

CLINICOPATHOLOGICAL SPECTRUM OF TUMORS OF THE NASAL CAVITY
AND PARANASAL SINUSES

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Abstract

Background: Tumors of nasal cavity and paranasal sinuses constitute for 0.5% of all the malignant tumors. Clinical findings are deceptive overlapping between benign tumors malignant tumors and chronic inflammatory processes lead to poorer care and prognosis of the patients. Advanced imaging technologies can give an accurate presumptive diagnosis but a proper histopathological report is necessary to ascertain the same.

Objectives: Classify nasal and paranasal sinus masses histopathologically as benign or malignant and with a clinico-pathological profile of sinonasal lesions in a tertiary care hospital.

Materials and Methods: A total of 54 surgical resected specimens of nasal and paranasal air sinuses were examined at the histopathology section of Department of Pathology, Karnataka Institute of Medical Sciences, Hubli, from 2004-2006 and classify nasal and paranasal sinus masses histopathologically as benign or malignant and with a clinico-pathological profile of sinonasal lesions.

Results: 54 specimens were examined over a period of 18 months with 28 cases (51.85%) being malignant. Age group of 31-40 accounted for majority of cases (24.074%) with male preponderance (64.81%). Nasal obstruction was the commonest symptom (29.23%). Nasal cavity was the commonest site of neoplasm (59.29%). Sinonasal papilloma was the commonest benign neoplasm (57.692%) and squamous cell carcinoma was the commonest malignant neoplasm (39.286%).

Conclusion: Clinical spectrum of nasal and paranasal tumors shows a big overlap with benign and malignant lesions. Hence, a detailed histopathological examination is needed to ascertain the diagnosis to reduce the burden on the patient and the healthcare system.

Keywords: Histopathology, Nasal cavity, Paranasal sinuses.

Introduction

The tumors of the nose and the paranasal air sinuses account of only 3% of the head and neck carcinomas and about 0.5% of all the malignant diseases¹.

In general these tumors produce similar clinical findings. Except for unilaterality, these findings are indistinguishable from those of chronic inflammatory process. In addition, a number of deceptively benign appearing tumors behave as aggressive or malignant lesions².

Cancer arising in these sites is highly lethal characterized by an insidious onset, protracted clinical course, and a resistance to most forms of therapy. The general unsatisfactory response to treatment can be attributed to a number of factors including

1. The advanced stage of disease at the time of diagnosis.
2. The complex anatomy of the region involved.
3. The reluctance of many surgeons and radiologists to pursue aggressive treatment methods that is prone to result in mutilation, prolonged morbidity and dysfunction³.

Advanced imaging techniques like Computerised Tomography (CT) and Magnetic Resonance Imaging (MRI) can help us reach a presumptive diagnosis; however, a careful histopathological examination is necessary to ascertain the nature of the specific lesion. Thus, a detailed clinical history, clinical examination, proper imaging, and most importantly thorough histopathological examination are the essential components of work-up for a necessary and timely intervention^{3,4}. The purpose of this prospective study was to classify nasal and paranasal sinus masses histopathologically as benign or malignant and provide for a clinico-pathological profile of sinonasal lesions in a tertiary care hospital.

MATERIALS AND METHODS

In the present study surgically resected specimens received at the histopathology section of Department of Pathology, Karnataka Institute of Medical Sciences, Hubli during the tenure of 2004-2006 were examined. During the study period, tumors of nasal and paranasal sinus accounted for 0.578% of total surgical specimens which included 54 specimens from the nose and paranasal sinus.

Prior permission from the institutional ethics committee was taken to conduct the study.

Detailed clinical history, occupational history and personal habits were documented.

Thorough gross examination of each specimen was carried out and several representative areas of tissue were processed and embedded in paraffin. The sections of 3-5µm thickness were prepared and stained routinely by Hematoxylin and Eosin. The tumors were classified according to WHO and observation was compared to other studies.

RESULTS

In the present study total 54 specimens were examined over a period of 18 months. We reported 28 cases (51.85%) cases of malignant tumors and 26 (48.14%) cases of benign tumors.

The age of patients ranged from 7-85 years with a mean age of 41-61 years. Majority of patients were in the age group of 31-40 years; followed by 21-30 years and 51-60 years.

There was male preponderance accounting for 35 (64.81%) of total 54 cases forming male to female ratio of 1.8:1 (Table-1)(Figure 1).

Table 1: Age and sex incidence of the tumors of the nasal cavity and paranasal sinuses.

