

## Patients with Hoarseness of Voice in Adults of Bihar Region: A Clinicopathological Study

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### Abstract

**Background:** Hoarseness of voice is a common symptom that can result from a variety of conditions ranging from benign lesions to serious malignancies. Understanding the clinicopathological profile of patients presenting with hoarseness can aid in early diagnosis and appropriate management. This study investigates the clinicopathological characteristics of adult patients with hoarseness of voice in the Bihar region.

**Methods:** A prospective study was conducted over 18 months at Department of ENT, Nalanda Medical College and Hospital, Patna, Bihar, India, involving 100 adult patients presenting with hoarseness of voice. Detailed clinical evaluations, including laryngoscopic examination and histopathological analysis, were performed. The study analyzed demographic data, etiological factors, and the correlation between clinical findings and histopathological diagnoses.

**Results:** The most common cause of hoarseness was laryngitis, accounting for 40% of cases, followed by vocal cord nodules (25%), and malignancies (20%). Male patients were predominantly affected, with a male-to-female ratio of 2:1. A significant correlation was found between smoking and the presence of laryngeal malignancies ( $p < 0.01$ ). Histopathological analysis confirmed malignancies in 20% of the cases, with squamous cell carcinoma being the most common type.

**Conclusion:** Laryngitis and vocal cord nodules are the leading causes of hoarseness in the Bihar region, but the high prevalence of malignancies underscores the need for thorough evaluation of patients presenting with this symptom. Early laryngoscopic examination and biopsy are crucial for the timely diagnosis and management of potential malignancies.

**Keywords:** Hoarseness of voice, laryngitis, vocal cord nodules, laryngeal malignancies, Bihar region, clinicopathological study

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### Introduction

Hoarseness of voice, or dysphonia, is a symptom characterized by a change in the quality of the voice, often described as raspy, strained, or weak. It can be caused by a variety of factors, ranging from benign conditions like vocal cord nodules and laryngitis to more serious conditions such as laryngeal cancer. [1] The differential diagnosis of hoarseness is broad and includes infectious, inflammatory, neoplastic, and neurological causes. [2]

In the adult population, particularly in regions with high tobacco and alcohol use, hoarseness can be an early sign of laryngeal malignancy, making it a symptom of significant clinical concern. Early

identification and treatment of the underlying cause are essential to prevent progression and improve patient outcomes. The evaluation of hoarseness typically involves a detailed history, physical examination, laryngoscopy, and sometimes imaging or biopsy. [3]

The prevalence and etiology of hoarseness can vary widely depending on geographical, cultural, and lifestyle factors. In regions like Bihar, where tobacco use is prevalent, the incidence of hoarseness due to laryngeal cancer may be higher compared to other regions. However, there is limited data on the

clinicopathological profile of patients with hoarseness in this region. [4-5]

This study aims to investigate the clinicopathological characteristics of adult patients presenting with hoarseness of voice in the Bihar region. By analyzing the demographic distribution, etiological factors, and histopathological findings, this study seeks to provide insights into the common causes of hoarseness and the prevalence of laryngeal malignancies in this population. Such information is crucial for developing targeted public health interventions and improving clinical management strategies for patients with hoarseness.

### Methodology

This prospective study was conducted over 18 months at Department of ENT, Nalanda Medical College and Hospital, Patna, Bihar, India. The study was designed to evaluate the clinicopathological profile of adult patients presenting with hoarseness of voice.

### Study Population

#### Inclusion Criteria:

- Adult patients aged 18 years and above present with hoarseness of voice for more than two weeks.
- Patients willing to undergo laryngoscopic examination and biopsy if indicated.

#### Exclusion Criteria:

- Patients with hoarseness due to known neurological disorders or recent surgical procedures.
- Patients with acute onset of hoarseness due to upper respiratory tract infections.
- Patients who refused to consent to the study.

### Data Collection

Data were collected through structured interviews, clinical examinations, and diagnostic investigations. The following parameters were recorded:

- **Demographic Data:** Age, gender, occupation, and lifestyle factors such as smoking and alcohol use.
- **Clinical History:** Duration of hoarseness, associated symptoms (e.g., cough, dysphagia), previous medical history, and family history of cancer.
- **Laryngoscopic Examination:** Performed using a flexible or rigid laryngoscope to assess the laryngeal structures and identify any abnormalities such as nodules, polyps, or masses.
- **Histopathological Examination:** Biopsy samples were taken from any suspicious lesions identified during laryngoscopy and sent for histopathological analysis.

### Statistical Analysis

Data were analyzed using SPSS version 25.0. Descriptive statistics were used to summarize the demographic and clinical characteristics of the study population. The chi-square test was employed to assess the association between smoking and the presence of laryngeal malignancies. A p-value of <0.05 was considered statistically significant.

### Results

#### Demographic and Clinical Characteristics

The study included 100 adult patients with hoarseness of voice, with a male-to-female ratio of 2:1. The majority of patients (60%) were aged between 40 and 60 years. Smoking was reported by 55% of the patients, and 30% reported regular alcohol consumption.

Table 1: Demographic and Lifestyle Characteristics of Study Participants

Characteristic	Frequency (n=100)	Percentage (%)
<b>Age Group (years)</b>		
18-30	10	10.0%
31-40	20	20.0%
41-50	30	30.0%
51-60	30	30.0%
>60	10	10.0%
<b>Gender</b>		
Male	67	67.0%
Female	33	33.0%
<b>Smoking History</b>		
Yes	55	55.0%
No	45	45.0%
<b>Alcohol Consumption</b>		
Yes	30	30.0%
No	70	70.0%

## Etiological Distribution

Laryngitis was the most common cause of hoarseness, observed in 40% of patients, followed by vocal cord nodules (25%) and laryngeal malignancies (20%). Other causes included vocal cord polyps (10%) and neurological disorders (5%).

