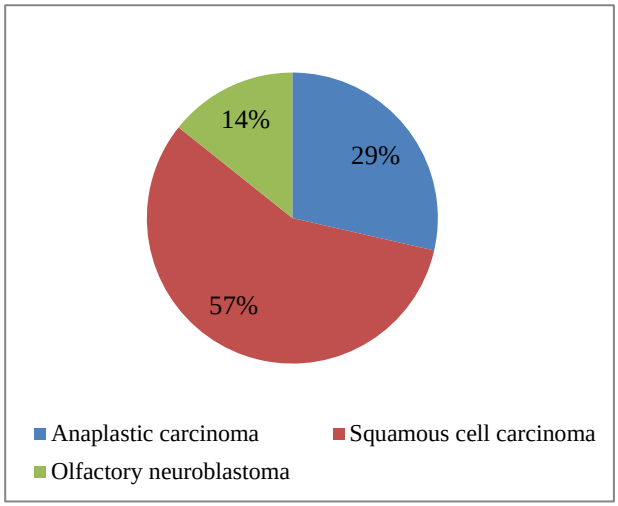


**Figure 2: Distribution of patients having malignant sinonasal masses.**

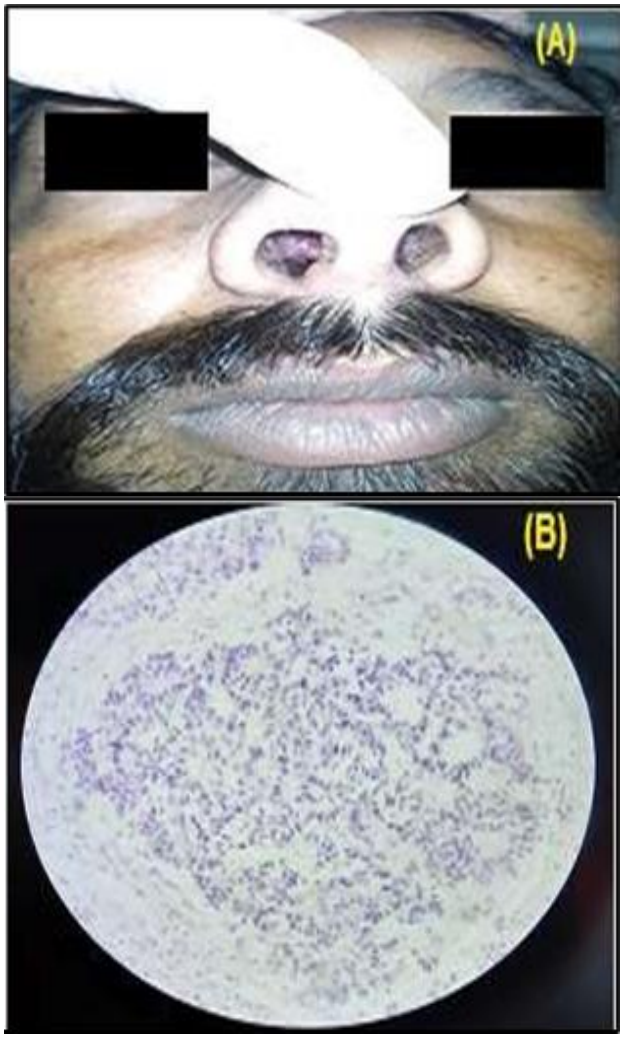


**Figure 3 (A and B): Clinical and histopathology of olfactory neuroblastoma.**

**Table 1: Age wise distribution of patients having sinonasal masses, n=80.**

| Age group (Years) | Non-neoplastic mass | | Neoplastic mass | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | Mass | % | Benign | % | Malignant | % | N | % |
| **<10** | 4 | 5.0 | 0 | 0.0 | 0 | 0.0 | 4 | 5 |
| **11-20** | 20 | 25.0 | 3 | 3.8 | 0 | 0.0 | 23 | 28.75 |
| **21-30** | 16 | 20.0 | 4 | 5.0 | 1 | 1.3 | 21 | 26.25 |
| **31-40** | 6 | 7.5 | 1 | 1.3 | 0 | 0.0 | 7 | 8.75 |
| **41-50** | 3 | 3.8 | 3 | 3.8 | 2 | 2.5 | 8 | 10 |
| **51-60** | 6 | 7.5 | 1 | 1.3 | 3 | 3.8 | 10 | 12.5 |
| **Above 61** | 4 | 5.0 | 2 | 2.5 | 1 | 1.3 | 7 | 8.75 |
| **Total** | 59 | 73.8 | 14 | 17.5 | 7 | 8.8 | 80 | 100 |
| **Mean ± SD** | 29.01±17.75 | | 37.14±19.02 | | 50.28±40.91 | | 32.3±18.7 | |

**Table 2: Gender wise distribution of patients having sinonasal masses, (n=80).**

| Gender | Non -neoplasticmass | | Neoplastic mass | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | Mass | % | Benign | % | Malignant | % | N | % |
| **Male** | 34 | 42.5 | 6 | 7.5 | 5 | 6.3 | 45 | 56.25 |
| **Female** | 25 | 31.3 | 8 | 10.0 | 2 | 2.5 | 35 | 43.75 |
| **Total** | 59 | 73.75 | 14 | 17.5 | 7 | 8.75 | 80 | 100 |
| **Male: Female** | 1.36:1 | | 0.7:1 | | 2.5:1 | | 1.28:1 | |