Age	Male	%	Female	%	Total	%
0-10	1	1.852	-	-	1	1.852
11-20	4	7.407	2	3.704	6	11.111
21-30	5	9.259	6	11.111	11	20.370
31-40	9	16.667	4	7.407	13	24.074
41-50	3	5.556	3	5.556	6	11.111
51-60	8	14.815	2	3.704	10	18.519
61-70	5	9.259	1	1.852	6	11.111
71-80	-	-	-	-	-	-
81-90	-	-	1	1.852	1	1.852
Total	35	64.815	19	35.185	54	100

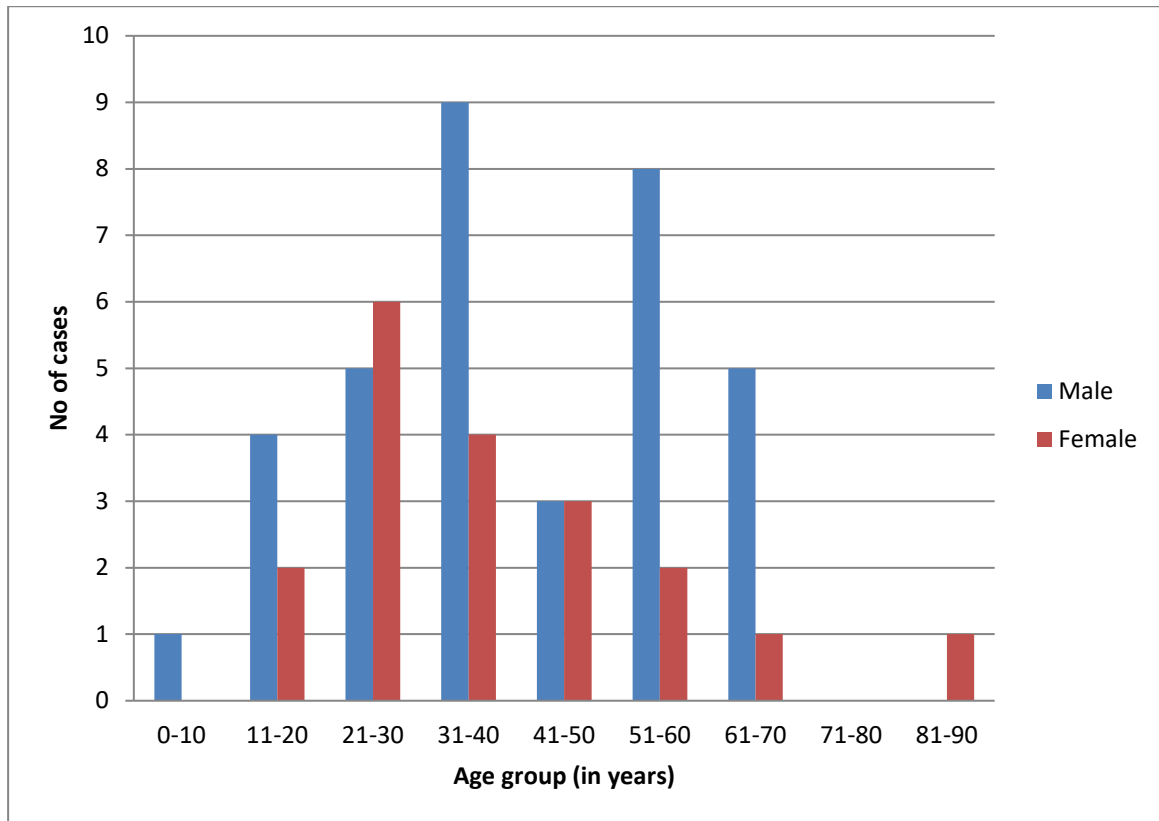


Figure 1: Age and sex incidence of the tumors of the nasal cavity and paranasal sinuses.

Most common symptom in both benign and malignant category was nasal obstruction seen in 38 cases (29.23%) followed by nasal discharge in 23 cases (17.692%) (Table-2) (Figure-2).

Table 2: Tumors of nasal cavity and paranasal sinuses symptomatology.

