

## CLINICAL STUDY ON ETIOPATHOGENESIS AND MANAGEMENT OF HOARSENESS OF VOICE

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### ABSTRACT

The human voice is an extraordinary attainment, which is capable of conveying not only complex thoughts but also subtle emotions. Production of voice is a complex mechanism. The vocal folds produce tone that becomes modified by pharynx, palate, tongue, nose and lips to generate the individual sounds of speech. Hoarseness of voice is one of the commonest important symptoms in otolaryngological practice invariably the earliest manifestation of a large number of conditions directly or indirectly affecting the voice apparatus. "It is however strange that hoarseness as a subject has not attracted the attention of many workers.

**Keywords:** Hoarseness, otolaryngological, Dysphonia, Chronic onset, articulation disorders

### Introduction

Voice is an important aspect of human life, because it conveys the mood and feelings at any particular time. It is an integral part of human attribute known as speech. It's a powerful tool which can reveal a person's physical state. Markel and his colleagues have shown that the pitch, loudness and tempo of the voice can be used to reflect the personality of the individual. A person with a voice problem may present with hoarseness, voice fatigue, breathy voice, reduced phonational range, pitch breaks etc. characterized by altered pitch, loudness, vocal effort and quality which reduces voice-related quality of life or impairs communication. Hoarseness is just a symptom, but Dysphonia is a diagnosis<sup>1</sup>. Hoarseness is a coarse, scratchy sound most often associated with the abnormalities of the vibratory margins of the vocal cords<sup>2</sup>. Hoarseness of voice describes the voice quality that is noticeably aberrant in its lack of clarity and discordance. Hoarseness may be associated with other symptoms like breathiness, tension and strain of voice.

Teachers and older adults were the common group of people where hoarseness is more prevalent. But both genders and all age groups can be affected. It is caused by benign or malignant conditions. The laryngeal dysfunction produces symptoms which can vary from mild hoarseness to life-threatening stridor. It is a most common presenting symptom for more serious conditions which warrants immediate diagnosis and management<sup>3</sup>. Benign conditions are more common than malignant<sup>4</sup>.

In 1930 Jackson and Jackson felt that hoarseness is the most common and important symptom of laryngeal disease. When it is absent, it indicates that the cords and the motor mechanism were free from the disease<sup>5</sup>. Laryngitis, vocal fold hemorrhage, mucosal disruption, mass lesions and carcinoma are the conditions where hoarseness of voice is found to be the main symptoms<sup>2</sup>. If the hoarseness of the voice persists for more than fifteen days, then it should be investigated properly to find the cause<sup>6</sup>.

The etiology of hoarseness is very diverse and it varies greatly. Hoarseness can be divided into acute and chronic onset<sup>7</sup>.

The acute onset of hoarseness may be secondary to viral infection, voice abuse or trauma to the larynx and thyroid surgery<sup>8</sup>.

Chronic onset may be due to vocal polyps, vocal cord nodules, laryngeal papillomatosis, laryngeal neoplasms, tumors of the vocal cords, functional dysphonia, smoking, voice abuse, 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<sup>9</sup>.

Hoarseness can be identified just by listening to the spoken voice. It is the most important and common symptom which warrants immediate investigation to rule out many local and systemic causes<sup>10</sup>. 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.

## **AIM AND OBJECTIVES**

### **AIM & OBJECTIVES:**

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 and its management.

## **MATERIALS AND METHODS**

The Prospective study of 100 patients with complaints of hoarseness of voice from the department of ENT in sreebalaji medical college was taken for this study, period of two years from July 2016 to July 2018

### **INCLUSION CRITERIA:**

1. Patients presenting with complaints of hoarseness of voice attending in sbmch.
2. Age more than 15 years and less than 80 years and both sexes

### **EXCLUSION CRITERIA:**

1. Age group below 15 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.

## **MATERIALS:**

Detailed history and complete ENT examination was done with the consent of patients in these study population. Indirect laryngoscopy and Video laryngoscopy under local anaesthesia(lignocaine 10%) was carried out in opd for all patients with hoarseness of voice for this study. Out of which, many patients required surgical intervention for both diagnostic and therapeutic purposes.

