

# A clinical study on etiopathogenesis of hoarseness of voice

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## Abstract

**Introduction:** Voice is a natural medium adapted to communicate emotional contact. Hoarseness is a common symptom that otolaryngologist come across. **Aims and Objectives:** This study aims at studying the etiology predisposing factors and clinical profile of patients presenting with hoarseness. **Materials and Methods:** This study was carried out in department of ENT, PSG medical college, Coimbatore in the period of July 2015 to July 2017. A total of 100 cases presenting with hoarseness were studied. **Results:** The most common etiology was found to be malignancy of larynx with incidence of 33% among the hoarseness of voice patients. The incidence of hoarseness was 0.27% among the total ENT cases. **Conclusion:** The symptom of hoarseness of voice should not be ignored as it might be an indication of laryngeal malignancy. Any patient with hoarseness should be thoroughly investigated to rule out laryngeal malignancy, that might cause respiratory distress leading to life threatening complications.

**Keywords:** Hoarseness of voice, Laryngeal malignancy, indirect laryngoscopy, direct laryngoscopy, Video laryngoscopy

## Introduction

Voice is an integral part of human attribute known as speech. A person with voice problem may present with hoarseness, voice fatigue, breathy voice, reduced phonational range, pitch breaks etc. Hoarseness is a coarse, scratchy sound most often associated with abnormalities of the vibratory margins of the vocal cords. Hoarseness of voice describes the voice quality that is noticeably evident in its lack of clarity and discordance. In Otorhinolaryngological practice one of the commonest symptoms encountered is hoarseness of voice.

It is more common in certain groups like teachers and voice professionals. Both males and females are affected, and it can be a presenting symptom in any age group. In addition to impact of health, it has an effect on quality of life. Hoarseness can be due to both benign and malignant conditions which requires prompt diagnosis and appropriate management. If hoarseness of the voice persists for more than two weeks, then it should be investigated properly to find the cause [1]. The etiology of hoarseness is very diverse, and it varies

greatly. Hoarseness can be divided into acute and chronic onset [2]. The acute onset of hoarseness may be secondary to viral infection, voice abuse, trauma to the larynx and thyroid surgery [3]. Chronic onset may be due to vocal polyps, vocal cord nodules, laryngeal papillomatosis, laryngeal neoplasms, tumors of the vocal cords, functional dysphonia, smoking, gastroesophageal reflux, post nasal drip, malignant neoplasms of the thyroid, oesophagus, lungs and neurological involvement by systemic diseases like diabetes mellitus and chronic granulomatous diseases like tuberculosis [4]. Hoarseness can be identified just by hearing to the spoken voice. It is a common symptom which warrants investigation to rule out many local and systemic causes [5]. The present study is an attempt to analyze the clinical profile, incidence of common etiological factors and the association of common predisposing factors for hoarseness of voice.

## Aims and Objective

1. To analyze clinical profile of hoarseness of voice
2. To find out incidence of common etiological factors of hoarseness
3. To find out the association of common predisposing factors leading to hoarseness

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## Materials and Methods

This was a prospective observational study conducted during July 2015 to July 2017 in department of Otorhinolaryngology, PSG institute of medical sciences and research. This study includes 100 patients with various laryngeal pathologies on the basis of inclusion and exclusion criteria. All cases presented with change in voice.

### Inclusion criteria for cases considered in the study

1. Patients presenting with hoarseness of voice.
2. Both genders

### Exclusion Criteria for cases considered in the study

1. Age group below 5 years.
2. Voice disorders other than hoarseness like rhinolalia aperta, rhinolalia clausa, articulation disorders and central nervous system like bulbar palsy, multiple sclerosis, stroke and Parkinson's disease.

## Results

In our present study incidence of hoarseness voice was 0.27% of total ENT cases, with incidence of laryngeal malignancy in 33% of cases.

**Cases:** Maximum number of cases (31%) were between the age group of 41-50 years. Among males 41-50 years and females 31-40 years were the common age group of presentation. Hoarseness was commonly found in labourer class (48%). Both among males and females this was commonest group.

Lower socio-economic group was commonly noted among patients (40.00%) both in males and females. Majority patients were from rural area (59%). Smoking was commonly encountered habit among males (30.00%) and no habits among females.

Along with hoarseness (100%) other symptom with which patient presented were dysphagia (25%), cough (41%), breathlessness (14%), foreign body sensation in throat (10%), neck mass (5%) and Hemoptysis (5%). Maximum number of patients presented with hoarseness of voice with duration of 1-3 months. On video laryngoscopic examination commonest finding was laryngeal growth (33.33%).

