

# A Study on Nasopharyngeal Mass in a Tertiary Care Centre

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## ABSTRACT

**Background:** Adenoid enlargement is the most common nasopharyngeal mass in children, whereas juvenile nasopharyngeal angiofibroma is a rare, benign but locally aggressive tumor predominantly affecting adolescent males and commonly presenting with recurrent epistaxis. This study aimed to evaluate the clinical presentation of nasopharyngeal masses, identify factors influencing prognosis, and assess treatment outcomes.

**Methods:** A prospective observational study was conducted over a 2-year period at a tertiary care centre among patients attending the ENT department with clinically or radiologically diagnosed nasopharyngeal masses, confirmed by histopathology wherever required. Patients with recurrent nasopharyngeal masses or inadequate follow-up were excluded. The calculated sample size was 63, and the collected data were entered into Microsoft Excel and analyzed accordingly.

**Results:** Out of 63 patients, 46% were benign and 54% malignant. 23 were adenoid enlargement, 5 JNA, 34 nasopharyngeal carcinoma and 1 granulomatous disease of nasopharynx. All 23 patients of adenoid enlargement were <20 yrs. Of nasopharyngeal carcinoma, 16 patients were in the age group of 40-60 yrs, 11 in 20-40 yrs, 6 in age group >60 yrs and 1 patient <20 yrs. All 5 JNA patients <20 yrs. Granulomatous disease of nasopharynx in age group 40-60 yrs. Post treatment, 60% patients with hearing loss, 82% epistaxis, 90% nasal obstruction and 75% ear pressure presented with improved symptoms.

**Conclusion:** Nasopharyngeal masses are common ENT conditions with a wide spectrum of benign and malignant pathologies requiring timely evaluation. This study underscores the significance of a comprehensive clinical, radiological, and histopathological approach for accurate diagnosis, appropriate management, and improved patient outcomes.

**Key-words:** Cervical lymphadenopathy, Epistaxis, Nasopharyngeal mass, Otorhinolaryngological disorders

## INTRODUCTION

Nasopharyngeal masses comprise a heterogeneous group of lesions ranging from inflammatory and congenital conditions to benign and malignant neoplasms. They may occur in both pediatric and adult populations and often present with non-specific symptoms that overlap with several common otorhinolaryngological disorders, making early diagnosis challenging<sup>[1,2]</sup>. Although many nasopharyngeal lesions are benign, certain malignant conditions, particularly nasopharyngeal carcinoma, require prompt recognition

because delayed diagnosis is associated with advanced disease, increased morbidity, and poor prognosis<sup>[3]</sup>.

Therefore, careful clinical evaluation combined with appropriate radiological and histopathological assessment plays a crucial role in establishing the correct diagnosis and guiding management.

The clinical presentation of nasopharyngeal masses depends on the size, location, extent, and underlying pathology of the lesion. Patients commonly present with nasal obstruction, epistaxis, hearing impairment due to Eustachian tube dysfunction, ear fullness, recurrent otitis media with effusion, cervical lymphadenopathy, cranial nerve deficits, or facial deformity in advanced cases<sup>[1,3]</sup>. Because these manifestations are often non-specific, patients may initially receive symptomatic treatment, leading to delayed diagnosis, particularly in malignant lesions. A high index of suspicion is therefore essential, especially in adults presenting with unilateral middle ear

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effusion, persistent cervical lymphadenopathy, or recurrent epistaxis.

Adenoid hypertrophy represents the most common benign nasopharyngeal mass in children and adolescents. Enlargement of the adenoid tissue may result in nasal obstruction, mouth breathing, snoring, sleep-disordered breathing, recurrent upper respiratory tract infections, and conductive hearing loss secondary to Eustachian tube obstruction <sup>[4]</sup>. Although adenoid hypertrophy is generally a benign condition, persistent symptoms may require surgical intervention in the form of adenoidectomy, particularly when associated with recurrent infections or significant airway obstruction.

