

# Evaluation of Clinical Profile and Etiopathology for Hoarseness of Voice- A Study of 146 Cases

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## Abstract

**Background:** Hoarseness of voice is the most common symptom related to laryngeal pathology and may be caused due to mild upper respiratory tract infections to life threatening laryngeal malignancies. **Aim:** The aim of this study is to evaluate various causes, predisposing factors and clinical profile of patients presenting with hoarseness of voice. **Design:** It is an observational study. **Materials and methods:** 146 patients attended to Otolaryngology department with h/o hoarseness of voice during the period of JAN 2013 to DEC 2014 were included. Primary information was obtained by detailed history, Clinical ENT examination and video laryngoscopy and imaging studies. Various laryngeal causes were identified and evaluated. Statistical analysis was done using standard methods. **Results:** Out of total 18,200 patients examined, 146(0.8%) found to have hoarseness of voice. Male to female ratio was 1.28:1. Common age group involved was 31-40 years in 54(36.98) cases. Common etio pathologies included Acute laryngitis in 45(30.82%) cases, chronic laryngitis in 29(19.86%), vocal nodules in 18 (12.32%), vocal cord palsy in 11(7.53%) and vocal cord malignancy in 19(13.01%) patients. Common Predisposing factors were smoking in 43(29.45%) cases and vocal abuse in 37(25.34%) cases. **Conclusion:** Most of the etiopathological factors found in this study were treatable and significant numbers of patients were having neoplastic disease. So, early diagnosis with the help of videolaryngoscopy and imaging can reduce the morbidity and mortality.

**Key words:** Hoarseness of Voice, Laryngeal Neoplasms, Laryngoscopy, Vocal Cords, Vocal Cord Paralysis

## Introduction

Voice in an individual is produced by a combination of laryngeal, respiratory and resonance mechanisms and it was a primary means of communication [1]. Hoarseness of voice (HOV) is defined as perceived rough, breathy or harsh quality to the voice [2]. HOV is the early and most important symptom of laryngeal pathology caused by simple common cold to severe laryngeal malignancy. Voice disorders also have a significant influence on vocational, social and emotional adjustments of patients.

Many etiopathological factors will cause hoarseness of voice but most commonly irritant or infective laryngitis, benign non neoplastic nodular lesions to neoplastic vocal cord lesions, neuromuscular disorders and laryngeal cancers are identified as causatives [3]. Common predisposing factors include vocal abuse;

smoking and frequent upper respiratory tract infections. Videolaryngostroboscopy has become the gold standard for diagnosing the vocal function and pathology now a days [4]. Spiral computerized tomography to know the extent of lesions particularly laryngeal cancers. Hence a detailed history and examination are highly essential to know the etiopathology of hoarseness to reduce the morbidity and mortality of the patients.

So the present study is aimed at evaluating different etiopathological factors, predisposing or risk factors and demographic profile for hoarseness of voice so that early diagnosis and intervention can be made there by reducing morbidity and mortality.

## Materials & Methods

This is an observational study and sample size is 146 patients having hoarseness of voice. The present study was carried out in Otolaryngology department in a

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tertiary care hospital from January 2013 to December 2014. Patients attended to Otolaryngology outpatient department with history of hoarseness of voice were included in this study. Patients having voice disorders not related to larynx like nasal & nasopharyngeal pathology, oral & oropharyngeal lesions and speech disorders due to central nervous system lesions were excluded from this study.

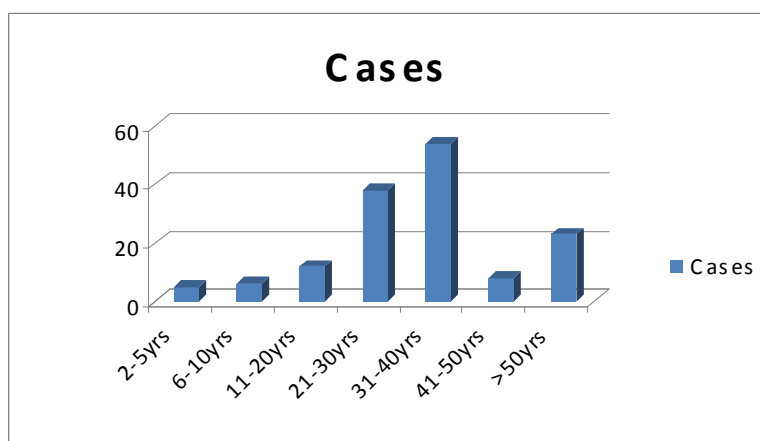
Complete medical and personal history was taken and clinical ENT examination was done. All the patients

were subjected to diagnostic flexible Video laryngoscopy. Children who were not cooperated in O.P.D were examined under general anaesthesia. Depending on the differential diagnosis patients underwent imaging studies like Chest x-ray PA view, Computerized tomography and Magnetic resonance imaging. Micro laryngoscopy was done and Biopsy was taken for cases of suspected malignancy. Specimen was sent for histopathological examination. Results were analyzed using standard statistical methods.

