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Nasopharyngolaryngoscopy in Upper Airway Disorders among the Patients Visiting Tertiary Hospital: A Retrospective Review of Clinical Findings and Diagnosis

Lal Bahadur Gurung[1], **Sarita Gurung**[2], **Ramesh Bhandari**[1], **Bivek Aryal**[1], **Rohita Bajracharya**[1], **Damodar Kandel**[1], **Ramesh Parajuli**[3]

[1]Department of ENT & HNS, Bharartpur Hospital, Chitwan, Nepal, [2]Department of Nursing, Shree College of Technology, Bharatpur, Chitwan, Nepal, [3]Department of ENT & HNS, Chitwan Medical College, Bharatpur, Chitwan, Nepal.

ABSTRACT

Background

Flexible Nasopharyngolaryngoscopy (NPL) is minimally invasive diagnostic procedure done with the use of a flexible endoscope to examine anatomical and pathological changes in the nasal cavity, pharynx and larynx. Many patients visit ENT OPD with upper airway problems with clinical features like nasal obstruction, throat discomfort, change in voice, difficulty in swallowing etc. This study aims to assess the nasopharyngolaryngoscopic findings in patients presenting with upper airway disorders.

Methods

This is a single center, retrospective, descriptive cross-sectional study conducted among 720 patients who underwent NPL for various upper airway problems in Department of ENT & HNS, Bharatpur Hospital, Chitwan from 1st Jan 2024 April to 31st Dec 2024. Ethical approval was takne from IRC of Bharatpur Hospital (Ref No. 081/82-076).

Results

720 patients between age group of six to ninety years were studied. Female (473) outnumbered male (247) with ratio 1:0.52. Majority of the patients (268, 37.2%) presented with complaint of foreign body sensation in throat. NPL findings was normal in majority of patients (n=197, 27.4%), followed by Laryngopharyngeal reflux (126, 17.5%). Benign lesions like polyp, nodule, cyst were common in larynx in comparison to malignant lesion. Deviated nasal septum was also common among the patients (77, 10.7%).

Conclusions

NPL is a cost-effective brief procedure which is helpful to find out the affected site causing upper airway disorder even though findings can be normal in some of the cases. Flexible NPL examination can be performed in patients without any delay for early diagnosis of pathology in nose, pharynx and larynx.

Keywords: deviated nasal septum; laryngopharyngeal reflux nasopharyngolaryngoscopy; upper airway.

Correspondence: Dr. Lal Bahadur Gurung, Department of ENT & HNS, Bharartpur Hospital, Chitwan, Nepal. Email: lal.grg2075@gmail.com, Phone: +977-9845209651. **Article received**: 2025-07-29. **Article accepted**: 2025-11-02. **Article published**: 2025-12-31.

INTRODUCTION

Flexible Nasopharyngolaryngoscopy (NPL) is non-invasive diagnostic procedure done using endoscope to examine the nose, pharynx and larynx which are not easily accessible to clinician for a routine examination for diagnostic or therapeutic purposes.[1] Patients visit Otorhinolaryngologist with problems related to nose, pharynx and larynx such as nasal bleeding, nasal obstruction, snoring, voice change, stridor, dysphagia, aspiration, throat discomfort, cervical lymphadenopathy, hemoptysis etc.[2] NPL is a brief OPD procedure and cost effective performed with application of topical anesthesia and well tolerated by patient[3] and upper airway can be examined appropriately with adequate illumination and visualization. There are few studies done in Nepal to study NPL findings in various types of laryngeal pathologies. This study will help to understand the spectrum of common nasal, nasopharyngeal, oropharyngeal and laryngeal causes of various signs and symptoms among patients visiting ENT OPD of Bharatpur Hospital and also highlights the importance of NPL in ENT OPD in proper care of patients. It will also review the correlation of clinical symptoms with NPL findings. Such data will provide understanding of upper airway disease pattern in the local population which will support in diagnosis and help optimize treatment plan as well.

METHODS

A restrospective descriptive cross-sectional study was conducted among the patients who underwent NPL procedure for the upper airway related problems in ENT Department of Bharatpur Hospital, Chitwan, Nepal. Ethical approval was taken from Institutional Review Committee of Bharatpur Hospital (Ref. No. 081/82-076). Purposive sampling technique was used for the data collection. Data of 720 patients were extracted from the NPL record book from 1st Jan 2024 to 31st Dec 2024 for the study. DIMEDA 3.2 mm diameter fiberoptic flexible Nasopharyngolagryngosocpe along with light source and colour video monitor was used for procedure. The data was entered into MS Excel and transferred to SPSS version 11.5 and analyzed.