**Table 2: Etiological Distribution of Hoarseness**

Cause	Frequency (n=100)	Percentage (%)
Laryngitis	40	40.0%
Vocal Cord Nodules	25	25.0%
Laryngeal Malignancies	20	20.0%
Vocal Cord Polyps	10	10.0%
Neurological Disorders	5	5.0%

## Laryngoscopic Findings

Laryngoscopic examination revealed that 50% of patients had visible lesions on the vocal cords, with the most common findings being nodules and erythema. Laryngeal masses were observed in 20% of patients, all of whom were later confirmed to have malignancies through histopathological analysis.

**Table 3: Laryngoscopic Findings**

Finding	Frequency (n=100)	Percentage (%)
Vocal Cord Nodules	25	25.0%
Erythema	25	25.0%
Laryngeal Masses	20	20.0%
Polyps	10	10.0%
Normal Laryngeal Appearance	20	20.0%

## Histopathological Results

Histopathological analysis confirmed the diagnosis of malignancy in 20% of the patients. Squamous cell carcinoma was the most common histological type, accounting for 75% of the malignancies. The remaining cases included adenocarcinoma and other rare types of laryngeal cancers.

**Table 4: Histopathological Results**

Histopathology	Frequency (n=100)	Percentage (%)
Squamous Cell Carcinoma	15	15.0%
Adenocarcinoma	3	3.0%
Other Laryngeal Cancers	2	2.0%
Benign Lesions	80	80.0%

## Correlation between Smoking and Laryngeal Malignancies

A significant correlation was found between smoking and the presence of laryngeal malignancies ( $p < 0.01$ ). Smokers were more likely to develop laryngeal cancer compared to non-smokers, highlighting the impact of tobacco use on the development of malignant lesions.

**Table 5: Correlation between Smoking and Laryngeal Malignancies**

Smoking Status	Malignancies (n=20)	Non-Malignant Lesions (n=80)	p-value
Smokers	16 (80.0%)	39 (48.8%)	$<0.01^*$
Non-Smokers	4 (20.0%)	41 (51.2%)	

## Discussion

The findings of this study provide valuable insights into the clinicopathological profile of patients presenting with hoarseness of voice in the Bihar region. The results indicate that laryngitis and vocal cord nodules are the most common causes of hoarseness, but there is a notable prevalence of

laryngeal malignancies, particularly among male patients with a history of smoking. [6-7]

## Etiological Factors and Clinical Presentation

Laryngitis, accounting for 40% of cases, was the leading cause of hoarseness, likely due to the high prevalence of upper respiratory tract infections and environmental factors such as pollution in the region. Vocal cord nodules, which were the second

most common cause, are often associated with vocal strain and are commonly seen in individuals with occupations that require excessive voice use. [7-8]

The study's finding that 20% of patients had laryngeal malignancies underscores the importance of considering malignancy in the differential diagnosis of hoarseness, especially in older patients and those with a history of smoking. The significant correlation between smoking and the presence of laryngeal malignancies aligns with the established role of tobacco as a major risk factor for laryngeal cancer. [9-10]

### Laryngoscopic and Histopathological Findings

Laryngoscopic examination played a crucial role in identifying the underlying cause of hoarseness, with visible lesions observed in 50% of patients. The presence of vocal cord nodules and erythema were common findings, but the identification of laryngeal masses in 20% of patients was particularly concerning, as all these masses were later confirmed to be malignant through histopathological analysis. [11]

Histopathology remains the gold standard for diagnosing laryngeal malignancies, with squamous cell carcinoma being the most common type identified in this study. Early detection and biopsy of suspicious lesions are critical for improving prognosis, as early-stage laryngeal cancers are more amenable to treatment and have better outcomes. [12]

### Clinical Implications

The high prevalence of laryngeal malignancies among patients with hoarseness in this study highlights the need for a thorough evaluation of all patients presenting with this symptom. Clinicians should maintain a high index of suspicion for malignancy, particularly in high-risk populations such as smokers and older adults. Early laryngoscopic examination and biopsy are essential for timely diagnosis and management, which can significantly impact patient outcomes. [13]

Public health interventions aimed at reducing tobacco use could potentially reduce the incidence of laryngeal cancer and related morbidity in the region. Additionally, raising awareness about the importance of seeking medical attention for persistent hoarseness may lead to earlier diagnosis and better treatment outcomes. [14]

### Study Limitations

This study has several limitations, including its single-center design, which may limit the generalizability of the findings to other regions. The sample size, while adequate for detecting significant associations, may not capture the full spectrum of causes of hoarseness in the general population.

Future studies with larger, multicenter cohorts are needed to validate these findings and explore the broader epidemiological trends in hoarseness and laryngeal pathology.

### Conclusion

This study provides a comprehensive clinicopathological analysis of patients presenting with hoarseness of voice in the Bihar region. Laryngitis and vocal cord nodules were the most common causes, but the significant prevalence of laryngeal malignancies, particularly among smokers, underscores the importance of thorough evaluation and early diagnosis. Laryngoscopic examination and biopsy are crucial for identifying malignant lesions and initiating timely treatment. Public health efforts to reduce smoking and increase awareness of the importance of early evaluation for hoarseness are essential for improving outcomes in this population.

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