**Results**

Out of total 18,200 new cases attended to ENT O.P.D, 146 patients were presented with hoarseness of voice. Thus the incidence was found to be 0.8%. Among 146 cases 82 (56.16%) were males, 64 (43.84%) were females and male to female ratio being 1.28:1. Age group distribution was shown in Figure 1. Age group involved was 2 years to 70 years with mean age 33.57 yrs. Most common age group affected was 31-40 years where 54 (36.98%) patients were affected.

**Fig 1: Age distribution in total 146 cases of Hoarseness of voice**



**Table 1: Showing etiopathology of hoarseness of voice and their prevalence (n=146)**

Cause	Number of cases	Percentage
<b>Functional</b>	06	4.1
<b>Organic</b>		
Congenital	04	2.73
Acute laryngitis	45	30.82
Chronic laryngitis	29	19.86
Vocal nodules	18	12.32
Vocal cords polyp	06	4.1
Vocal cord palsy (Neurological)	11	7.53
Benign tumors of vocal cord	04	2.73
Vocal cord malignancy	19	13.01
Trauma	04	2.73

Patients having hoarseness of voice belongs to different occupations (Figure 2). Teachers were involved in 28(19.17%) cases, Priests in 08(5.47%) cases, Singers in 4 (2.73%), School children in 12(8.21%), Housewives in 38(26.02%), Labourers in 42(28.76%) and others in 14(9.5%) cases. Predisposing factors identified for different pathologies found in

this study were Vocal abuse in 37 (25.34%) cases, Smoking in 43(29.45%) cases, Alcohol in 22(15%), Upper respiratory tract infections (URI) in 42 (28.76%) cases and Laryngopharyngeal reflux (LPR) in 14(9.58%) cases (Figure 3).Single predisposing factor was identified in 72% cases, 24% had two and 4% had multiple risk factors. Different pathological lesions were identified after doing necessary investigations (Table 1) and their association with predisposing factors was shown in table 2.

**Table 2: Showing association between etiology and predisposing factors for Hoarseness of voice**

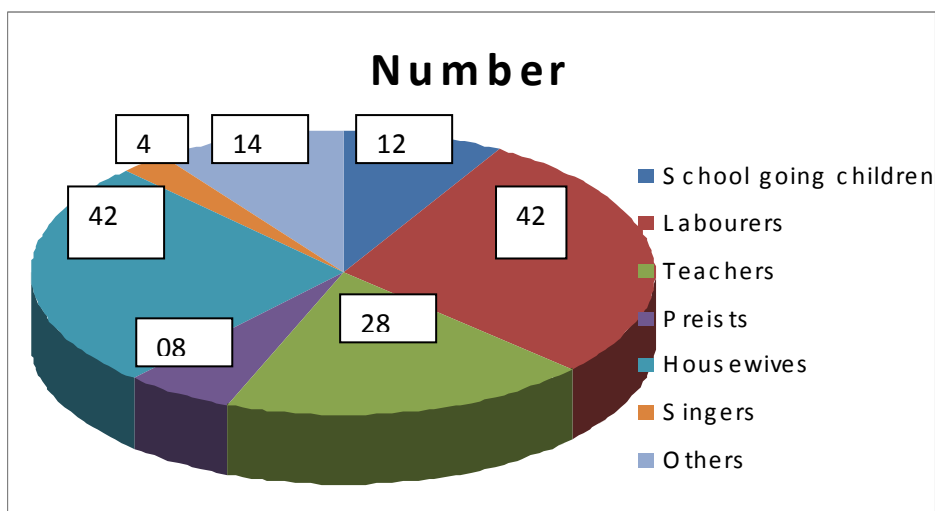
Etiology	No. of cases	Predisposing factors				
		Smoking	Alcohol	Vocal abuse	URI	LPR
Congenital	04(2.73%)	-	-	-	-	-
Acute laryngitis	45(30.82%)	14	07	07	27	05
Chronic laryngitis	29(19.86%)	12	04	09	13	08
Vocal nodules	18(12.32%)	01	01	16	-	-
Vocal polyps	06(4.1%)	-	-	04	-	01
Vocal cord palsy	11(7.51%)	-	01	-	-	-
Benign tumors	04(2.73%)	-	01	-	-	-
Vocal cord malignancy	19(13.01%)	15	06	-	-	-
Trauma	04(2.73%)	-	01	-	01	-
Functional	06(4.1%)	1	01	01	01	-
<b>TOTAL</b>	<b>146</b>	<b>43</b>	<b>22</b>	<b>37</b>	<b>42</b>	<b>14</b>