RESULTS

There was total 720 patients included in the study. Among them 247(34.3%) were male and 473(65.7%) were female with male to female ratio 0.52:1, (Figure 1). The age of patients ranged from 6 years to 90 years. The overall mean age was 46.45 years with standard deviation 16.758. The most common age group among the patients was 31-45 years (32.8%) (Table 1). Female patients were dominant in most of the age group with highest number of patients in 31-45 age group.

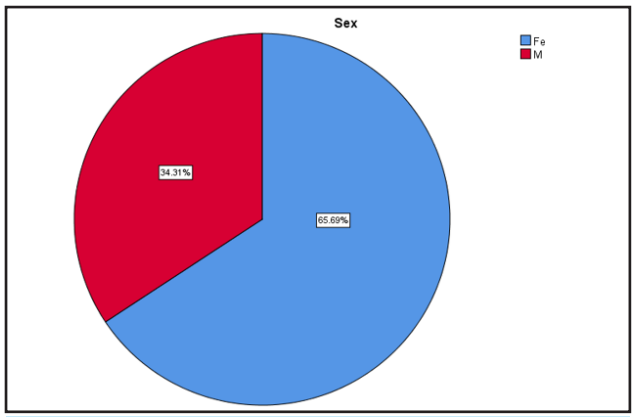

Figure 1. Gender distribution. (n=720)

Table 1. Age group distribution of patients.

Age group (years)	Male, n	Female, n	Frequency (%)
0-15	8	10	18(2.5)
16-30	80	36	116(16.1)
31-45	178	58	236(32.8)
46-60	127	65	192(26.7)
61-75	67	61	128(17.8)
>75	13	17	30(4.2)
Mean ±SD = 46.45±16.758			

Patients presented with various complaints related to upper airway such as dysphagia, change in voice, foreign body sensation, nasal obstruction, aural fullness, throat pain etc. Majority of the patients (268, 37.2%) presented complaining of foreign body sensation in throat. Among the patients (n=3, 0.4%) difficulty in speaking was the least mentioned complaint (Table 2).

Table 2. Distribution of complaints among the patients.	
Chief Complaints	**Frequency (%)**
Aural fullness	5(0.7)
Change in voice	156(21.7)
Difficulty in speaking	3(0.4)
Dysphagia	35(4.9)
Foreign body sensation in throat	268(37.2)
Foreign body stuck in throat	31(4.3)
Nasal bleeding	13(1.8)
Nasal obstruction	56(7.8)
Throat pain	153(21.3)

NPL findings was normal in majority of patients (n=197, 27.4%), followed by LPRD (n=126, 17.5%). Among 31 patients presented with history of foreign body stuck in upper airway, foreign body was found in only 2 cases. DNS was predominant among the patients (n=77, 10.7%) who presented with nose related complaints. Laryngeal benign lesions like polyp, nodule, cyst were common in comparison to suspicious laryngeal malignant lesion (Table 3).

DISCUSSION

NPL is a OPD based procedure to examine upper airway appropriately with adequate illumination and visualization. Rhinoscopy (anterior and posterior) and indirect laryngoscopy are performed to visualize nasal cavity nasopharynx and larynx but not sufficient enough for accurate diagnosis.[4,5] NPL has overtaken the traditional posterior rhinoscopy and indirect laryngoscopy which has better visibility, gives static and dynamic images.[6]

In this study, 720 patients who underwent flexible fibreoptic NPL for upper airway-related complaints were evaluated. A female predominance was observed (65.7%) with male to female ration of 0.52:1. This

Table 3. Flexible Fibreoptic Nasopharyngolaryngoscopic findings.			
NPL findings	**Female, n**	**Male, n**	**Frequency (%)**
Adenoid Hypertrophy	11	13	24(3.3)
Chronic Rhinosinusitis	20	10	30(4.2)
Deviated Nasal septum (DNS)	49	28	77(10.7)
Foreign body in Upper airway	1	1	2(0.3)
Functional Dysphonia	28	6	34(4.7)
Laryngeal mass	8	20	28(3.9)
Laryngeal ulcer	7	3	10(1.4)
Laryngitis	9	10	19(2.6)
Laryngopharyngeal Reflux (LPR)	88	38	126(17.5)
LPR with DNS	12	12	24(3.3)
Nasal mass	7	6	13(1.8)
Nasal synechia	1	0	1(0.1)
No foreign body	9	7	16(2.2)
Normal	149	48	197(27.4)
Pharyngeal mass	2	6	8(1.1)
Pharyngitis	13	14	27(3.7)
Reinke's edema	12	1	13(1.8)
Septal perforation	0	1	1(0.1)
TVC palsy	10	10	20(2.8)
TVC polyp	16	11	27(3.8)
Vocal nodule	21	2	23(3.2)
Total	473	247	720(100)

