e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2026; 18(1); 307-312

Original Research Article

Histopathological Spectrum of Lesions in Nasopharynx and Sinonasal Sinuses: A Tertiary Care Experience

Sujata Lawa[1], Deepak Maini[2], Sharda Dawan[3]

[1]Final Year Resident, Department of Pathology, S.P.M.C. Bikaner, Rajasthan, India
[2]Final Year Resident, Department of Pathology, S.P.M.C. Bikaner, Rajasthan, India
[3]Professor, Department of Pathology, S.P.M.C. Bikaner, Rajasthan, India

Received: 01-10-2025 / Revised: 15-11-2025 / Accepted: 21-12-2025
Corresponding author: Dr. Deepak Maini
Conflict of interest: Nil

Abstract

Background: Lesions of the nasal cavity, paranasal sinuses, and nasopharynx encompass a wide range from non-neoplastic inflammatory conditions to benign and malignant neoplasms. Because of overlapping clinical features, histopathological examination remains the gold standard for diagnosis.

Aims: To evaluate the histopathological spectrum of lesions in the nasopharynx and sinonasal region, analyze their demographic distribution, and compare findings with previous studies.

Materials and Methods: This retrospective cross-sectional study was conducted from June 2022 to June 2024 in the Department of Pathology, Sardar Patel Medical College, and Bikaner. A total of 150 biopsies from sinonasal and nasopharyngeal regions were studied. Hematoxylin and eosin staining was performed; special stains were used when indicated. Data were analyzed statistically.

Results: Among 150 cases, 81 (54%) were non-neoplastic and 69 (46%) were neoplastic. Males predominated (63.3%), and the mean age was 40.08 years. The nasal cavity was the most common site (46.7%), followed by tonsillar region (26%). Inflammatory polyp was the most frequent non-neoplastic lesion, while squamous cell carcinoma was the most common malignant tumor. The association between age and lesion type was statistically significant ($p < 0.001$).

Conclusion: The sinonasal and nasopharyngeal regions show a diverse spectrum of lesions. Non-neoplastic inflammatory conditions predominate, but malignant neoplasms, particularly squamous cell carcinoma, constitute a significant subset, emphasizing the role of histopathology in accurate diagnosis and management.

Keywords: Sinonasal Lesions, Nasopharynx, Histopathology, Inflammatory Polyp, Squamous Cell Carcinoma.
DOI: 10.25258/ijcpr.18.1.50

Introduction

The nasal cavity and paranasal sinuses are complex anatomical structures involved in respiration, filtration, and olfaction. Despite their small volume, these sites exhibit diverse pathological entities ranging from simple inflammatory conditions to highly aggressive malignancies.

Clinical and radiological overlap often makes it difficult to differentiate between benign and malignant lesions. Hence, histopathology serves as the definitive diagnostic tool for classification and management.

Sinonasal tumors constitute less than 3% of all head and neck lesions but are significant due to their varied presentation and potential for recurrence or malignant transformation.[1,2,3]

This study was undertaken to analyze the histopathological patterns of sinonasal and nasopharyngeal lesions in a tertiary care hospital in Western Rajasthan and to correlate findings with previous Indian and international studies.

Materials and Methods

This retrospective cross-sectional study was conducted in the Department of Pathology, Sardar Patel Medical College, Bikaner, between June 2022 and June 2024.

All incisional and excisional biopsies of nasal cavity, paranasal sinuses, and nasopharyngeal lesions were included. Poorly preserved or inadequate samples were excluded. Tissues were fixed in 10% neutral buffered formalin, processed routinely, and stained with hematoxylin and eosin. Special stains (PAS, GMS) were employed where required. Clinical data such as age, sex, and presenting symptoms were recorded. Statistical

analysis was done using Chi-square test with $p < 0.05$ considered significant.