Juvenile nasopharyngeal angiofibroma (JNA) is a rare benign but locally aggressive vascular tumour seen almost exclusively in adolescent males <sup>[4]</sup>. It commonly presents with recurrent epistaxis and progressive nasal obstruction. Contrast-enhanced computed tomography and magnetic resonance imaging are essential for assessing tumour extent and planning surgical excision.

Nasopharyngeal carcinoma (NPC) is the most important malignant lesion arising from the nasopharynx. Although relatively uncommon worldwide, its incidence varies considerably across different geographical regions and ethnic populations <sup>[5,6]</sup>. NPC is frequently diagnosed at an advanced stage because of its deep anatomical location and the absence of obvious early symptoms. Cervical lymphadenopathy may be the first presenting feature, while nasal obstruction, epistaxis, hearing impairment, cranial nerve involvement, and skull base extension usually indicate more advanced disease. Histopathological confirmation remains the gold standard for diagnosis, while imaging plays an essential role in staging, treatment planning, and follow-up.

The evaluation of patients with nasopharyngeal masses requires a systematic diagnostic approach. Detailed history taking, thorough head and neck examination, diagnostic nasal endoscopy, radiological imaging, and histopathological examination are fundamental components of assessment <sup>[1,4,6]</sup>. Endoscopic examination allows direct visualization of the lesion and facilitates biopsy whenever indicated, whereas contrast-enhanced CT and MRI help define tumour extent, adjacent tissue involvement, and possible intracranial extension. Histopathological examination confirms the diagnosis and determines the appropriate therapeutic strategy.

Management depends on the underlying pathology. Benign lesions such as adenoid hypertrophy are managed conservatively or surgically depending on symptom severity, while juvenile nasopharyngeal angiofibroma usually requires complete surgical excision. Management depends on the underlying pathology. Benign lesions are treated conservatively or surgically as indicated, while juvenile nasopharyngeal angiofibroma requires surgical excision <sup>[3,4,6]</sup>. Nasopharyngeal carcinoma is primarily managed with chemoradiotherapy. Early diagnosis and timely treatment improve outcomes and reduce complications.

## MATERIALS AND METHODS

**Study Design and Setting-** This prospective observational study was conducted over a period of two years in the Department of Otorhinolaryngology at a tertiary care teaching hospital. The study included patients presenting to the ENT outpatient department and inpatient services with clinically or radiologically diagnosed nasopharyngeal masses. Histopathological examination was performed wherever indicated to establish the final diagnosis.

**Study Population-** A total of 63 patients with suspected nasopharyngeal masses who fulfilled the eligibility criteria were included in the study. Patients were enrolled consecutively during the study period after obtaining written informed consent.

**Inclusion Criteria-** Patients of all age groups with clinically or radiologically diagnosed nasopharyngeal masses, supported by histopathological confirmation wherever necessary, and willing to participate in the study were included.

**Exclusion Criteria-** Patients with recurrent nasopharyngeal masses, previously treated cases, and those with inadequate follow-up data or unwilling to participate were excluded from the study.

**Clinical Evaluation-** A detailed clinical history including presenting complaints, duration of symptoms, addiction history, and associated comorbidities was obtained from each patient. This was followed by a comprehensive general physical examination and complete otorhinolaryngological examination. Clinical findings such as nasal obstruction, epistaxis, hearing loss, ear pressure, cervical lymphadenopathy, cranial nerve

involvement, trismus, and external nasal deformity were recorded wherever present.

**Radiological and Histopathological Assessment-** All patients underwent appropriate radiological investigations depending on the clinical presentation to determine the site, extent, and local spread of the lesion. Diagnostic nasal endoscopy using a 0° rigid endoscope was performed for direct visualization of the nasopharynx. Tissue biopsy was obtained whenever indicated, and histopathological examination was carried out to establish the definitive diagnosis.