Depending upon diagnosis ,both medical and surgical intervention was given to these patients.In case of vocal cord growth,vocalnodule,vocal fold polyp,vocal fold cyst,biopsy specimen was sent for histopathological examination for confirmation of diagnosis.

## **Working indices and Analysis of data:**

Thus obtained data was analyzed with the aid of calculator and presented in the forms of tables, figure, graphs and diagrams wherever necessary.

## **RESULTS**

### **Incidence:**

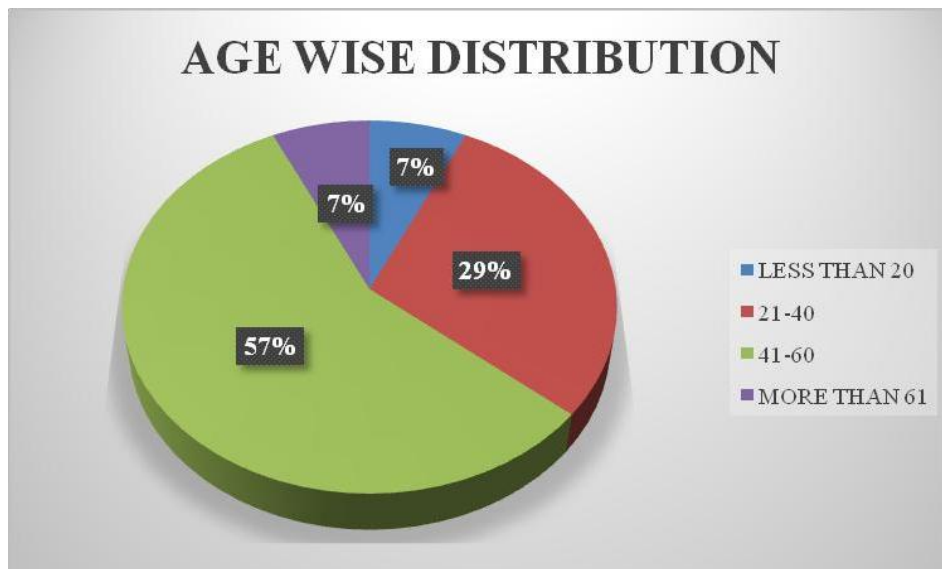
The prospective study of 100 cases with complaints of hoarseness of voice was conducted, period of two years in sreebalaji medical college.

Thus, the incidence of hoarseness was observed to be is 0.33% of all cases attending in E.N.T opd.