Results

A total of 150 sinonasal and nasopharyngeal lesion biopsies were analyzed. The age of patients ranged from 2 to 87 years (mean 40.08 years, median 42 years). Maximum number of patients were seen in age group 41 – 60 with 41 (27.3%) cases followed by 1 – 20 years age grup with 38 (25.3%) cases. Least number of cases were seen in 81 -100 age group with only 2 (1.3%) cases.

Males (63.3%) predominated over females (36.7%) with M:F ratio of 1.72:1. Non-neoplastic lesions were slightly more common (54%) than neoplastic lesions (46%). Non-neoplastic lesions occurred more in younger age groups whereas neoplastic lesions in older age groups. The nasal cavity was the most frequent site (46.7%), followed by tonsillar region (26%) and nasopharynx (11.3%).

There was total 81 (54%) cases of non-neoplastic lesions. The most common lesion was inflammatory polyp with 37 (45.7%) cases followed by Follicular Tonsillitis with 21 (25.1%) cases. Out of the total 49 cases of polyps, inflammatory polyp was the most common with 37 (75.51%) cases followed by allergic polyp with 7 (14.29%) cases. Out of the total 17 cases of Benign lesions, most common lesion was lobular haemangioma with 3 (21.4%) followed by capillary hemangioma, inverted papilloma, juvenile nasopharyngeal angiofibroma and angiofibroma each with 2 (14.3%) cases. out of the total 52 cases of malignant lesions Moderately differentiated squamous cell carcinoma was the most common lesions with 21 (38.2%) cases followed by Undifferentiated malignant neoplasm with 10 (18.2%) cases.

Table 1: Age distribution of the study population

Parameter	Mean	Median	SD	Range	Min–Max
Age (years)	40.08	42	22.38	85	2–87

Table 2: Gender-wise distribution of cases

Sex	Frequency	Percent
Female	55	36.7
Male	95	63.3

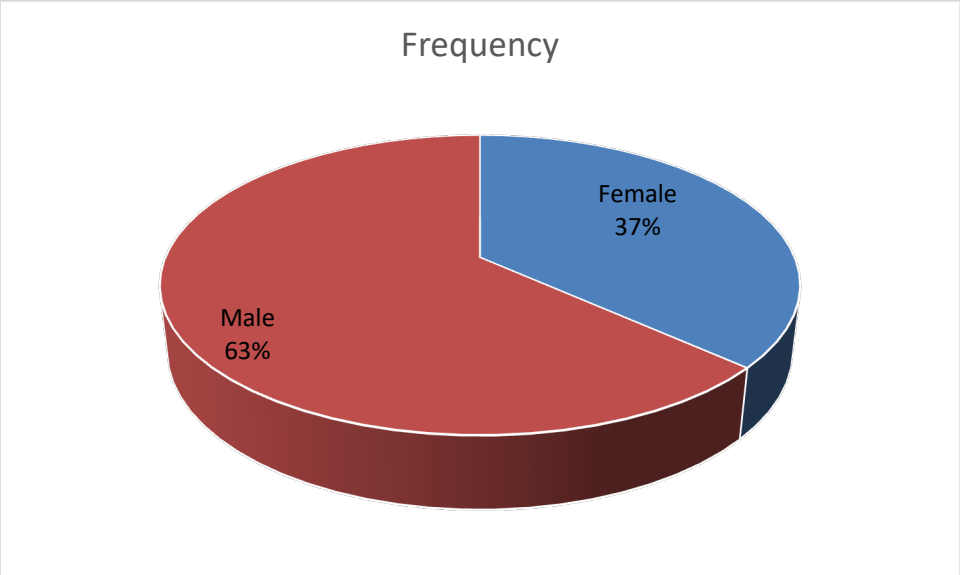

Figure 1: Frequency

Table 3: Age group and gender-wise distribution of cases

	Sex					
Age Groups	Female		Male		Total	
	No. of cases	Percent	No. of cases	Percent	No. of cases	Percent
1 - 20	12	31.6%	26	68.4%	38	25.3%
21 - 40	17	47.2%	19	52.8%	36	24.0%
41 - 60	13	31.7%	28	68.3%	41	27.3%
61 - 80	11	33.3%	22	66.7%	33	22.0%
81 - 100	2	100.0%	0	0.0%	2	1.3%

Total	55	36.7%	95	63.3%	150	100.0%

Significant male predominance was observed across all age groups except in the 81–100 year group.