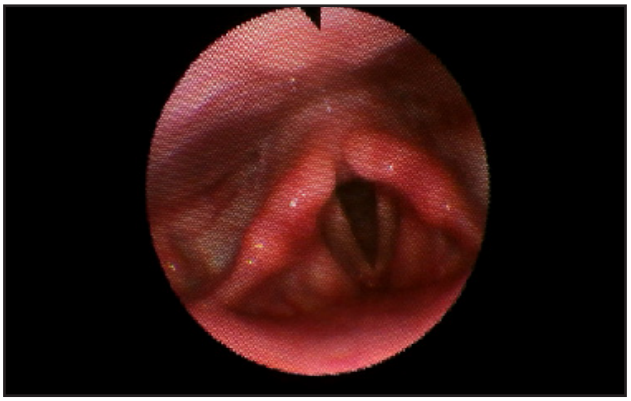

Figure 2. Normal.

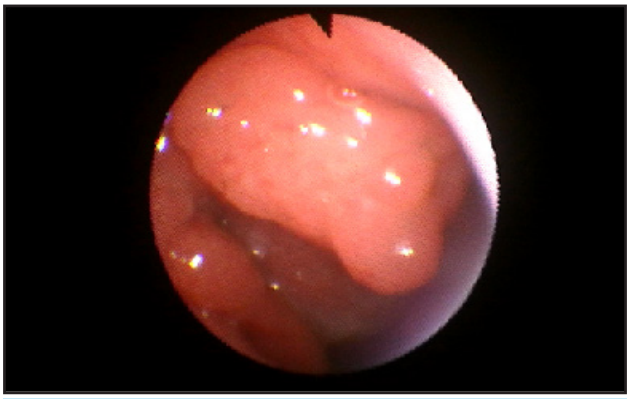

Figure 3. Hypertrophied adenoid.

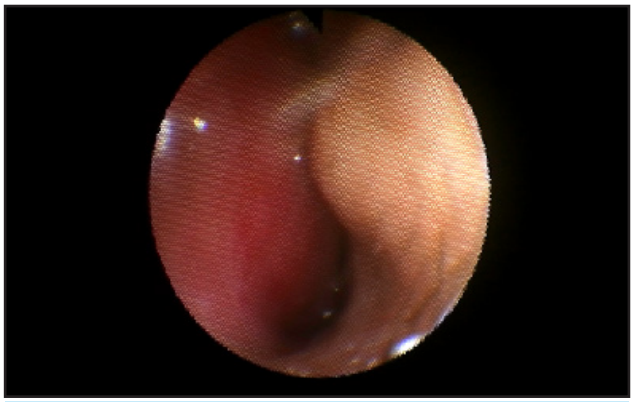

Figure 4. Left sided DNS.

Figure 5. Vocal nodule.

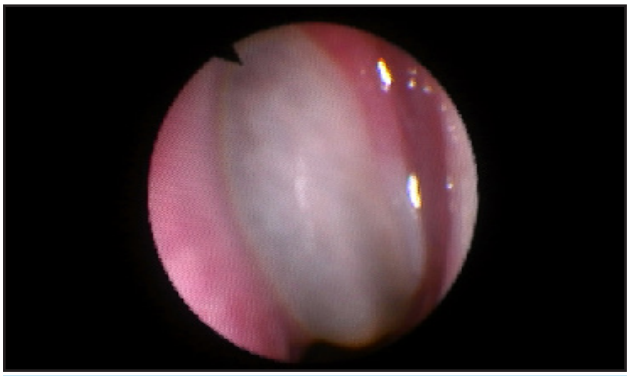

Figure 6. Nasal polyp.

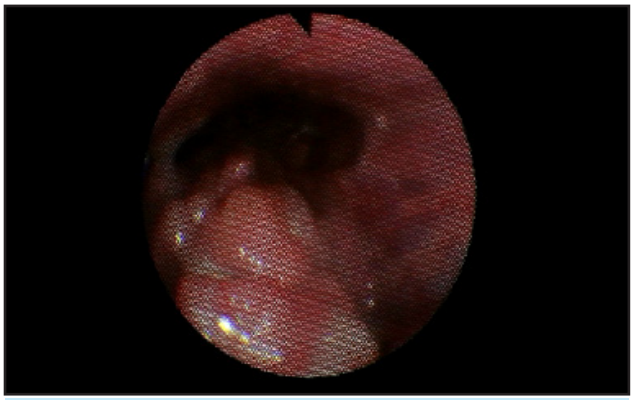

Figure 7. Supraglottic mass.

Figure 8. Left TVC palsy.