### **AGE:**

<b>AGE GROUP</b>	<b>FREQUENCY (N=100)</b>	<b>PERCENTAGE</b>
LESS THAN 20	7	7
21-40	29	29
41-60	57	57
MORE THAN 61	7	7

**TABLE 4: AGE OF THE STUDY PARTICIPANTS**



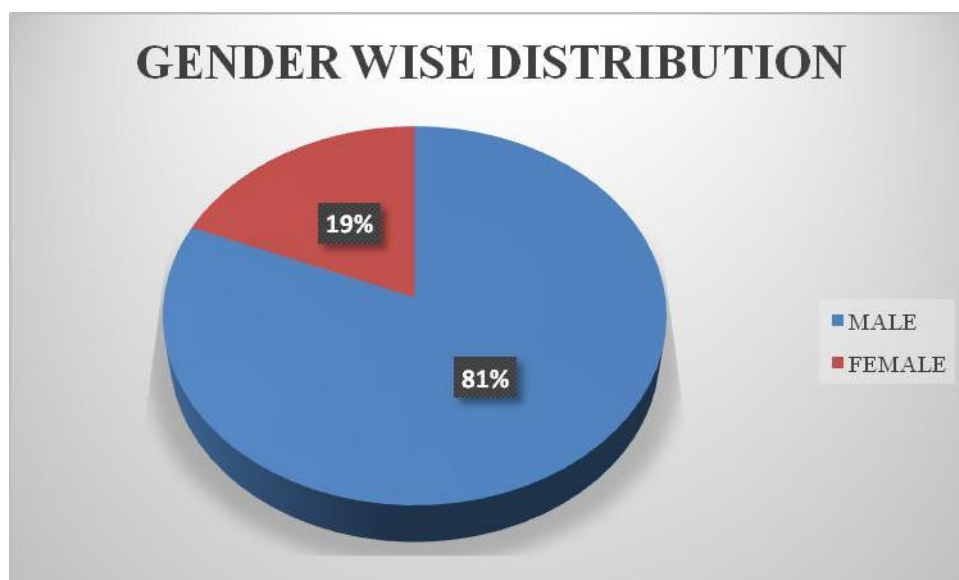
**CHART 1: AGE WISE DISTRIBUTION:**

1. 57% cases were in the group of 41 -60 years
2. 29 % cases were in the group of 21 -40 years.
3. 7% cases were in the group of less than 20years and more than 60 years.

**GENDER**

GENDER	FREQUENCY	PERCENTAGE
MALE	81	81
FEMALE	19	19

**TABLE 5: GENDER WISE DISTRIBUTION**



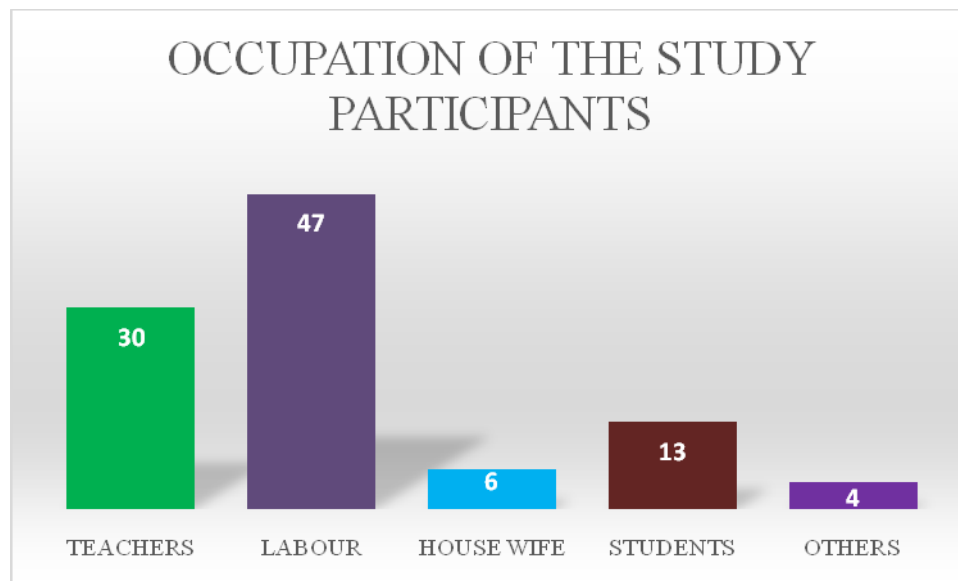
**CHART 2: GENDER WISE DISTRIBUTION:**

- 81 % patients were males and 19% patients were Females.