Table 4: Distribution of cases according to site of lesion

Site	Frequency	Percent
Adenoid	2	1.3
Lateral Pharyngeal Wall	1	0.7
Mass Excised Post Fess	1	0.7
Maxillary Antrum	1	0.7
Maxillary Sinus	5	3.3
Nasal Cavity	70	46.7
Nasopharynx	17	11.3
Parapharynx	1	0.7
Posterior Pharyngeal Wall	7	4.7
Sinonasal Area	5	3.3
Soft Palate Mass	1	0.7
Tonsillar Region	39	26.0
Total	150	100.0

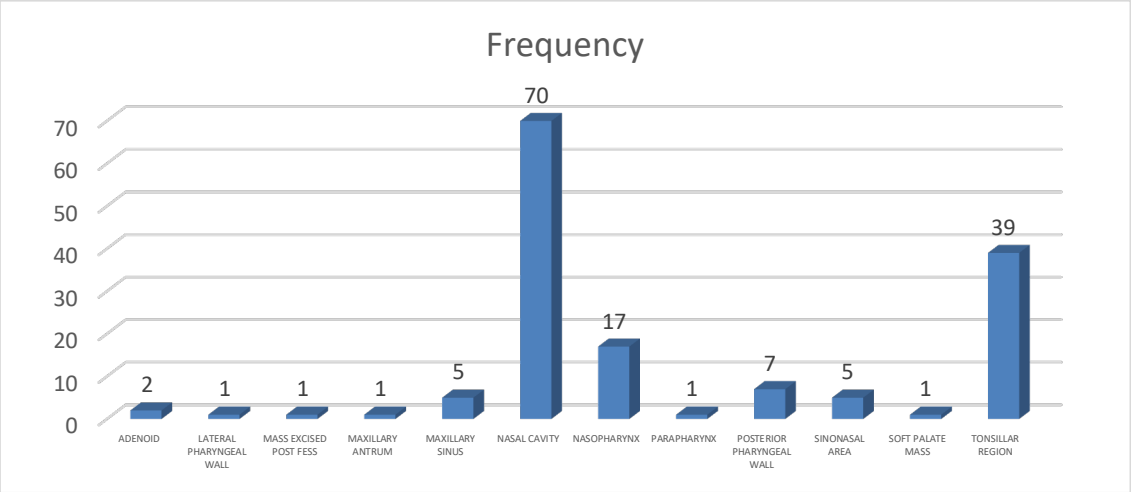

Figure 2: Frequency

Table 5: Type of lesions in the present study

Type of Lesion	Frequency	Percent
Neoplastic	69	46.0
Non-neoplastic	81	54.0

Table 6: Non-Neoplastic lesions in the present study.

Diagnosis	No. of Cases	Percent
Allergic Polyp	7	8.6%
Angiomatous Polyp	1	1.2%
Chronic Sinusitis	1	1.2%
Follicular Tonsillitis	21	25.9%
Fungal Inflammatory Lesion	6	7.4%
Inflammatory Polyp	37	45.7%
Inflammatory Polyp With Mucous Gland Hyperplasia	1	1.2%
Nasal Polyp	1	1.2%
Parapharyngeal Abscess	1	1.2%
Reactive Lymphoid Hyperplasia	1	1.2%
Sinonasal Polyp	2	2.5%
Sinusitis	1	1.2%
Tubercular Granulation Tissue	1	1.2%
Total	81	100.0%

Table 7: Benign lesions in the present study.