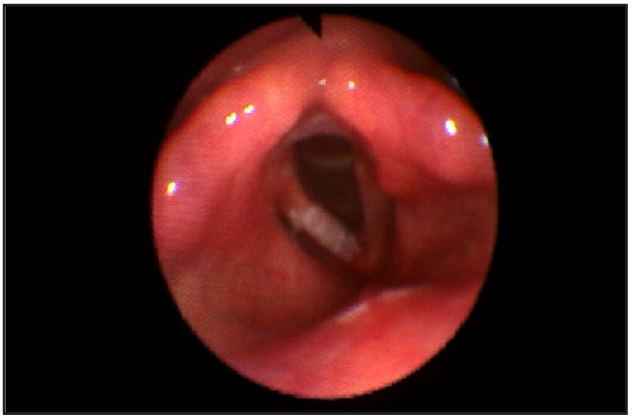

Figure 9. Right TVC leukoplakia.

is consistent with study[7] who also reported higher number of female patients. In contrary male patients (52.2%) were enrolled more in the study.[8] Female predominance may reflect greater health seeking behavior, as well as the higher prevalence of upper airway related problems among females. The most common age group among the patients was 31-45 years (32.8%) which is similar to the same study.[7] The overall mean age was 46.45±16.758 years consistent with the study.[9]

Many patients visit Otorhinolaryngologist in Hospital with various complaints associated with upper airway problems. This study showed patients had various complaints related to upper airway such as dysphagia, change in voice, foreign body sensation, nasal obstruction, aural fullness, throat pain etc. In this study majority of the patients presented with foreign body sensation in the throat (37.2%), followed by change in voice (21.7%) and throat pain (21.3%). Number of patients with foreign body sensation was similar to our study but the number of patients with change in voice was more in this study.[10] In contrast to our study 86% patients had change in voice and only 2% had foreign body sensation in throat in another study.[11] Our study had large number of patients in comparison to that study with only 100 patients which can be the cause of different result. Nose related indications (nasal obstruction, nasal bleeding) were seen in 9.6%(n=69) patients which is supported by another study.[8] Nasal bleeding was the indication for NPL among 13 patients (1.8%) only which is different than in another study.[9] Throat pain is another indication for NPL which was presented in 21.3%(n=153) of total patients in this study which is different than the other study with 10.9% (n=30) patients presented with throat pain.[10]

On endoscopic evaluation, a normal examination was observed in 27.4% of patients, indicating that a significant proportion of symptomatic individuals may have functional or reflux-related causes without structural lesions. In another study[1] majority of patients 35%) had normal findings. Among abnormal findings, laryngopharyngeal reflux disease (LPRD) was most frequent (17.5%). In contrary to this, another study[10] only 12.8% had normal NPLfinding but LPRD was seen in 42.5% patients. Similarly, an American Family Physician review reported that 23%–60% of globus patients had gastroesophageal reflux disease (GERD) as the underlying etiology.[12] Among 31 patients presented with history of foreign body stuck in upper airway, foreign body was found in only 2 cases. DNS was predominant among 10.7% patients who presented with nose related complaints. Another study[13] on DNS and sinus disease reported a prevalence of DNS as 31.1%. Lower prevalence of DNS in our study may be due to different patient selection criteria and study population characteristics.

In our study, laryngeal pathology was observed in 19.4%. Among which Laryngeal benign lesions like polyp (3.8%), nodule (3.2%), reinke's edema (1.8%) were common in comparison to suspicious laryngeal malignant lesion 3.9%). In contrast to this another study[14] showed suspected malignant laryngeal lesion were the most common among the patient with hoarseness of voice. laryngeal These findings along with other findings like functional dysphonia were similar to the study.[7] Vocal cord palsy were also similar among our study and the other study.[1]. In contrast to this another study[15] had more cases with vocal cord palsy. Laryngitis (acute and chronic) was the most common causes of hoarseness of voice is same study.[15]

Overall, our findings reinforce the clinical utility of flexible fibreoptic nasopharyngolaryngoscopy as a first-line diagnostic tool for diverse upper airway complaints. The predominance of functional and reflux-related conditions over malignant pathology highlights the need for a multidisciplinary approach including lifestyle modification, medical therapy, and speech–voice rehabilitation alongside ENT evaluation. At the same time, the procedure plays a crucial role in ruling out suspected foreign bodies and detecting serious pathologies such as vocal cord paralysis and laryngeal masses at an early stage.

Limitations

Accuracy of findings may depend on the experience and skill of the examiner. Patient discomfort and poor tolerance during the procedure can limit the examination result. Biopsy or further imaging may still be required for confirmatory diagnosis. Additionally, minor lesions or early disease stage may have been missed due to movement artifacts or inadequate visualization.

CONCLUSIONS

NPL is a simple, safe and highly valuable diagnostic tool in the evaluation of upper airway disorders with direct visualization of various anatomical sites which facilitates early and accurate diagnosis of wide spectrum of conditions.

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