## OCCUPATION

OCCUPATION	FREQUENCY (N=100)	PERCENTAGE
TEACHERS	30	30
LABOUR	47	47
HOUSE WIFE	6	6
STUDENTS	13	13
OTHERS	4	4

**TABLE 6: OCCUPATION**



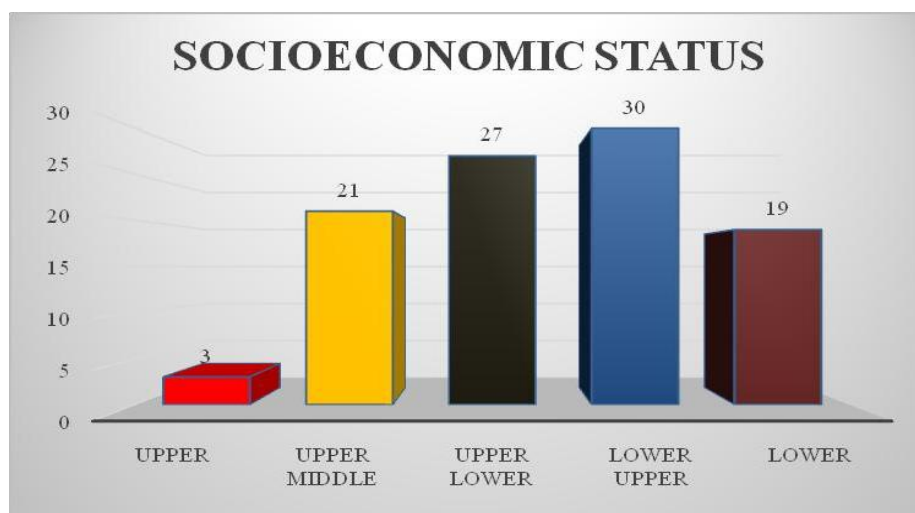
**CHART 3: OCCUPATION:**

- 47% cases were of labourer Class
- 30% cases were of teachers
- 13% cases were of students
- 6% cases were of housewives
- 4 % cases were of others

## SOCIOECONOMIC STATUS

SOCIOECONOMIC STATUS	FREQUENCY (N=100)	PERCENTAGE
UPPER	3	3
UPPER MIDDLE	21	21
UPPER LOWER	27	27
LOWER UPPER	30	30
LOWER	19	19

**TABLE 7: SOCIOECONOMIC STATUS**



**CHART 4: SOCIO ECONOMIC STATUS**

- (49.00%) belonged to low socio economic status
- 27.00% Upper lower group
- lower middle (18%)
- upper middle (21%) and upper (3%).

## DURATION

DURATION ILLNESS	OFFFREQUENCY (N=100)	PERCENTAGE
1-3 MONTHS	40	40
4-6 MONTHS	9	9
7-9 MONTHS	4	4
9-12 MONTHS	13	13
12-24 MONTHS	22	22
MORE THAN 24 MONTHS	12	12

TABLE 8: HISTORY OF ILLNESS

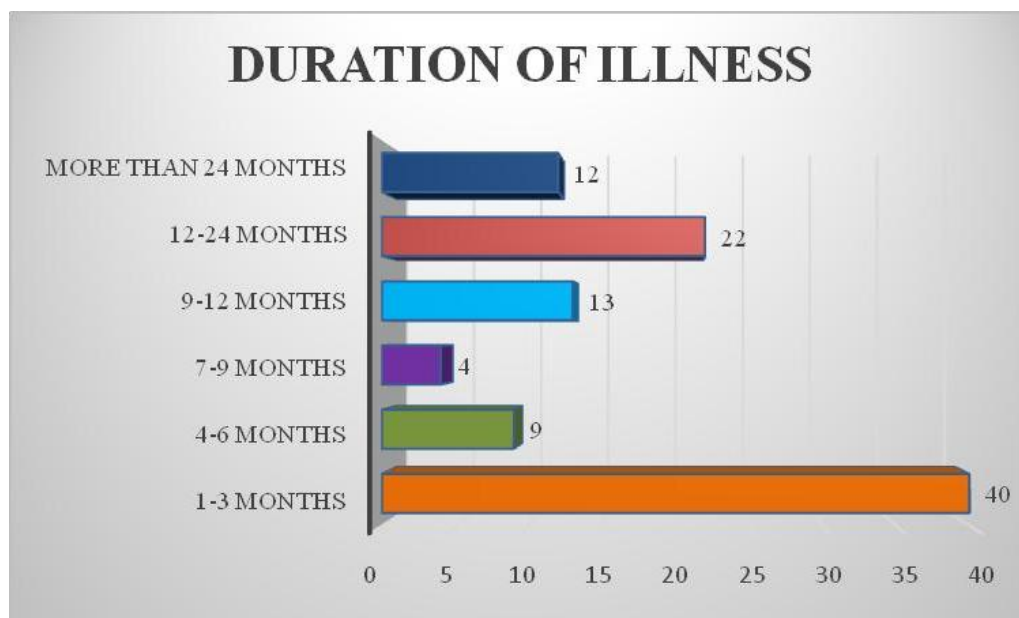


CHART 5: DURATION ILLNESS:

- 1-3 months was about 40%
- 4-6 months was about 9%
- 7-9 months was about 4%
- 9-12 months was about 13%
- 12-24 months was about 22%