Among histopathological (47pts) studies, commonest finding was squamous cell carcinoma in 70%.

### The present study showed following aetiological factors for hoarseness of voice.

Laryngeal malignancy	:	33%
Chronic laryngitis	:	22%
Vocal cord paralysis	:	15%
Vocal cord nodules	:	10%
Tuberculosis of larynx	:	8%
Vocal cord papilloma	:	5%
Vocal cord polyp	:	3%
Vocal cord cyst	:	2%
Laryngeal trauma	:	2%

**Methods of data collection:** Proforma was designed based on the objective of the study and it was pretested and used after modification. As per the proforma detailed clinical history was taken followed by thorough ENT examination and systemic examination and clinical diagnosis was arrived in support with the relevant investigations.

Videolaryngoscopy under local anaesthesia was carried out in all 100 patients as a part of local examination. Out of which many patients required surgical intervention for both diagnostic and therapeutic purposes.

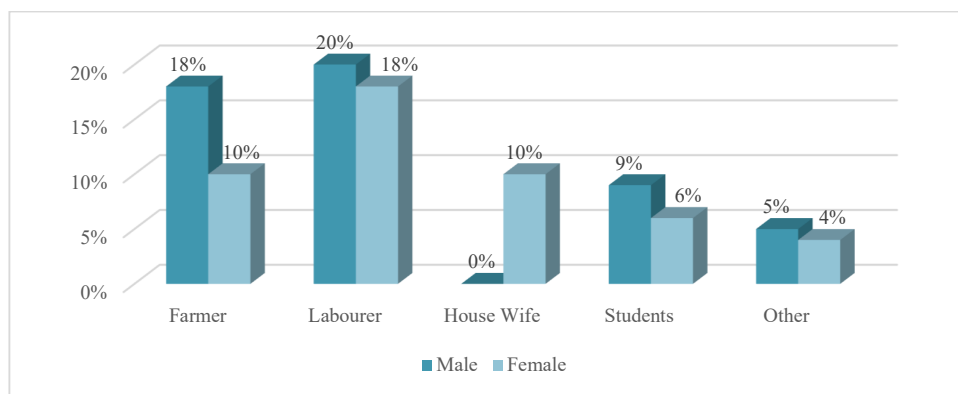
When the findings were inadequate to arrive at a clinical diagnosis, direct laryngoscopic examination with or without biopsy, microlaryngoscopy with or without biopsy, flexible endoscopy with or without biopsy was performed. The biopsy specimen was sent for histopathological examination.

Laryngeal malignancy was the commonest cause of hoarseness of voice (33%) and males were commonly affected. Smoking was noted in all male patients with malignancy (80%), along with alcohol consumption in (70%) and chewing tobacco preparation in (65%) of cases.

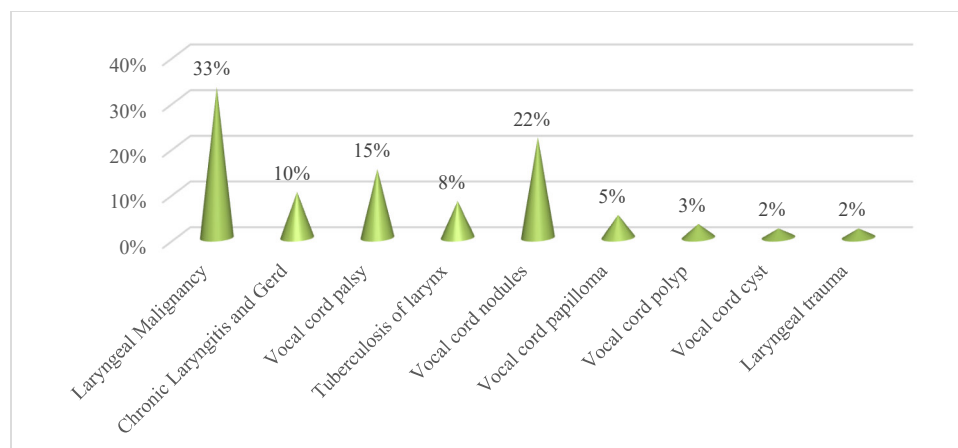
Chronic laryngitis was next common cause for hoarseness of voice (22%) and was found in 23% among males and 18% among females, with male to female ratio 1:1.

Vocal cord palsy was found in 15% of cases and was common in females (29%). Vocal cord nodules were found in 10% of patient and was common among female patients (24%) and with male to female ratio 1:2.

Tuberculosis was found in 8% all cases were males, with pulmonary tuberculosis and showed AFB on sputum examination.