**URI – Upper respiratory tract infection; LPR – Laryngopharyngeal reflux**

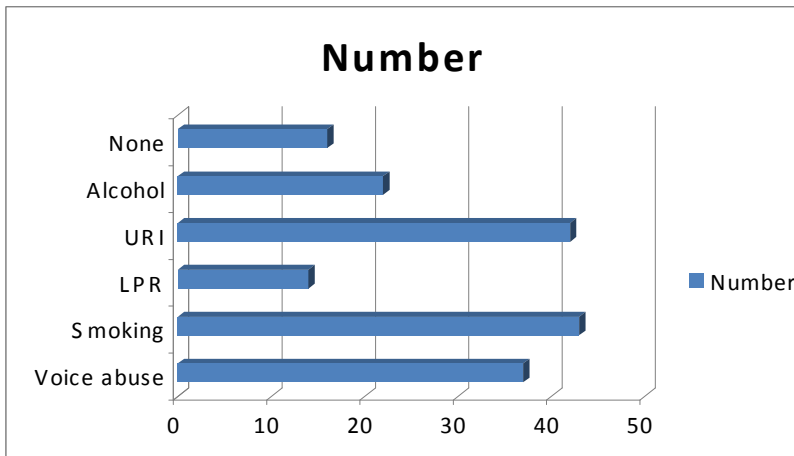
Functional dysphonia was seen in 06 (4.1%) cases. Congenital lesions were identified in 4(2.73%) cases of which 3 cases were congenital vocal cord palsy and one case vocal cord haemangioma. Acute laryngitis (Figure 4) was observed in 45(30.82%) cases, chronic laryngitis seen in 29(19.86%) cases of which 3 cases were tuberculous laryngitis. Vocal nodules (Figure 5) were seen in 18 (12.32%) cases and Vocal polyps in 6(4.1%) cases. Vocal cord palsy was seen in 11 (7.53%) cases of which unilateral palsy in 10(90%) cases and bilateral in one case. Left sided vocal cord palsy (7cases) is more common than right sided palsy (3 cases).Causes for vocal cord palsy include idiopathic in 8(72.7%) cases and post thyroidectomy in 3 cases.

Vocal cord malignancy (Figure 6) is diagnosed in 19 (13.01%) cases. Benign vocal cord growth was observed in 4(2.73%) cases of which 2 cases were fibro angioma and 2 cases were vocal cord papilloma. Trauma as a cause for hoarseness was in identified in 4(2.73%) cases.

**Fig 2: Distribution of occupation in total 146 cases of Hoarseness of voice**



**Figure 3: Showing prevalence of predisposing factors**



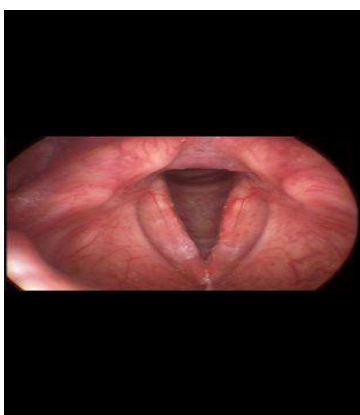
**Discussion**

146 cases with hoarseness of voice were investigated thoroughly and found prevalence of 0.8% which correlated with the study by Banjara H [5]. In countries like India this prevalence can be attributed to poor general health, unclean surroundings, vocal habits and unhealthy habits like smoking.

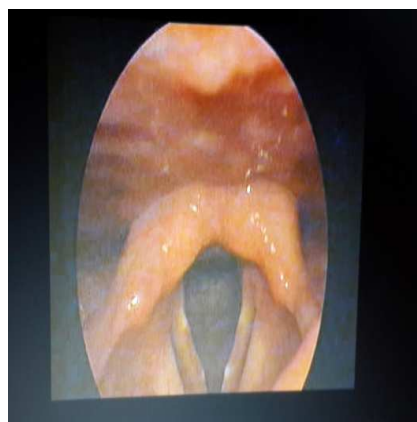
In the present study majority of cases were seen between the age 31-40 years (36.98%) and the mean age was 33.57 years which correlates with the study by Pal KS et al [6], but in study by Nwaorgu OG et al in Nigerian country the mean age was 46.98 years [7].

Males (56.16%) were affected more than females and similar results were obtained by Ghosh SK et al [8] and by Kiakojoury K et al in Iran [9].

In this study variable professions were observed and most commonly laborers were involved (28.76%) which correlates with studies by Baitha S and Pal KS but study by Khurshid RS [10], showed only 3% laborers were affected and most commonly housewives (46%) were affected.