- more than 24 months was about 12%

## HABITS

LIFE STYLE HABITS	FREQUENCY (N=100)	PERCENTAGE
SMOKING	70	70
ALCOHOLIC	27	27
TOBACCO CHEWING	35	35
SMOKING+ ALCOHOL	18	18
VOCAL ABUSE	47	47

TABLE 9: PERSONAL HABITS

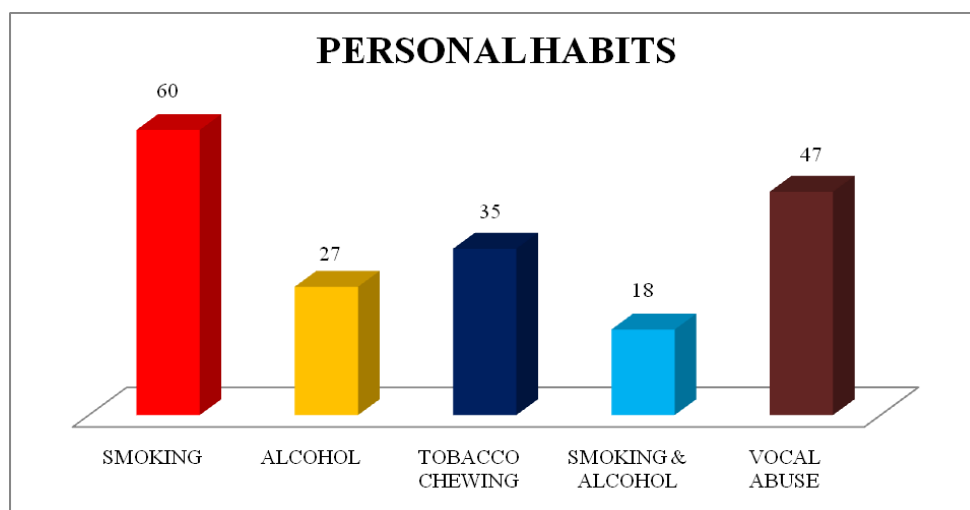


CHART 6: LIFESTYLE HABITS:

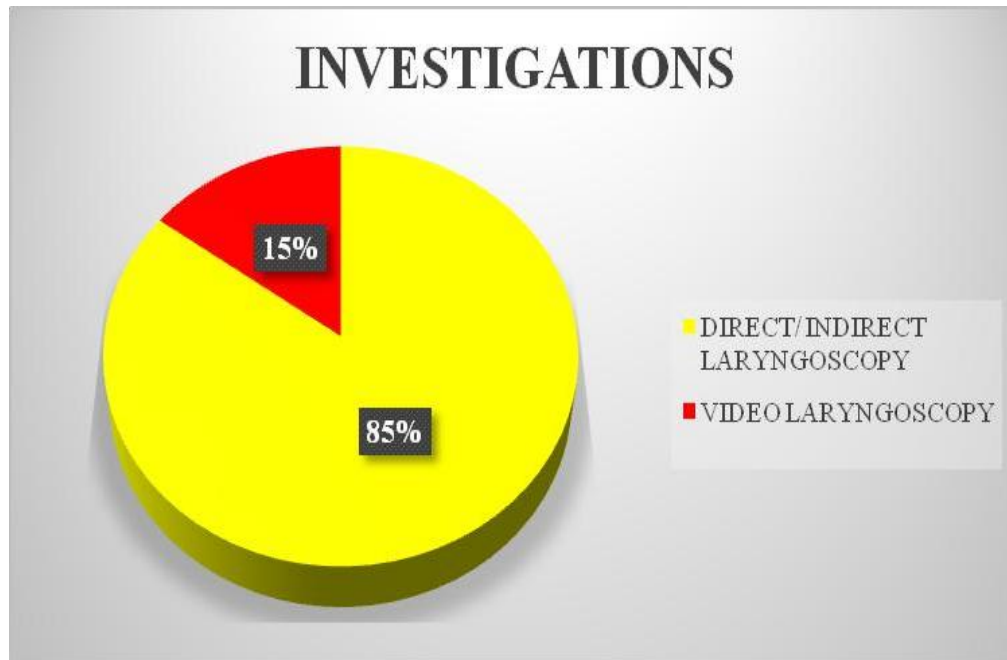
- 60% of the study participants were smokers, 27 % consuming alcohol, 35% were chewing tobacco, and 47 % had vocal abuse, 18% were both consuming alcohol and smoking habits.