Symptoms	Benign	%	Malignant	%	Total	%
Nasal obstruction	17	13.077	21	16.154	38	29.231
Swelling (Cheek/ Facial)	-	-	9	6.923	9	6.923
Nasal discharge	15	11.539	8	6.154	23	17.692
Headache	4	3.077	10	7.692	14	10.769
Bleeding from nose	11	8.461	6	4.615	17	13.077
Visual disturbance	-	-	4	3.077	4	3.077
Tooth ache	-	-	3	2.307	3	2.307
Watering of eyes	1	0.769	13	10	14	10.769
Mass in the nose	4	3.077	4	3.077	8	6.154
Total	52	40	78	60	130	100

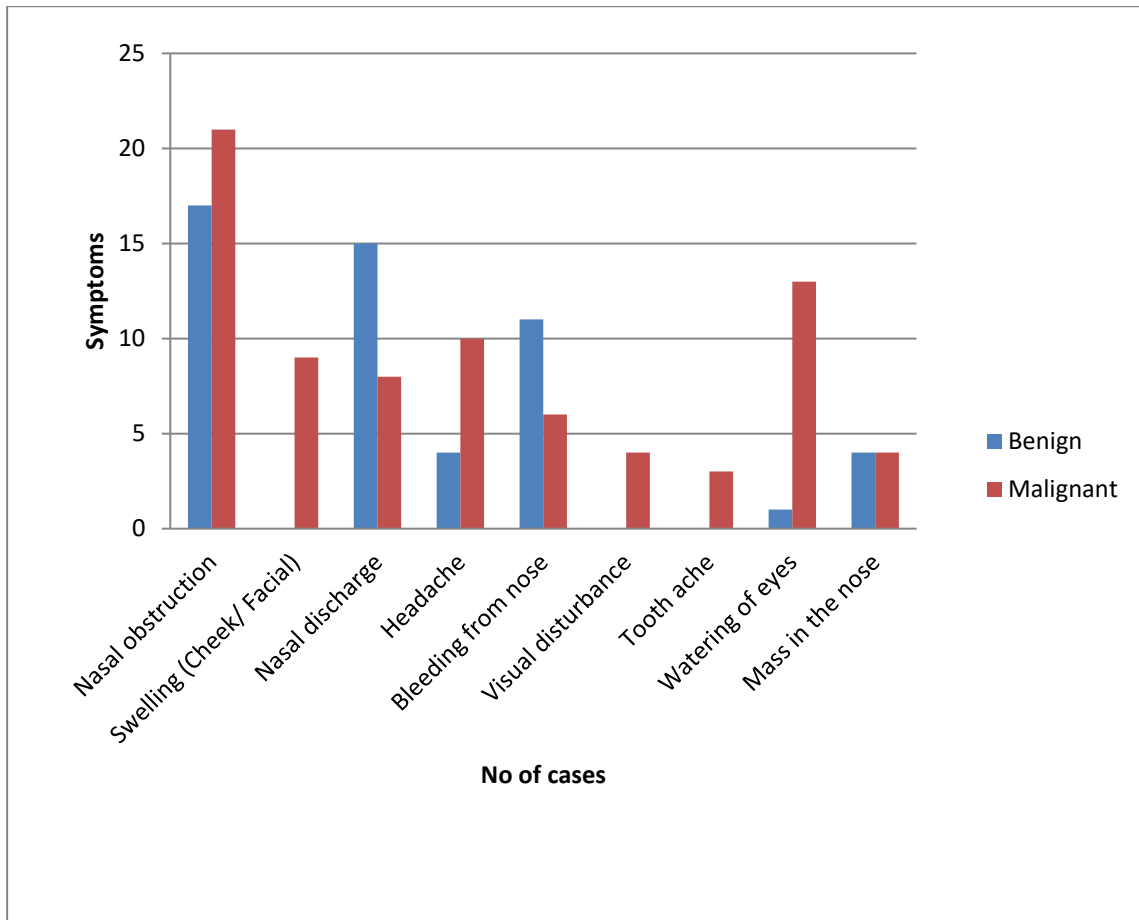


Figure 2: Tumors of nasal cavity and paranasal sinuses symptomatology.

The most common site of neoplasm was nose with 32 cases (59.259%) followed by maxillary sinus with 20 cases (37.037%) (Table-3) (Figure-3).