**Treatment and Follow-up-** Management was planned according to the final diagnosis. Patients with benign lesions were managed either conservatively or surgically, while patients with malignant lesions received appropriate treatment, including surgery, chemoradiotherapy, or a combination of both, depending on disease extent. Patients were followed up after treatment, and improvement in presenting symptoms along with treatment outcomes was documented.

**Statistical Analysis-** All clinical, radiological, operative, histopathological, and follow-up data were recorded in a predesigned data collection sheet and subsequently entered into Microsoft Excel for compilation. The collected data were analysed using appropriate descriptive statistical methods, and the results were expressed in the form of frequencies and percentages.

**Ethical Consideration-** Written informed consent was obtained from all participants prior to enrolment. The study was conducted in accordance with institutional clinical practice and the principles of the Declaration of Helsinki.

## RESULTS

Table 1 summarizes the disease and habitat distribution of the study participants. Among the 63 patients, nasopharyngeal carcinoma was the most common diagnosis (54%), followed by adenoid enlargement (36%), juvenile nasopharyngeal angiofibroma (8%), and granulomatous disease of the nasopharynx (2%). The majority of participants belonged to rural areas (70%), while 30% were from urban areas.

**Table 1:** Disease Distribution, and Habitat Distribution of Study Participants (n = 63)

Variable	Category	Number	Percentage (%)
Disease distribution	Adenoid enlargement	23	36
	Juvenile nasopharyngeal angiofibroma	5	8
	Nasopharyngeal carcinoma	34	54
	Granulomatous disease of nasopharynx	1	2
Habitat distribution	Urban	19	30
	Rural	44	70

Table 2 shows all the adenoid enlargement patients are <20 years, 16 nasopharyngeal carcinoma patients were in 40-60 age group<sup>11</sup> in the age group 20-40 yrs, 6 in >60

yrs and 1 in <20 yrs age group, 5 patients of JNA were <20 yrs and 1 granulomatous disease of nasopharynx was in the age group 40-60 yrs.

**Table 2:** Age distribution

	<20 yrs	20-40 yrs	40-60 yrs	>60 yrs
Adenoid enlargement	23	0	0	0
Nasopharyngeal carcinoma	1	11	16	6
Juvenile Nasopharyngeal Angiofibroma	5	0	0	0
Granulomatous disease of nasopharynx	0	0	1	0

Table 3 shows 16 are male and 7 female in adenoid enlargement, 23 male and 11 female in nasopharyngeal carcinoma, 5 male in Juvenile nasopharyngeal

angiofibroma where 1 is recurrent case and 1 male in granulomatous disease of nasopharynx.

**Table 3: Gender distribution**

	Male	Female
Adenoid enlargement	16	7
Nasopharyngeal carcinoma	23	11
Juvenile Nasopharyngeal Angiofibroma	5 (1 recurrent)	0
Granulomatous disease of nasopharynx	1	0

Table 4 shows 57% with ear pressure, 49% with cervical lymphadenopathy, 48% with nasal obstruction, 40%

hearing loss, 9% with external deformity and 2% with both cranial neuropathy and trismus.

**Table 4: Clinical features in patients presenting with nasopharyngeal mass**

	Number	Percentage (%)
Nasal obstruction	30	48
Hearing loss	25	40
Cervical lymphadenopathy	31	49
Epistaxis	17	27
Ear pressure	36	57
Cranial neuropathy	1	2
Trismus	1	2
External deformity	6	9

Table 5 summarizes the clinical presentation of different nasopharyngeal masses. Among patients with nasopharyngeal carcinoma, cervical lymphadenopathy (88%) and ear pressure (62%) were the most frequent presenting features. Adenoid enlargement commonly presented with nasal obstruction (74%), whereas all

patients with juvenile nasopharyngeal angiofibroma presented with epistaxis (100%). The single patient with granulomatous disease presented with nasal deformity, ear pressure, nasal obstruction, cervical lymphadenopathy, and hearing loss (100% each).