## INVESTIGATIONS

INVESTIGATIONS	FREQUENCY (N=100)	PERCENTAGE
DIRECT/INDIRECT LARYNGOSCOPY	85	85
VIDEO LARYNGOSCOPY	15	15

TABLE 10: INVESTIGATIONS





**CHART 7:INVESTIGATIONS**

- 85% were subjected for direct/ indirect laryngoscopic examination and 15% were subjected to videolaryngoscopic examination.

## DISCUSSION

The study population of 100 patients were carried out in this perspective study for the period of two years.

### Age and Sex:

In our study age of patients with hoarseness of voice ranged from 15 yrs to 78 yrs majority of patients i.e. 29 % cases were in the group of 21 -40 years. In a study by SambuBaitha majority of patients i.e. 31 cases (28.18%) were in the age group of 31 -40 years. In a study by SwapanGhosh maximum patients i.e. 28 cases (28%) were in the age group of 21-30 years.

In our present study 81 % patients were males and 19% patients were females was observed. This finding was similar to the study done by SambuBaitha,<sup>92</sup> where males 74 cases (67.27%) and female 36 cases (32.72%) were noted and also in study by Parikh<sup>8</sup> where males presented 67% .

### Aetiology of hoarseness of voice:

In our study commonest aetiology observed was malignancy of larynx and laryngopharynx in about 35% of patients. Among males commonest etiology was malignancy of larynx and laryngopharynx which was 29 cases and among females malignancy of larynx and laryngopharynx was only 4 cases with male to female ratio as 7:1. In study by Sambu Bhaita<sup>62</sup>

incidence of malignancy was 14.54% with male to female ratio as 15:1. In study by Kadambari<sup>9</sup> incidence of malignancy was 18% and in study by Swapan Ghosh<sup>63</sup> incidence of malignancy was only 8% and in Parikh<sup>8</sup> incidence of malignancy was 12%. When compared to the other study our study malignancy incidence for hoarseness was found to be high this may be due to their socioeconomic status and substance abuse related.

The second common etiology was chronic laryngitis and GERD noted in 23 cases, in which males were 20 and females were 3 cases. In both studies of Parikh<sup>8</sup> and Sambu Baitha<sup>94</sup> chronic laryngitis was commonest etiology comprising of 48% in each, whereas in study by Swapan Ghosh<sup>93</sup>, it was only 6% and in study by Kadambari<sup>9</sup> it was

8%. Our study was similar to the study done by Swapan Ghosh and Kadambari but contrast to the other studies like Parikh and Sambu Baitha.

Third common aetiology was vocal cord paralysis noted in 12% of cases. Among males the incidence was 7 cases and among female 5 cases, with male to female ratio as 1.2:1. In study by Parikh,<sup>8</sup> Kadambari<sup>9</sup> and Sambu Baitha<sup>9</sup>, It was only 3%, 9% and 9% respectively, with male to female ratio in Sambu Baitha study was 9:1. Our study have a very lower male female ratio. Our study showed clearly that females have a higher vocal cord palsy rate compared to male.

The fourth common etiology was tuberculosis of larynx 10 cases. All the patients were males with pulmonary tuberculosis. In study by Parikh<sup>8</sup> Sambu Baitha and Kadambari<sup>9</sup> incidence of tuberculosis was 23%, 5.45% and 1% respectively.

In our study next common aetiology was Vocal nodule seen in 8 cases. Among males 4 cases were affected and among females 4 patients had vocal nodules. In all cases vocal nodules were bilateral. Vocal nodules were the commonest aetiology in study by Parikh<sup>8</sup> (50%) with males 43.3% and females 56.7% and also study by Swapan Ghosh it was commonest etiology with incidence of 30% with male to female ratio 1:1.5. In study by Sambu Baitha incidence was only 12.72% with male to female ratio 1:1.3.

### **Personal habits:**

This study shows that the majority 60% of the study participants were smokers, 27 % consuming alcohol, 35% were chewing tobacco, and 47 % had vocal abuse.