Histopathological Diagnosis	Count	Percent
Angiofibroma	2	14.3%
Capillary Haemangioma	2	14.3%
Haemangioma	1	7.1%
Infected Angiofibroma	1	7.1%
Inverted Papilloma	2	14.3%
Juvenile Nasopharyngeal Angiofibroma	2	14.3%
Keratinous Cyst	1	7.1%
Lobular Haemangioma	3	21.4%
Total	14	100.0%

Table 8: Malignant lesions in the present study.

Histopathological Diagnosis	No. of Cases	Percent
Adenoid Cystic Carcinoma	1	1.8%
Basal Cell Carcinoma	2	3.6%
Giant Cell Tumor	1	1.8%
Invasive Squamous Cell Carcinoma	1	1.8%
Lymphoepithelial Carcinoma	1	1.8%
Moderately Differentiated Squamous Cell Carcinoma	21	38.2%
Nasopharyngeal Carcinoma (Non-Keratinizing Undiff. Type)	2	3.6%
Poorly Differentiated Squamous Cell Carcinoma	2	3.6%
Small Round Cell Neoplasm	5	9.1%
Squamous Cell Carcinoma In Situ	3	5.5%
Undifferentiated Malignant Neoplasm	10	18.2%
Well Differentiated Squamous Cell Carcinoma	5	9.1%
Well Differentiated Squamous Cell Carcinoma With Basaloid Changes	1	1.8%
Total	55	100.0%

Table 9: Summary of histopathological spectrum of lesions

Category	Common Subtypes	Most Frequent Lesion
Non-neoplastic	Inflammatory polyp, Follicular tonsillitis, Fungal lesions	Inflammatory polyp (45.7%)
Benign	Inverted papilloma, Hemangioma, Angiofibroma	Lobular hemangioma (21.4%)
Malignant	Squamous cell carcinoma, Nasopharyngeal carcinoma, Undifferentiated carcinoma	Moderately differentiated SCC (38.2%)