**Table 5: Clinical Features of Different Nasopharyngeal Masses**

Disease	Clinical feature	Number	Percentage (%)
Nasopharyngeal carcinoma (n = 34)	Cervical lymphadenopathy	30	88
	Ear pressure	21	62
	Hearing loss	14	41
	Nasal obstruction	9	26
	Epistaxis	9	26
	Nasal deformity	4	12
	Cranial nerve involvement	1	3
	Trismus	1	3
Adenoid enlargement (n = 23)	Nasal obstruction	17	74
	Ear pressure	14	61
	Hearing loss	10	43
	Epistaxis	3	13

Juvenile nasopharyngeal angiofibroma (n = 5)	Epistaxis	5	100
	Nasal obstruction	3	60
Granulomatous disease of nasopharynx (n = 1)	Nasal deformity	1	100
	Ear pressure	1	100
	Nasal obstruction	1	100
	Cervical lymphadenopathy	1	100
	Hearing loss	1	100

Endoscopic examination showing a representative nasopharyngeal mass with irregular mucosal growth occupying the nasopharyngeal cavity (Fig. 1). Contrast-

enhanced computed tomography (CT) scan demonstrating the location, extent, and adjacent tissue involvement of the nasopharyngeal mass (Fig. 2).



**Fig. 1:** bilateral cervical lymphadenopathy



**Fig. 2:** Nasopharyngeal mass in diagnostic nasal endoscopy

Table 6 summarizes the addiction history and histological findings among patients with nasopharyngeal carcinoma. Combined alcohol and smoking was the most common addiction (62%), followed by alcohol alone (21%), while 21% had no addiction history and 3% were smokers only.

Histopathological examination revealed squamous cell carcinoma as the predominant subtype (82%), followed by undifferentiated carcinoma (12%), with adenoid cystic carcinoma and high-grade lymphoma accounting for 3% each.

**Table 6:** Addiction History and Histological Findings in Nasopharyngeal Carcinoma Patients (n = 34)

Parameter	Category	Number	Percentage (%)
Addiction History	Alcohol	7	21
	Smoking	1	3
	Alcohol + Smoking	21	62
	None	7	21
Histological Findings	Squamous cell carcinoma	28	82
	Undifferentiated carcinoma	4	12
	Adenoid cystic carcinoma	1	3
	High-grade lymphoma	1	3

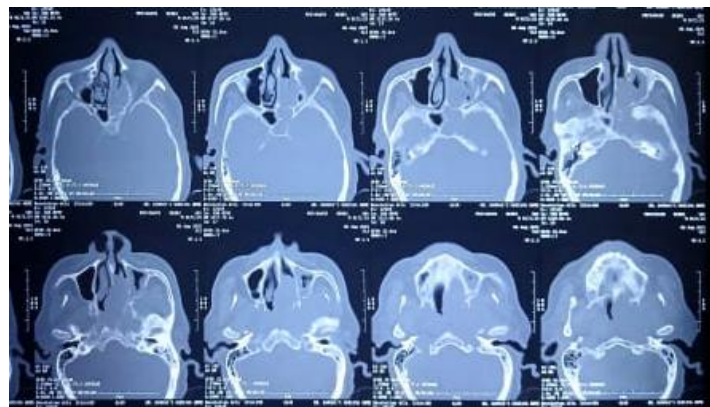
Table 7 summarizes the complications and management of patients with nasopharyngeal carcinoma, along with the management of adenoid enlargement. Laryngeal extension (15%) was the most common complication of nasopharyngeal carcinoma, followed by intracranial (6%) and sinus extension (3%). Most patients with

nasopharyngeal carcinoma were treated with chemoradiotherapy (82%), whereas 15% underwent combined surgery with chemoradiotherapy. Among patients with adenoid enlargement, 78% underwent surgical management, while 22% were managed conservatively.