Brock has mentioned inhaled irritants especially cigarette smoke as most important predisposing factors for hoarseness.<sup>36</sup> In the study done by Swapan Ghosh vocal abuse was noted in 72% of cases. In the study done by Sambu Baitha<sup>94</sup> smoking was noted in 25.45% of cases, chewing tobacco preparation was noted in 17.27% and alcohol in 12.72%. Parikh<sup>8</sup> has found that smoking was associated with hoarseness in about 20% of cases only and vocal abuse was found in 56%.

### **Clinical presentation:**

Hoarseness was noted in all the 100 cases and the associated symptom was the dysphagia which was noted in 25% of patients, neck swelling in 14% of patients. Other symptoms were dry cough (10%), foreign body sensation in throat (10%), stridor (5%) and Hemoptysis (5%). This was similar to the study done by Sambu Baitha<sup>92</sup> hoarseness was observed in all the cases (100%) and the least common symptom was noisy respiration (0.99%).

### **Indirect laryngoscopic (IDL) examination:**

On Indirect laryngoscopic examination (IDL) commonest finding was - Ulceroproliferative growth involving larynx and laryngopharynx[supraglottis,glottis and subglottis] which was seen in 33% of cases. And the rare finding is the vocal fold cyst and submucosal hemorrhage of vocal folds,vocal cord polyp,vocal nodule and false cords were noted in 2%. In a study by SambuBaitha<sup>92</sup>,congestion of vocal cords noted in 34.54%, growth in only 9% of cases on IDL examination. This was contrast to our study.

### **Investigations:**

In the present study 85% were subjected for direct/ indirect laryngoscopic examination and 15% were subjected to videolaryngoscopic examination. In study by Parikh<sup>8</sup> 60% of patient underwent microlaryngoscopy.

## **CONCLUSION**

Maximum number of cases (57%) were in the age group of 41-60 years. Hoarseness was commonly found in labourer class (47%). Both among males and females this was commonest group. Lower socio economic group was commonly noted among patients (49%), also both in males and females. Smoking was commonly encountered substance abuse among males (60%) and no smoking among females. Along with hoarseness (100%) other symptom with which patient presented were dysphagia (25%), neck swelling (14%), dry cough (10%), foreign body sensation in throat (10%), stridor (5%) and Hemoptysis (5%). Maximum number of patients presented with hoarseness of voice with duration of 1-3 months. On indirect laryngoscopic examination commonest finding was ulceroproliferative growth (33.33%).Indirect/ direct laryngoscopic examination done in 85%. Among 62% patients of histopathological studies, commonest finding was squamous cell carcinoma (45.2%). 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. Laryngeal malignancy was the commonest cause were found in 35% of patients. Vocal cord palsy was found in 12% of cases. Chronic laryngitis and GERD was found in 23 %.

Tuberculosis was found in 10%, all cases were males, with pulmonary tuberculosis. Vocal cord papilloma presented in 4% of cases. Vocal fold polyp was found in 2% of cases, each one in male and female. Vocal cord cyst was presented in 2% of cases. Two cases (2%) presented with laryngeal trauma. Among the study participants 65% were treated surgically and 35% treated by conservative management. Hoarseness is a symptom,not a disease.It is one of the commonest symptoms and is invariably earliest manifestation of a large variety of condition affecting voice apparatus. Laryngeal malignancy (Squamous cell carcinoma) was found to be the most common cause of hoarseness of voice.(35%) Smoking was found to be the most common etiological factor for squamouscell carcinoma of Larynx(60%). In our study, male patients were found to be affected more in laryngeal carcinoma than females with male female ratio of 7: 1. In our study majority were treated by surgery followed by radio and chemotherapy. According to our observation ,most common cause of hoarseness of voice is due to malignant growth of larynx, so it is importance derived from this study was, that common cause is malignant disease than the benign lesion,so delay for the treatment of malignant disease should be ignored. Treatment of

hoarseness of voice at early stage will prevent life threatening complications like respiratory distress.

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**Ethical approval:** The study was approved by the Institutional Ethics Committee

### CONFLICT OF INTEREST

The authors declare no conflict of interest

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