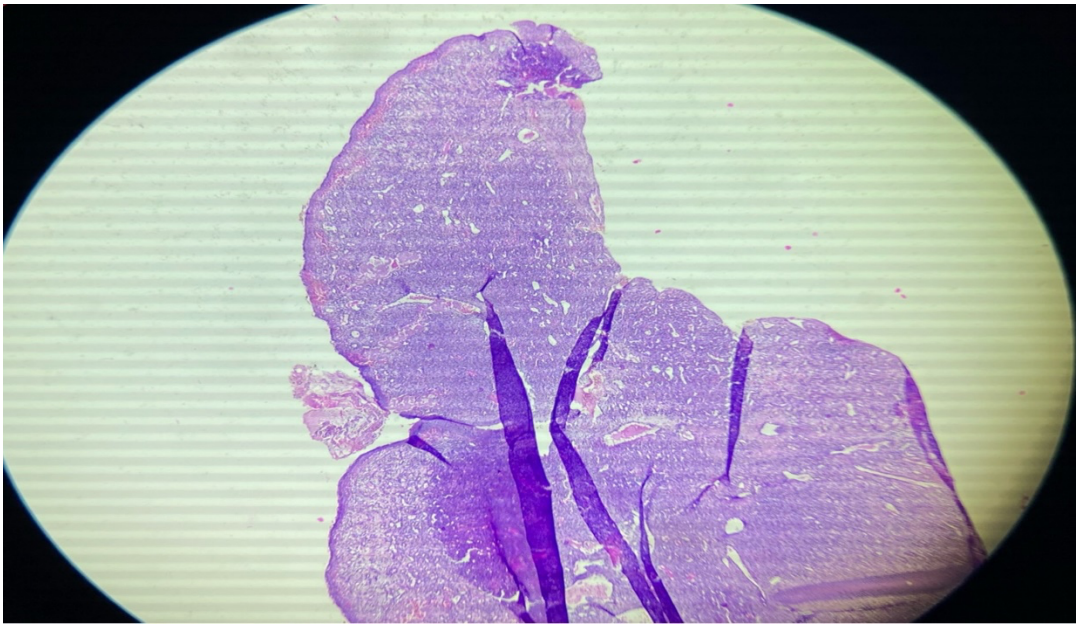

Figure 3: Lobar Haemangioma

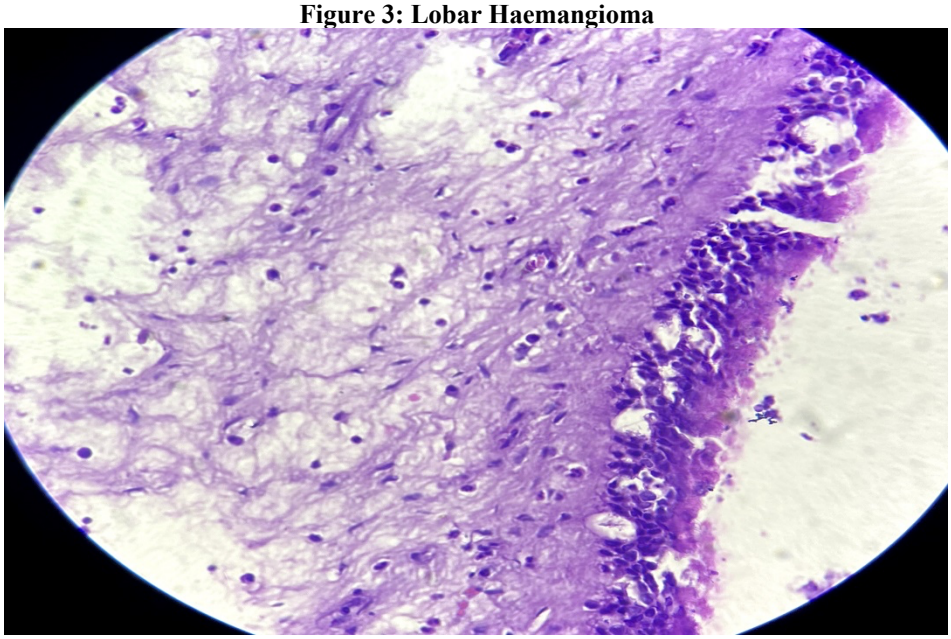

Figure 4: Inflammatory Polyp

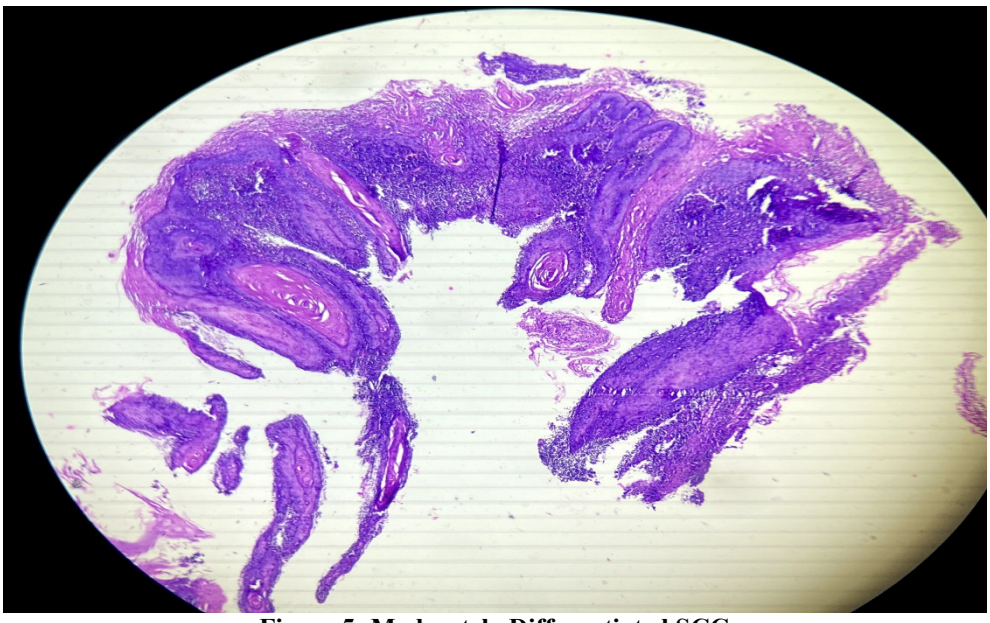

Figure 5: Moderately Differentiated SCC

Discussion

In the present study, non-neoplastic lesions formed the majority (54%), similar to studies by Kulkarni et al. [1], Parajuli et al. [2] ,and Garg et al. [3], who reported inflammatory polyps as the most common lesion type. The mean age of 40.08 years and male predominance observed in this study are consistent with Shah et al.[5] and Ramteke et al.[4].

Among non-neoplastic lesions, inflammatory polyps accounted for nearly half of all cases, comparable to findings of Kulkarni et al. [1] and Regmi et al.[9]. Infective granulomatous lesions such as rhinoscleroma and fungal sinusitis were relatively rare, aligning with patterns observed by Jaison et al.[7]. Benign neoplasms constituted 20.3% of all neoplastic lesions. Capillary hemangioma and inverted papilloma were predominant benign tumors, paralleling reports by Kulkarni A. et al.[6]. Juvenile nasopharyngeal angiofibroma was seen exclusively in adolescent males, similar to the trends in previous Indian studies.

Malignant lesions formed 79.7% of all neoplastic cases, with squamous cell carcinoma being the most frequent (over one-third of malignancies). This mirrors results from Garg et al.[3], Jaison et al.[7], and Jagannadham et al.[8]. The observed statistical significance between age and lesion type suggests increased malignancy risk in older individuals, corroborating global data.

Overall, the present findings reaffirm that histopathological examination is indispensable for categorizing sinonasal and nasopharyngeal lesions. Regional variations in lesion spectrum reflect environmental and demographic influences, emphasizing the need for localized data to guide clinical management.