**Table 7: Complications and Management of Nasopharyngeal Masses**

Parameter	Category	Number	Percentage (%)
Complications in nasopharyngeal carcinoma (n = 34)	Intracranial extension	2	6
	Laryngeal extension	5	15
	Sinus extension	1	3
Management of nasopharyngeal carcinoma (n = 34)	Chemoradiotherapy (CTRRT)	28	82
	Surgery	1	3
	Surgery + CTRRT	5	15
Management of adenoid enlargement (n = 23)	Surgery	18	78
	Conservative treatment	5	22

Histopathological photomicrograph (Hematoxylin and Eosin stain) showing characteristic microscopic features of nasopharyngeal carcinoma, confirming the diagnosis (Fig. 3).



**Fig. 3: Contrast enhanced CT scan showing left nasopharyngeal mass**

Table 8 shows 3 patients underwent complete excision+ right lateral rhinotomy+ medial maxillectomy+ partial resection of posterior wall+ maxillary sling approach, 1 patient with excision by palatine approach and 1 with

excision with right sided lateral rhinotomy+ medial maxillectomy+ cauterization of sphenoidal mass+ sphenoidal polypectomy.

**Table 8: Management in juvenile nasopharyngeal angiofibroma patients**

	Number	Percentage (%)
Excision by trans palatine approach	1	20
Complete excision+ right lateral rhinotomy+ medial maxillectomy+ partial resection of posterior wall+ maxillary sling	3	60
Excision with right sided lateral rhinotomy+ medial maxillectomy+ cauterization of sphenoidal mass+ sphenoidal polypectomy	1	20

Table 9 shows 60% patients with improved hearing loss, 82% improved epistaxis, 90% improved nasal obstruction and 75% with improved ear pressure post treatment.

**Table 9: Post-treatment status**

	Number	Percentage (%)
Hearing loss (25)	15	60
Epistaxis (17)	14	82
Nasal obstruction (30)	27	90
Ear pressure (36)	27	75

## DISCUSSION

The present study evaluated the clinicopathological profile of nasopharyngeal masses in patients attending a tertiary care centre. Nasopharyngeal masses comprise a wide spectrum of inflammatory, benign, and malignant lesions, often presenting with overlapping clinical manifestations that make early diagnosis challenging. Histopathological examination remains the gold standard for definitive diagnosis and appropriate treatment planning. Similar observations have been reported in previous clinicopathological studies of nasopharyngeal masses.<sup>[7]</sup>

In the study by von Witzleben *et al.*<sup>[8]</sup>, 24.7% of lesions were malignant and 75.3% were benign, whereas in the present study, benign lesions constituted 46% and malignant lesions 54%. This relatively higher proportion of malignant lesions in our study may be attributed to the referral pattern of a tertiary care centre, where patients with persistent or suspicious symptoms are more frequently evaluated. Similar variations in the proportion of benign and malignant lesions have also been reported by Biswas *et al.*<sup>[1]</sup> and Sahu *et al.*<sup>[3]</sup>, indicating that institutional settings and geographical differences considerably influence the disease profile.

Regarding gender distribution, von Witzleben *et al.*<sup>[8]</sup> reported 62% males and 38% females, while Roe Noy *et al.*<sup>[5]</sup> observed a female predominance in neonatal nasopharyngeal masses. Sahu *et al.*<sup>[3]</sup> reported 59.63% males and 40.37% females. In comparison, the present study demonstrated a marked male predominance, with 71.4% males and 28.6% females. Similar male predominance has been described in several studies, particularly due to the higher incidence of juvenile nasopharyngeal angiofibroma and nasopharyngeal carcinoma among males.