Table 3: Distribution of tumors according to site

Site	Benign	%	Malignant	%	Total	%
Nose	20	37.037	12	22.222	32	59.259
Maxillary sinus	4	7.407	16	29.629	20	37.037
Ethmoid sinus	1	1.852	-	-	1	1.852
Sphenoid sinus	-	-	-	-	-	-
Frontal sinus	1	1.852	-	-	1	1.852
Total	26	48.15	28	51.851	54	100

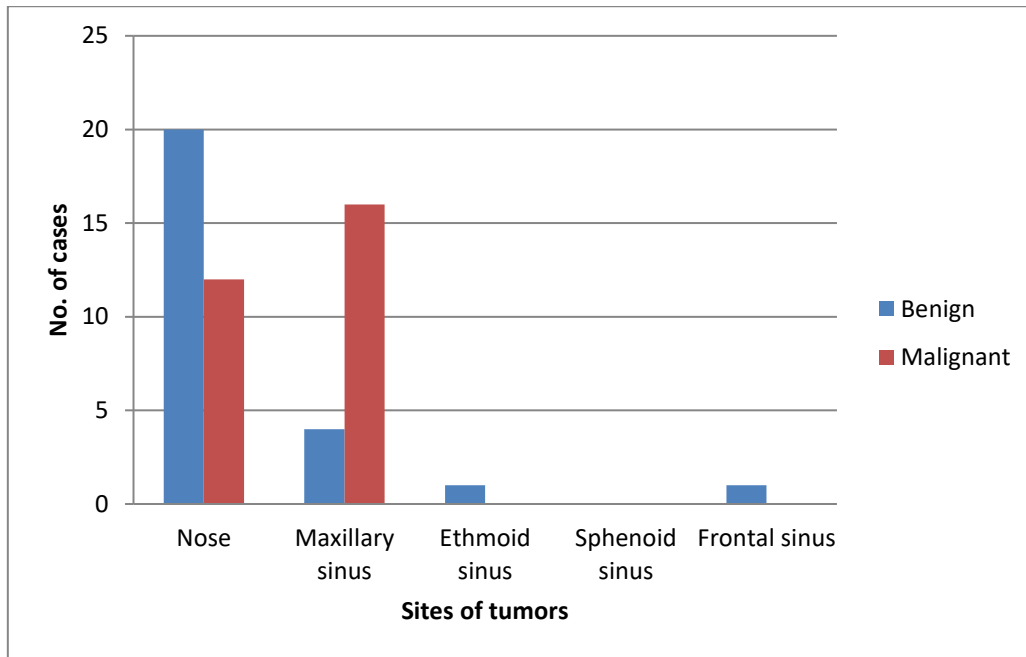


Figure 3: Distribution of tumors according to site.

Out of 26 cases of benign tumors, majority were sinonasal papilloma accounting for 15 cases (57.69%) followed by angiofibroma, 5 cases (19.23%), hemangioma 4 cases (15.38%) and neurilemmoma 2 cases (7.69%) (Table 4) (Figure 4).

Table 4: Histological distribution of benign tumors of nasal cavity and paranasal sinuses.

Type	No. of cases	%
Sinonasal papilloma	15	57.692
Angiofibroma	5	19.231
Hemangioma	4	15.385
Neurilemmoma	2	7.692
Total	26	100

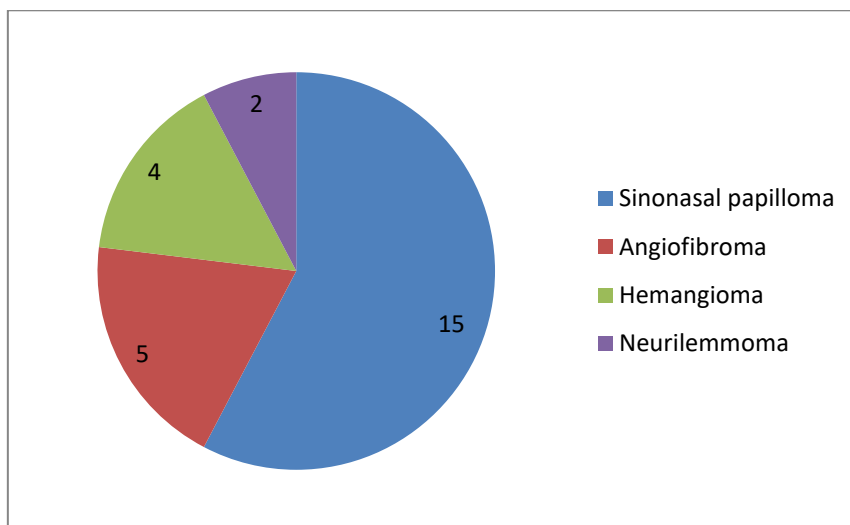


Figure 4: Histological distribution of benign tumors of nasal cavity and paranasal sinuses.