Conclusion

Sinonasal and nasopharyngeal lesions display considerable histopathological diversity. Non-neoplastic inflammatory conditions predominate, followed by benign and malignant tumors. Squamous cell carcinoma remains the most common malignancy. A statistically significant association between age and lesion type underscores the value of early tissue diagnosis for appropriate treatment and prognosis.

References

1. Kulkarni M, et al. Histopathological study of lesions of nose and paranasal sinuses. Indian J Pathol Microbiol. 2012; 55:123–127.
2. Parajuli S, et al. Clinicopathological study of sinonasal masses. Kathmandu Univ Med J. 2013;11(41):26–29.
3. Garg D, et al. Spectrum of sinonasal masses: A histopathological study. Indian J Otolaryngol Head Neck Surg. 2014;66(Suppl 1):244–250.
4. Ramteke D, et al. Histopathological study of nasal cavity and paranasal sinus lesions. Indian J Basic Appl Med Res. 2016;5(4):356–364.
5. Shah H, et al. Spectrum of sinonasal and nasopharyngeal lesions: A histopathological study. Int J Res Med Sci. 2017;5(7):2968–2973.
6. Kulkarni A, et al. Histopathological evaluation of sinonasal lesions: A two-year study. J Clin Diagn Res. 2019;13(6):EC01–EC05.
7. Jaison J, et al. Spectrum of sinonasal and nasopharyngeal masses: A five-year study. Indian J Pathol Microbiol. 2020;63(3):418–423.
8. Jagannadham RP, et al. Histopathological spectrum of sinonasal lesions: A tertiary care study. J Evid Based Med Healthc. 2021;8(18): 957–962.
9. Regmi S, et al. Spectrum of sinonasal masses in a tertiary hospital of Nepal: A twenty-year study. Nepal Med Coll J. 2021;23(1):45–52.