

## The Evaluation of Hoarseness And Its Treatment

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### Abstract:

**Background and objectives:** Hoarseness is defined as roughness of voice resulting from variations of periodicity or intensity of consecutive sound waves. Hoarseness is a symptom not a disease.

**Materials and Methods:** The study was conducted in the department of Otorhinolaryngology, IQ City Medical College and Narayana Multispecialty Hospital, Durgapur, India between August 2015 to February 2017.

**Results:** Total 170 cases were studied. Average age group was found to be between 21 –50 years. The number of female patients were 105(61.76%) and male 65(38.24. %). The chronic non specific laryngitis were 60(35.29%), acute laryngitis 45(26.47%), vocal nodule 21(12.35%), vocal polyp 18(10.59%), reinke's edema 10(5.88%), contact ulcer 8(4.71), vocal cord palsy 5(2.94%) and vocal cord carcinoma 3(1.76%). Out of 170 cases, 35 were selected for Micro laryngeal surgery, those were vocal nodules 18(51.43%), vocal polyp 12 (34.29%) and reinke's edema were 5(14.29%). Postoperatively, 2(5.71%) patients had persistent of the symptoms and 3 (8.57%) patients had recurrent during the 4 months of follow-up period.

**Conclusion:** Hoarseness is a common symptom of laryngeal dysfunction. The micro laryngeal surgery is a minimally invasive procedure used to correct voice disorder or other problems affecting the larynx.

**Keyword:** Hoarseness, laryngitis, vocal nodule, vocal polyp, micro laryngeal surgery.

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### I. Introduction:

Hoarseness is defined as roughness of voice resulting from variations of periodicity or intensity of consecutive sound waves. The vocal apparatus consists of the respiratory system, the larynx, and the supraglotticvocal tract. Normally, these complex systems are integrated to produce high vocal quality<sup>1</sup>. The respiratory system (i.e., the lungs, rib cage, abdominal musculature, and diaphragm) Acts as a bellows or compressor by providing constant and steady flow of air through the vocal folds<sup>2</sup>. During vocalization, the compressed air generates pressure differential through a narrowed glottis by means of the Bernoulli effect.<sup>3</sup> Larynx. The larynx consists of fold-shaped muscles and is covered by mucous membranes. The space between the vocal folds is called the glottis. Each vocal fold consists of a membranous (anterior) component and cartilaginous (posterior) component. Vocal fold pathology may therefore adversely affect phonation and/or respiration, depending on the location of the pathology.

The supraglottic tract amplifies some frequencies in this spectrum and dampens others, giving rise to an individual's characteristic vocal quality, called timbre. Alterations in the position, shape, or stiffness of the pharyngeal walls, tongue, palate, lips, or larynx alter the quality of sound produced, similar to the way sounds are modified by changing the length and shape of the resonating cavity of various musical instruments, particularly wind instruments<sup>1</sup>. Hoarseness is the reason for about 1% of all consultations in primary care. It has many causes, ranging from self-limited laryngitis to malignant tumors of the vocal cords<sup>4</sup>. Lesions of the Vocal folds more often produce vocal symptoms of gradual onset, frequently beginning intermittently and then becoming constant and occasionally worse with time. Production of a clear voice requires exquisite coordination between respiration, phonation, and articulation. Improper technique (for example, speaking while holding one's breath or with excessive muscle strain in the neck area) may result in dysphonia. In addition, gastrointestinal disorders are a common cause of voice complaints<sup>5-8</sup>.

Acute laryngitis is the most common cause of hoarseness, accounting for 40% of cases and is almost always viral in origin<sup>9</sup>. Chronic laryngitis has an incidence of 3.5 /1000 in the general population and is a precursor of vocal cord cancer<sup>10,11</sup>. Vocal cord polyps are unilateral tissue proliferations on the free margin of the vocal cord and thus hamper phonation<sup>12</sup>. Reinke's edema is due to collection of edema fluid in the sub epithelial space of Reinke. contact ulcer is due to faulty voice production in which vocal processes of arytenoids friction against each other as a result of formation of ulcer and granuloma. The vocal nodule appear symmetrically on the free edge of the vocal cord, junction between the anterior 1/3 with the posterior 2/3. They mostly affect teachers, actor, vendor etc. Around two thirds of laryngeal cancers are located in the area of the vocal cords. Squamous epithelial carcinoma accounts for more than 90% of cases<sup>11</sup>. Vocal cord paralysis may

be partial (reduced mobility) or complete, caused by damage to the recurrent laryngeal nerve; a dysphonia arises from the incomplete glottic closure or irregular vibration of the vocal cords. The majority of vocal cord paralyses (24 to 79%) can be attributed to iatrogenic causes, such as surgery or trauma in the region of the vagus nerve or the recurrent laryngeal nerve)<sup>13,14</sup>.