Malignant neoplasms constituted 28 cases with majority of them being squamous cell carcinoma accounting for 11 cases (39.286%) followed by olfactory neuroblastoma 4 cases (14.286%), and mucoepidermoid carcinoma 3 cases (10.71%). One case each of anaplastic carcinoma, adenocarcinoma, adenosquamous carcinoma, adenoid cystic carcinoma, malignant melanoma, plasmacytoma, lymphoma, chordoma, teratocarcinoma, malignant ameloblastoma and malignant mixed tumor were seen (Table-5) (Figure 5).

Table 5: Histological distribution of malignant tumors of the nasal cavity and paranasal sinuses.

Histology	Nasal	%	Paranasal	%	Total	%
Squamous cell carcinoma	2	7.143	9	32.143	11	39.286
Olfactory neuroblastoma	4	14.286	-	-	4	14.286
Mucoepidermoid carcinoma	1	3.571	2	7.143	3	10.714
Adenocarcinoma	-	-	1	3.571	1	3.571
Adenoid cystic carcinoma	-	-	1	3.571	1	3.571
Adenosquamous carcinoma	-	-	1	3.571	1	3.571
Malignant melanoma	1	3.571	-	-	1	3.571
Plasmacytoma	1	3.571	-	-	1	3.571
Lymphoma	1	3.571	-	-	1	3.571
Chordoma	1	3.571	-	-	1	3.571
Teratocarcinoma	1	3.571	-	-	1	3.571
Malignant mixed tumor	-	-	1	3.571	1	3.571
Malignant Ameloblastoma	-	-	1	3.571	1	3.571
TOTAL	12	42.857	16	57.143	28	100

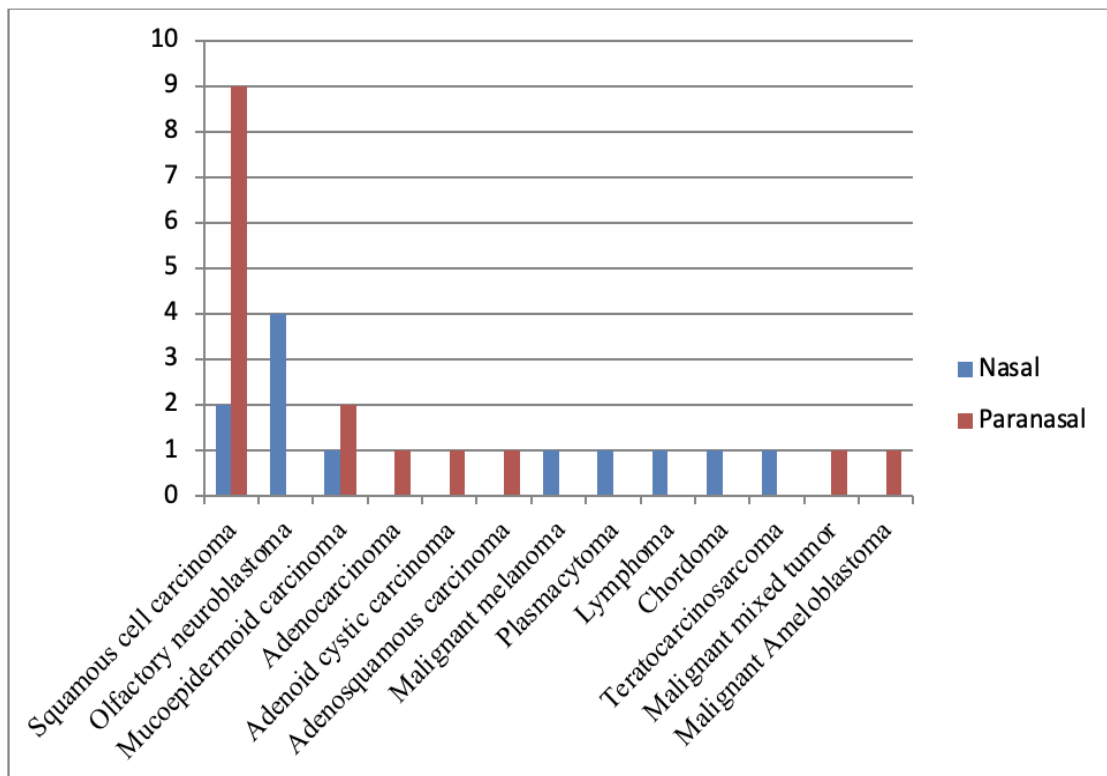


Figure 5: Histological distribution of malignant tumors of the nasal cavity and paranasal sinuses.