**Table 3: Symptomatology of patients having sinonasal masses.**

| Symptoms | N | Percentages (%) |
|---|---|---|
| **Nasal obstruction** | 73 | 91.25 |
| **Nasal discharge** | 70 | 87.50 |
| **Nasal bleeding** | 34 | 42.50 |
| **Nasal mass** | 69 | 86.25 |
| **Nasal pain** | 41 | 51.25 |
| **Headache** | 54 | 67.50 |
| **Mouth breathing** | 3 | 3.75 |
| **Facial swelling** | 2 | 2.50 |
| **Occular symptom** | 5 | 6.25 |

**Table 4: Distribution of clinical diagnosis of patients having sinonasal masses, (n=80).**

| Diagnosis | N | Percentage (%) |
|---|---|---|
| **Antrochoanal polyp** | 25 | 31.25 |
| **Ethmoidal polyposis** | 28 | 35 |
| **Mucormycosis** | 3 | 3.75 |
| **Nasolabial cyst** | 1 | 1.25 |
| **Inverted papilloma** | 5 | 6.25 |
| **Dentigerous cyst** | 2 | 2.5 |
| **Angiofibroma** | 2 | 2.5 |
| **Hemangioma** | 9 | 11.25 |
| **Squamous cell carcinoma** | 5 | 6.25 |
| **Total** | 80 | 100 |

**Table 5: Distribution of patients with non-neoplastic sinonasal mass, (n=59).**

| Diagnosis | N | Percentage (%) |
|---|---|---|
| **Ethmoidal polyposis** | 26 | 44.07 |
| **Antrochoanal polyp** | 25 | 42.37 |
| **Mucormycosis** | 3 | 5.08 |
| **Rhinosporidiosis** | 1 | 1.69 |
| **Granulomatous disease** | 1 | 1.69 |
| **Nasolabial cyst** | 1 | 1.69 |
| **Dentigerous cyst** | 2 | 3.39 |
| **Total** | 59 | 100 |

**Table 6: Patient with sinonasal masses showing difference in clinical and histopathological diagnosis.**

| Clinical diagnosis | N | Histopathological diagnosis |
|---|---|---|
| **Ethmoidal polyposis** | 02 | Rhinosporidiosis |
| | | Hemangioma |
| **Inverted papiloma** | 02 | Granulomatous disease |
| | | Olfactory neuroblastoma |
| **Hemangioma** | 01 | Anaplastic carcinoma |
| **Squamous cell carcinoma** | 01 | Anaplastic carcinoma |
| **Total** | 06 | |

**Table 7: Correlation of clinical and histopathological diagnosis, (n=80).**

| Diagnosis | N | Percentage (%) |
|---|---|---|
| **Correlated diagnosis** | 74 | 92.5 |
| **Noncorrelated diagnosis** | 6 | 7.5 |
| **Total** | 80 | 100 |

## DISCUSSION

In present study most common age group having sinonasal masses was 2nd decade (28.75%), which is similar with study done by lathi et.al.[2] (21.4%). In present study non neoplastic sinonasal masses were most commonly seen in 2nd decade (20%), which is similar to study done by Lathi et al (18.75%). In present study benign sinonasal masses were most commonly seen in 3rd decade (5%) which is similar with study done by Alpesh et al (08.57%).[2,3] In present study malignant masses were most commonly seen after 5th decade which is similar with study done by Lathi et al.[2]

In present study mean age of patients having sinonasal masses was 32.3 years it is similar with study done by Dimple et al and Rajat et al with mean age 32.67 and 31.5 years respectively and not similar with study done by Bit et al with mean age 39.4 years.[4-6] This might be due to geographical variations.

In present study the patients of sinonasal masses shows male preponderance with M:F ration 1.28:1 which is similar with study done by Lathi et al, Agarwal et al and Zafar et al with male female ratio 1.5:1, 1.2:1 and 1.7:1 respectively. And not similar with study done by Bakari et al.[2,4,8]

In present study, most common patients presented with sinonasal masses were farmer (41.25%) by occupation. Which is similar with study done by Lathi et al (40.20%) and not similar with study done by Dimple et al and Rajat et al.[5,6]

In present study, patients having sinonasal masses most common presenting symptoms were nasal obstruction (91.25%) and nasal discharge (87.50%) which is similar with study done by Khan et al, Richa et al, Agarwal and Vikas et al.[9-12]

In present study the non-neoplastic sinonasal masses (73.75%) more than neoplastic sinonasal masses are similar with study done by Agarwal et al (59%), Bist et al (60%) and Khan et al (60%) respectively.[4,6,11]

In present study, most common non-neoplastic sinonasal mass was ethmoidal polyposis (44.07%) which is similar with study done by Lathi et al (62.5%), Anjali et al (67.3%), Khan et al (83.33%) and Agarwal et al (24.7%).[2,4,9,11,13]

In present study, most common malignant sinonasal mass

was squamous cell carcinoma in 57.1% which is similar with study done by Lathi et al (92.3%), Agarwal et al (43.75%), Anjali et al (36.6%) and Khan et al (37.50%) respectively.[2,9,11,13] Least common malignant sinonasal mass was olfactory neuroblastoma in 14.3% which is similar with study done by Khan et al (4%).[11]

The present study shows correlation of clinical and histopathological diagnosis in (92.50 %) patients which is similar with study done by Gupta et al (96.00%), Sahni et al (94.67%), Kale et al (99.70%) and Diamontopoulus et al (98.90%).[5,10,14,15] And not similar with study done by Abdul-Karim et al where correlation was 88.90% which is less than present study this might be due to sample size.[16]

## CONCLUSION

The presenting feature of all sinonasal masses may be indistinguishable and therefore represent diagnostic and therapeutic dilemma. Similarity of benign and malignant masses at initial presentation may lead to a significant delay in diagnosis. Correlation of clinical and histopathological modalities is of utmost important for accurate diagnosis and further management. These modalities are complimentary to each other but histopathological examination remains the gold standard for diagnosis.

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