This study was analyzed the evaluation of hoarseness and its treatment strategy in our institution.

## II. Materials and Methods

The study was conducted in the department of Otorhinolaryngology, IQ City Medical College and Narayana Multispecialty Hospital, Durgapur, India between August 2015 to February 2017. All the patients were included in this study were detailed clinical history and physical examination. Demographic data was recorded in terms of age, sex and the site of involvements. Out of 170 cases, 35 cases were selected for Microlaryngealsurgery, the number of female patients were 105(61.76%) and male 65(38.24. %). Based on the clinical and laryngoscopical characteristics decisions were taken regarding the types of surgery. Data were grouped and analyzed by standard statistical method.

## III. Results And Observations

Total 170 cases were taken for studies, where 105(61.76%) were female and male 65(38.24%). The number of female patients were 105(61.76%) and male 65(38.24. %)( Figure-1). The patients were presented with hoarseness (100%) with other associated symptoms were cough, painful swallowing, difficulty in swallowing, fever, lump in throat and respiratory distress.

Average age group was found to be between 21 –50 years (Table-1)

Age in years	Number and percentage N=170
1. 0-10	3(1.76%)
2.11 -20	10(5.88%)
3.21-30	30(17.64%)
4.31-40	56(32.94%)
5.41-50	45(26.47%)
6.51-60	21(12.35%)
7.61-70	5(2.94%)
	Total =170

Table-1 Showing age of presentation

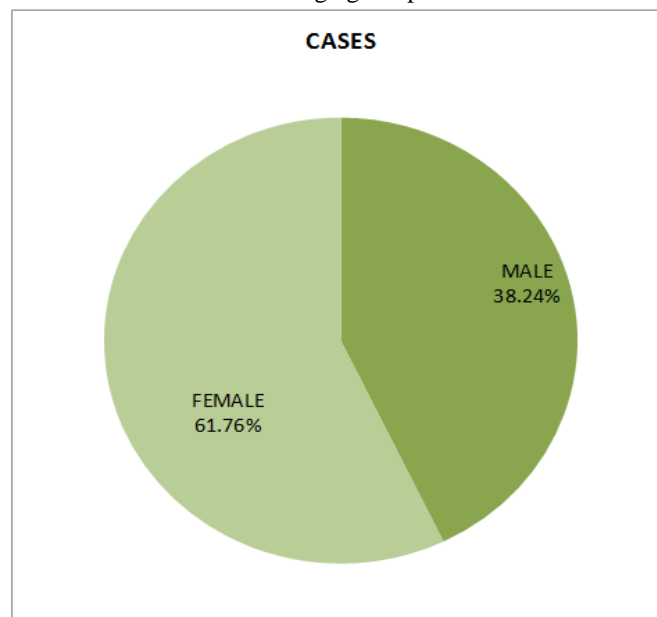


Figure-1 showing Male and Female ratio

Diagnosis was mainly made by indirect laryngoscopy and flexible nasopharyngeal video laryngoscopy. The chronic non specific laryngitis were 60(35.29%), acute laryngitis 45(26.47%), vocal nodule

21(12.35%), vocal polyp 18(10.59%), reinke’s edema 10(5.88%), contact ulcer 8(4.71), vocal cord palsy 5(2.94%) and vocal cord carcinoma 3(1.76%) (Table 2). Out of these 35 cases were selected for micro laryngeal surgery. These includes - vocal nodule were 18(51.43%)(Figure-2), vocal polyp12 (34.29%) (Figure-3) and reinke’s edema were 5(14.29%)(Figure-4). For the surgery we were using high quality operating microscope using 400mm focal length lens. It facilitates detailed examination also for staging of malignant lesions and taking biopsy.