**Fig 4: Acute Laryngitis**



**Fig 5: Bilateral vocal nodules**



**Fig 6: Vocal cord malignancy**

Teachers and other professional voice users were affected in 27.37% cases in our study. They are among high risk group affected by hoarseness because of vocal abuse as shown in the present study and also studies conducted by Smith E et al [11], Angellio M et al [12], Fritzell B [13] and Roy N et al [14]. Because of this hoarseness in few instances teachers will have to lose their jobs and there by livelihood.

Among predisposing factors for hoarseness, smoking played a significant role (29.45%) ( $p$ -value 0.0001) and similar results were obtained in studies by Baitha S, Pal KS and Reiter R [15] where smoking history was present in 25%, 33% and 56% respectively. But in study by Nwaorgu OG only 14.49% were smokers. Smoking together with tobacco chewing had a significant role in causing laryngitis and particularly vocal cord malignancy.

Upper respiratory tract infections were the second most common risk factor (28.76%) in this study by causing acute as well as chronic laryngitis. Vocal abuse was observed in 25.34% cases which were found mostly in professional voice users and highly active children. Study by Ghosh SK showed about 72% cases have vocal abuse. Vocal abuse mostly resulted in chronic laryngitis and vocal nodules.

In the present study 9.58% patients were having Laryngopharyngeal reflux (LPR). Recent studies by Smullen JL [16] and Gregory ND et al [17]. showed incidence of hoarseness caused by Laryngo pharyngeal reflux disease (LPR) has been increasing. This high rise in LPR can be related to change in food habits and increasing psychological stress of individuals.

Etiopathology was classified in to two categories.

1. Functional 2. Organic.

Functional disorders where there is no structural abnormality were present in 6(4.1%) cases of which muscle tension dysphonia in 4 cases and psychogenic in 2 cases. Surprisingly study by Koufman JA showed prevalence of functional disorders in majority (40%) cases [18].

In organic disorders congenital lesions were seen in 4(2.73%) cases, all were aged between 2-5 years. Reasons for that being congenital vocal cord palsy in 3 cases and laryngeal haemangioma on one case. And special mention about school going children aged between 06-15 years was acute laryngitis was the most

common cause in this study followed by vocal nodules because of frequent upper respiratory infections and vocal abuse or misuse by the active children. In studies by Soldatskil LuL et al [19], Schneider stickler B [20] and Martin RH et al [21] vocal nodule was the most common cause for hoarseness in children prevalence being 53.1%, 60% and 57.5% respectively.

Acute laryngitis was the most common cause for hoarseness of voice seen in 45(30.82%) cases in this study and also in study by Baitha S et al [22]. In another study by Banjara H only 4.38% cases were affected. This high occurrence is attributed to frequent upper respiratory tract infections and exposure to irritants by the general population in our region.

Chronic laryngitis being the second most common cause for hoarseness observed in 19.86% cases. But in study by Parik N, chronic laryngitis was the most common cause and in study by Kumar H et al [23] 52% of the cases were affected with chronic laryngitis. Special mention should be given to tuberculous laryngitis where 6 cases were identified indicating that although the total number of have been decreasing, tuberculosis is still a major burden in India.

Vocal nodules were noted in 12.32% of cases mostly in the age group of 20-40 years. Similar results were shown in studies by Banjara H and Baitha S but studies by Parik N [24] showed high prevalence of 43.3%. Vocal abuse was the predominant factor causing vocal nodules (87%). And the underlying pathology can be reversed by voice rest and voice therapy. Out of 11 vocal cord palsy cases cause remain unknown (idiopathic) in majority 9(81%) and 2 cases were post thyroidectomy patients. Vocal cord malignancy was observed in 19(13%) cases and similar results were showed in studies by Parik N (12%) and Batra K [25] (18%). In the present study there was a significant association between smoking and vocal cord malignancy where 15 (80%) patients with hoarseness of voice were smokers. Most of the patients were above the age of 60 years and male to female ratio was 3.2:1. Duration of hoarseness was more than 6 months in 76% of cases.

Using of advanced diagnostic modalities video laryngostroboscopy and Computed tomography made the diagnosis easy and accurate [26, 27].

## Conclusion

Prevalence of hoarseness was found to be 0.8%, most common pathology involved was acute laryngitis. Vocal cord malignancy was diagnosed in significant number of patients and smoking and tobacco chewing were found to be the major risk factor. Professional voice users had the highest risk of developing vocal nodules. And most of the etiopathological factors found in this study are treatable. So making early diagnosis with the help of videolaryngoscopy and imaging can reduce the morbidity and mortality.

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**Conflict of interest:** None initiated.

**Permission from IRB:** Yes

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