Discussion

Tumors of the nasal cavity and paranasal sinuses have been known since the time of Hippocrates and were grouped into hard and soft type with the belief that they shorten the life of a person¹.

The incipient signs of tumors of the nose and paranasal sinus often masquerades as chronic inflammatory conditions with nasal discharge, nose bleed, obstruction to breathing and sinusitis. The diagnosis of such lesions by histopathological examination is necessary^{2,5}.

Rarity and occupational exposure make sinonasal lesions important in study of cancer causation and prevention⁵.

In the present study, 26 cases were benign and 28 cases were malignant tumors with benign to malignant ratio of 0.92:1. Buchanan G *et al*⁶ studied nasal and paranasal lesions with benign to malignant ratio of 0.25:1. Study done by Neb V *et al*⁵, Lathi A *et al*⁷, Banerjee A *et al*⁸, Panchonia A *et al*⁹, and Parajuli S *et al*¹⁰, showed more of benign lesions compared to malignant lesions.

Our present study showed peak age of benign tumors in the 4th decade and malignant tumors in the 6th decade of life. Smoking was the most common habit and risk factor accounting for 17 cases (56.66%), second most common risk factor was tobacco chewing 7 (20%) followed by snuff usage and alcohol consumption at 4 cases (13.32%) and 2 cases (6.66%) respectively.

Our present study showed male predominance with a male to female ratio of 1.8:1 which is similar to studies done by Buchanan G *et al*⁶, Banerjee A *et al*⁸, Panchonia A *et al*⁹, Ngairangbam S *et al*¹¹, Sharma R *et al*¹⁰.

The most common site for benign lesions was nose accounting for 20 cases and in malignant lesions the maximally affected area were the maxillary sinuses accounting for 16 cases (29.62%). Similar results were seen in studies by Dulguerov P *et al*¹ and N Hopkin *et al*¹¹.

Studies by Shah SN *et al*¹⁴, Khan N *et al*⁴, Kulkarni AM *et al*¹⁵, and Swamy KVN *et al*¹⁶ found nasal cavity as the commonest site for both benign and malignant lesions.

Our study states nasal obstruction to be most common presenting symptom which was in concordance with study conducted by Khattak MS *et al*¹⁷, Lathi A *et al*⁷, Panchonia A *et al*⁹, Sharma R *et al*¹⁰, Shah H *et al*¹⁸ and Bist SS *et al*¹⁹.

Sinonasal papilloma was the most common benign tumor found in our study accounting for 15 cases (57.69%), followed by angiofibroma accounting for 5 cases (19.23%), with 4 cases of capillary hemangioma (15.48%) and 2 cases of Schwannoma (7.69%). The comparison study by Buchanan G *et al*⁶ encountered only papillomas. Study done by Lathi A *et al*⁷, Banerjee A *et al*⁸, and Shah H *et al*¹⁸ found hemangioma as the most common benign neoplastic lesion. Out of the 15 cases of sinonasal papilloma 14 were inverted papillomas and one fungiform papilloma. 8 of the squamous papillomas were in the nasal cavity and 7 were in the paranasal air sinuses.

The present study showed that squamous cell carcinoma was the most common malignant lesion with 39.28% cases followed by olfactory neuroblastoma with 14.28% cases. The present study was in concordance with studies done by Dulguerov P *et al*¹, Lathi A *et al*⁷, Panchonia A *et al*⁹, Khan N *et al*⁴, Grau C *et al*²⁰, Katz TS *et al*²¹, Dasgupta A *et al*²², Parmar NJ *et al*²³ all of which showed squamous cell carcinoma as the most common malignant neoplasm.

Conclusion

Tumors of the nasal cavity and paranasal sinuses accounted for 0.578% of total surgical specimens received. The malignant tumors outnumbered the benign tumors with a ratio of 1.07:1. The malignant tumors were commonly seen affecting the nasal cavity.

Nasal and paranasal tumors have various differential diagnosis and non-specific symptoms. Malignancy should be distinguished from non-malignant lesions. Benign conditions show preponderance in the second to fourth decade of life whereas malignancy is generally observed after the fourth decade of life. Papillomas are the most common benign lesion while squamous cell carcinomas are the most common malignant lesion in the sinonasal tract. It is important to make accurate histopathological diagnosis as some of the tumors imitate malignancy and vice-versa.

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