**Figure 1: Occupation and sex wise distribution of hoarseness of voice.**



**Figure 2: Aetiology of hoarseness of voice.**

**Table 1: Histopathology.**

Histopathology	No. of cases (73pts)	Percentage
Squamous cell carcinoma (keratin pearls)	33	45.2
caseating granuloma and acid-fast bacilli	8	10.96
Hyperplastic stratified squamous epithelium with pigment laden macrophags	24	32.88
Squamous papilloma	5	6.85
Dense fibrin deposition with stellate cells with hemorrhages	3	4.11

Vocal cord papilloma presented in 5% of cases and females were commonly affected (66%) with male to female ration 1:2. Vocal fold polyp was found in 3% of cases, each one in male (33%) and two in female (67%). Vocal cord cyst was presented in 2% of cases. Two cases (2%) presented with laryngeal trauma.

## Discussion

Hoarseness is considered a presenting symptom of a disease and not a disease by itself. It is one of the most common symptoms in conditions affecting laryngeal apparatus. Usually Benign pathologies are more common than malignant pathologies in patients with hoarseness and early diagnosis and treatment aids in good voice quality. Hoarseness lasting longer than two weeks needs complete evaluation to rule out malignancy as a cause.

A total 100 cases of hoarseness of voice were studied during study period. In the present study period incidence of hoarseness voice was 0.27% with laryngeal malignancy being the most common cause. while in a study by Shambhu Baitha (6) incidence of hoarseness was 0.32%, which nearly coincides with the present study.

**Age and Sex:** In the present study age of patients with hoarseness of voice ranged from 8 years to 78 years majority of patients i.e. 31 cases were in the group of 41-50 years and minimum number of patients i.e. 2 case was in the age of group of <10 years. In a study by Shambhu Baitha [6] majority of patients i.e. 31 cases (28.18%) were in the age group of 31-40 years. In a study by Swapan Ghosh [7] maximum patients i.e. 28 cases (28%) were in the age group of 21-30 years.

In our present study 66 patients were males and 34 patients were females, thus male to female ratio of approximately 2:1 was observed. This finding was similar to the study done by Shambhu Baitha [8] where males 74 cases (67.27%) and female 36 cases (32.72%) were noted. But in a study done by Parikh and Sudhir babu where the male to female ratio was 1:1. and 1.89:1, which was found to be little bit lower than the present study [8, 9].

**Occupation:** In the present study majority of patients of about 48 cases were of labourer class and least i.e. 5 cases were in the others group. In a study by Shambhu Baitha al the same observation was made i.e. majority of patients were of labourer class (36.36%). In the present study group among males and females labour classes, male was found to be predominated i.e. male 52.63% and female 48.30%. In females next common group was housewife (27.28%) least which was contrast to the study done by Swapan Ghosh where majority of patients were housewife (29%).

**Socio economic status:** In the present study, majority of patients (40.00%) belonged to low socio-economic status and also majority of patients among males (36.84%) and females (45.45%) belong to lower socio-economic status. Upper lower group was next common (30.00%), other groups with decreasing frequency were lower middle (18%), upper middle (8%) and upper (4%).

**Residence:** In the present study about 59 patients were from rural area and minimum cases of 41 patients were from urban area. This was similar and coincides with the study done by Shambhu Baitha [6] were predominantly patients were from rural areas comprising of 83 cases (75.5%).

**Habits:** Brock has mentioned inhaled irritants especially cigarette smoke as most important predisposing factors for hoarseness (10). In our present study commonest habit noted was smoking which was seen in 30 patients and the alcohol was the lowest habit seen in 8% of patients. The present study was similar to the study done Sambhu Baitha [6]. In the study done by Swapna Ghosh [7] vocal abuse was noted in 72% of cases which was contrast to the present study. In the study done by Shambhu Baitha [6] smoking was noted in 25.45% of cases, chewing tobacco preparation was noted in 17.27% and alcohol in 12.72% similar to the present study. Parik [3] has found that smoking was associated with hoarseness in about 20% of cases only and vocal abuse was found in 56% which was contrast to ours.

**Videolaryngoscopic examination:** On videolaryngoscopic examination commonest finding was – Ulceroproliferative growth involving larynx and laryngopharynx which was seen in 41% of cases. And the rare finding is the vocal folds cyst and submucosal haemorrhage of vocal folds and false cords were noted in 2%. In a study by Shambhu Baitha [6], congestion of vocal cords noted in 34.54%, growth in only 9% of cases on IDL examination. This was contrast to the present study. This may be due to patients' habits.