The age distribution in the present study also differed from previous reports. von Witzleben *et al.*<sup>[8]</sup> found the highest incidence in the 30–40-year age group, while Biswas *et al.*<sup>[1]</sup> reported the majority of patients between 11 and 20 years and Sahu *et al.*<sup>[3]</sup> observed maximum cases in the 31–40-year age group. In contrast, the present study showed the highest incidence in patients below 20 years of age. This finding may be explained by the relatively higher proportion of adenoid hypertrophy and juvenile nasopharyngeal angiofibroma encountered in our institution.

With respect to histopathological diagnosis, von Witzleben *et al.*<sup>[8]</sup> reported adenoid enlargement in 64% and nasopharyngeal carcinoma in 36% of patients. Sahu *et al.*<sup>[3]</sup> observed adenoid enlargement in only 2.22% and nasopharyngeal carcinoma in 0.74% of cases. In the present study, adenoid enlargement accounted for 36% of cases, nasopharyngeal carcinoma for 54%, juvenile nasopharyngeal angiofibroma for 8%, and granulomatous disease of the nasopharynx for 2%. The relatively higher proportion of malignant lesions in our study probably reflects the referral nature of our tertiary care centre, where suspicious lesions undergo early biopsy and histopathological confirmation.<sup>[7,9]</sup>

Most patients in the present study belonged to rural areas (70%), similar to the findings of Sahu *et al.*<sup>[3]</sup>, who reported that 75% of patients were from rural backgrounds. Limited healthcare access, delayed presentation, and reduced awareness among rural populations may contribute to this distribution.

Nasal obstruction remained the commonest presenting symptom, occurring in 48% of patients, which is comparable to von Witzleben *et al.*<sup>[8]</sup> (44%) and Sahu *et al.*<sup>[3]</sup> (41.29%). Ear-related symptoms were more frequent in the present study, with ear pressure reported in 57% of patients compared with 29% reported by von Witzleben *et al.*<sup>[8]</sup> and 3.51% by Sahu *et al.*<sup>[3]</sup>. Hearing loss was observed in 40% of our patients compared with 33% reported by von Witzleben *et al.*<sup>[8]</sup>. These findings probably reflect Eustachian tube dysfunction caused by nasopharyngeal masses, particularly adenoid hypertrophy and nasopharyngeal carcinoma.<sup>[10]</sup>

Epistaxis was observed in 27% of patients in the present study, considerably lower than the 67.03% reported by Sahu *et al.*<sup>[3]</sup>. External facial deformity was observed in 9% compared with 3.14% in their study. These differences may be related to variations in tumour type, disease stage at presentation, and referral bias.

Regarding associated risk factors, 62% of patients in the present study had combined alcohol consumption and smoking, whereas von Witzleben *et al.*<sup>[8]</sup> reported 61% with combined addiction. Isolated smoking and alcohol consumption were less common in both studies. These findings support the established association of tobacco and alcohol exposure with upper aerodigestive tract malignancies, particularly nasopharyngeal carcinoma,



although additional environmental and viral factors may also contribute to disease development.<sup>[9,10]</sup>

Overall, the present study demonstrates that nasopharyngeal masses exhibit considerable clinicopathological diversity, with demographic characteristics and clinical presentation varying across different populations. Early clinical suspicion, diagnostic nasal endoscopy, appropriate radiological evaluation, and histopathological confirmation remain essential for accurate diagnosis and timely management, particularly in patients presenting with persistent nasal obstruction, hearing impairment, cervical lymphadenopathy, or recurrent epistaxis.

## CONCLUSIONS

Nasal and nasopharyngeal masses are frequently encountered conditions in ENT practice. Early detection of nasopharyngeal malignancies remains challenging; however, timely diagnosis and appropriate management can significantly improve patient outcomes and survival. Juvenile nasopharyngeal angiofibroma is primarily diagnosed clinically and confirmed by histopathological examination. This study highlights the importance of a comprehensive clinical, radiological, and histopathological approach in the diagnosis and management of nasopharyngeal masses. However, the findings should be interpreted in light of certain limitations, including the small sample size, potential selection bias, single-centre design, and limited follow-up duration.

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