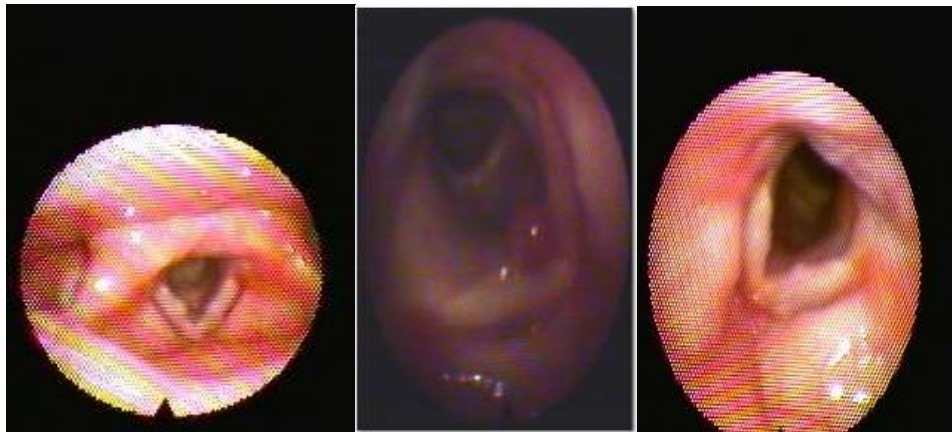


Figure-2 Vocal Nodule      Figure -3 Vocal Polyp      Figure-4 Reinke’s Odema

Laryngoscopic Finding	Number And Percentage N=170
Chronic Non Specific Laryngitis	60(35.29%)
Acute Laryngitis	45(26.47%)
Vocal Nodule	21(12.35%)
Vocal Polyp	18(10.59%)
Reinke’s Edema	10(5.88%)
Contact Ulcer	8(4.71%)
Vocal Cord Palsy	5(2.94%)
Vocal Cord Carcinoma	3(1.76%)
	Total=170

TABLE-2 Showing laryngological finding

Postoperatively, there were 2(5.71%) patients had persistent of the symptoms and 3 (8.57%) patients had recurrent during 4 months of follow-up period. Majority of the cases were treated conservatively, these includes antireflux therapy, speech therapy etc.

#### IV. Discussion:

Most voice disorders are multifactorial in etiology and are related to irritation from possible reflux, allergies, smoking, inadequate hydration, vocal abuse, and/or chronic vocal hyper function. Voice therapy is often successful in the treatment of functional and organic vocal disturbances. The only entity causing hoarseness that can be treated pharmacologically is chronic laryngitis associated with gastro-esophageal reflux, which responds to treatment of the reflux disorder<sup>4</sup>. Indications for the use of antibiotics and/or antihistamine decongestants in patients with hoarseness are rare unless the patient has concomitant rhino sinusitis or bacterial laryngotracheitis, which may be causing or complicating the patient’s hoarseness<sup>1</sup>. Surgery on the vocal cords is indicated to treat tumors and inadequate vocal cord closure. Microlaryngeal surgery is a common and safe otolaryngological surgery. Microlaryngoscopy is not only helpful in taking biopsy but also in determining the extent of the lesion properly which is necessary for staging and subsequent treatment of the disease.

In our study, most common cause of hoarseness were the chronic nonspecific laryngitis 60 (35.29%) followed by acute laryngitis 45(26.47%). Average age group was found to be between 21 –50 years. The patients were presented with e cough, painful swallowing, difficulty in swallowing, fever, lump in throat and respiratory distress. On clinical examination septic foci in the oral cavity and oropharynx were observed in 44% of Out of 35 operated cases, there were 2(5.71%) patients had persistent of the symptoms and 3 (8.57%) patients had recurrent during 4 months of follow-up period. Majority of the cases were treated conservatively, these includes antireflux therapy, speech therapy etc. Sambhu Baitha et al found in their studies hoarseness ranged from 6 - 7 1 yrs. (Mean 40.4 yrs.) and the majority of patients presenting with benign glottic lesions. Presenting

with hoarseness like cough, dyspnoea, dysphagia, throat pain, weight loss etc.<sup>15</sup> Mehta (1985) who reported oral and oropharyngeal septic foci in 43% of their patients with hoarseness<sup>16</sup>.

Kaluskar (1971) reported a higher incidence of septic foci (59%) in patients with hoarseness of voice<sup>17</sup>.

In our study most of the lesions were glottal which is similar to Sambhu et al.

Matin et al found postoperatively 18 out of 100 cases, 6 cases developed some sort's includes 3 old patient had damage to upper incisor teeth, 2 patients developed severe laryngeal spasm need tracheotomy and 1 patient developed vocal cord atrophy with dysphonia<sup>18</sup>.

## V. Conclusion

Management of hoarseness can be a challenge for the physician. Proper diagnosis through a detailed history and examinations is very important. Treatment is individualized depending on the diagnosis and individual needs of the patient. Voice therapy, vocal cord surgery, and drug therapy for appropriate groups of patients with hoarseness are well documented as effective by the available evidence. In patients with risk factors, especially smokers, hoarseness should be immediately evaluated by laryngoscopy. The different methods of laryngeal examination, like laryngoscopy (indirect, flexible and rigid) and microlaryngoscopy have established diagnostic and therapeutic application so the standard treatment of choice in all types of benign tumours of the larynx should consist of a triad of approach by microlaryngeal surgery (with or without laser), voice rest and vocal rehabilitation.

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