**Etiology of hoarseness of voice:** In the present study, commonest etiology observed was malignancy of larynx and laryngopharynx in about 33% of patients. Among males commonest etiology was malignancy of larynx and laryngopharynx 29 cases (41.86%) and among

females' malignancy of larynx and laryngopharynx was only 11.77% (4 cases). Among patients with malignancy males were common 29 cases (92.86%) and females 4 cases (7.14%) with male to female ratio as 13:1. In study by Shambhu Baitha [6] Incidence of malignancy was 14.54% with male to female ratio as 15:1. In a study done by Kadambari [11] incidence of malignancy was 18% and in study by Swapna Ghosh [7] incidence of malignancy was only 8% and in Parikh [8] incidence of malignancy was 12%. When compared to the other study, incidence of malignancy in patients presenting with hoarseness was found to be high this may be due to their socioeconomic status and habit related.

In the present study next common etiology was chronic laryngitis 22 cases. Among females it was common etiology 11 cases (17.65%). Male to female ratio was found to be 1:1 as 11 cases of males had chronic laryngitis. In both studies of Parikh [8] and Shambhu Baitha [6] chronic laryngitis was commonest aetiology comprising of 48% in each, whereas in study by Swapna Ghosh [7], it was only 6% and in study by Kadambari [11] it was 8%. The present study was similar to the study done by Swapna Ghosh [7] and Kadambari [11] but contrast to the other studies like Parikh [8] and Shambhu Baitha [6].

Third common etiology was vocal cord paralysis noted in 15 cases. Among males the incidence was 9.30% (7 cases) and among female 29.41% (8 cases), with male to female ratio as 0.8:1. In study by Parikh [8], Kadambari [11] and Shambhu Baitha [6], It was only 3%, 9% and 9% respectively, with male to female ratio in Shambhu Baitha [6] study was 9:1. The present study had a very lower male female ratio. The present study showed clearly that females have a higher vocal cord palsy rate compared to male.

The fourth common etiology was vocal cord nodules, 10 cases with male to female ratio 1:2. Among males 4.65% (3 cases) were affected and among females 23.53% (7 cases) patients had vocal nodules. In all cases vocal nodules were bilateral.

Vocal nodules were the commonest aetiology in the studies done by Parikh [8] (50%) with males 43.3% and females 56.7% and also in Swapna Ghosh [8] with incidence of 30% with male to female ratio 1:1.5.

In study by Shambhu Baitha [6] incidence was only 12.72% with male to female ratio 1:1.3. in the present study also, it was clearly defined that vocal nodule is more common in female than male but the ratio is found to be higher when compared to other studies.

The fifth common etiology was tuberculosis of larynx 8 cases. All the patients were males with pulmonary tuberculosis. In study by Parikh [8] Shambhu Baitha [6] and Kadambari [11] incidence of tuberculosis was 23%, 5.45% and 1% respectively.

Vocal cord papilloma was found in 5 cases with male to female ratio as 1:2. Vocal cord polyp was presented in 3 patients with male to female ratio as 1:2 as one male and two female had vocal cord polyp. In the study done by Swapna Ghosh [7], Parikh [8] and Shambhu Baitha [6] incidence of vocal cord polyp were 23%, 15%, and 4.54% with male to female ratio as 3.6:1, in Swapna Ghosh Study [7] and 1:1.5 in Parikh et al study. Only Parikh [8] study was similar to the present study whereas in other studies the vocal cord polyp had a higher incidence than others. Other cases, which presented with hoarseness, were vocal cord cyst in 2 patients and laryngeal trauma in 2 patients which was similar to above study [8].

## Conclusion

Thus, from this study it was found that the incidence of hoarseness of voice in the present study is 0.27%. Laryngeal malignancy (squamous cell carcinoma) was found to be the most common cause of hoarseness of voice (33%). Smoking was found to be the most common etiological factor for squamous cell carcinoma of Larynx (30%). In the present study, male patients were found to be affected more in laryngeal carcinoma than females with male female ratio of 13: 1. Rural population and patients in low socio-economic status were the most affected. Finally, it can be concluded that, the symptom of hoarseness of voice should not be ignored as it might be an indication of laryngeal malignancy. Any patient with hoarseness should be thoroughly investigated to rule out laryngeal malignancy, that might cause respiratory distress leading to life threatening complications.

## What the study adds to the existing knowledge?

The importance of the present study is to highlight the importance of not neglecting hoarseness of voice lasting for more than a week.

## Author's contribution

**Dr. A. Dayanand:** Concept, study design

**Dr. Minu Madeswaran:** Data analysis, manuscript preparation

**Dr. S. Palaninathan:** Guidance

## Original Research Article

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