

A Clinicopathological Study of Patients with Organic Dysphonia

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ABSTRACT

Introduction - Maintenance of good vocal health and the treatment of the diseased larynx are essential for all members of the society. Our aim was to study the incidence of various conditions affecting the larynx that commonly present to an Otorhinolaryngologist in his daily practice and to identify the etiological and predisposing factors which lead to the development of lesions.

Materials and methods: The present study was conducted on 50 patients presenting to outpatient department with chief complain of change of voice were included in the study.

Results: Vocal cord nodules (28%) are the most commonly encountered lesions of vocal cord, followed by carcinoma of glottis (20%). Vocal cord polyp and Chronic laryngitis (16%). There were 32 male (64%) and 18 female (36%) with male to female ratio of 1.77:1. Smoking and alcohol were the most important etiology in carcinoma of glottis. 35 patients underwent microlaryngeal surgery and speech therapy was given in all patients.

Conclusion: In properly selected patients microlaryngeal surgery can produce consistent and excellent results along with speech therapy.

Keywords: dysphonia, microlaryngeal surgery, vocal polyp, laryngitis.

restore normal voice quality.³ Current era of microlaryngeal surgery began around 1961 by Oscar Kleinsasser and Jako, who introduced surgical operating microscope, microlaryngeal hand held instrument with wide laryngoscopes fitted with suspension system.⁴ Oscar Kleinsasser of Cologne (1960-1968)⁴ honoured as “The Father of Microlaryngeal Surgery”, he designed a laryngoscope with much wider diameter which permitted more freedom for the surgical manipulation within the larynx, new instrument for magnified endolaryngeal observation, photography and observation of early pathological changes of malignancy. Present study aimed to study the incidence of various conditions affecting the larynx that commonly present to an Otorhinolaryngologist in his daily practice and to identify the etiological and predisposing factors which lead to the developments of the lesions

MATERIAL AND METHODS

The present study was conducted on 50 patients at SSG Hospital Baroda from June 2008 to Dec 2010 presenting to outpatient department with chief complain of change of voice. Patients were selected based on inclusion exclusion criteria.

Inclusion Criteria

Patients presenting to the Department of Otolaryngology with the change of voice.

Exclusion criteria

1. Patients with age less than 10 years.
 2. Patients with functional cause of dysphonia
- All the patients who came with complaints of hoarseness of voice and had local laryngeal lesions were examined by indirect laryngoscopy and Hopkins rod telescope. Whenever a vocal cord lesion was encountered, it was addressed with microlaryngeal surgery, provided that the patient was fit for general anaesthesia. Patient who underwent microlaryngeal surgery at our institute, were followed up at 1 week, 1 month. Pre operative and post operative speech therapy was also given.

STATISTICAL ANALYSIS

Results obtained were tabulated and analyzed using descriptive statistics. Microsoft office 2007 was used to make tables.

RESULTS

Vocal cord nodules were more common in middle aged patients (table-1). Pre-Malignant /Malignant lesions are commoner in elderly between the age group 50-70 years (table-2).

INTRODUCTION

Voice is an invaluable gift of nature to mankind and one of the most powerful mode of communication. The human voice is fascinating and complex. Voice being a part of one's personality, it is necessary to have normal and pleasant voice. The maintenance of good vocal health and the treatment of the diseased larynx are essential for all members of the society, especially individuals who are professional voice users. The lesions causing change of voice commonly encountered by an Otorhinolaryngologist in daily practice include vocal cord nodules, Reinke's edema, vocal cord polyps, vocal cord cysts, vocal cord granulations and contact ulcer, Sulcus vocalis and pre-malignant lesions of epithelial origin like Leukoplakia, Hyperkeratosis, Erythroplakia and Respiratory papillomas along with malignant lesions like Squamous cell carcinoma. Microlaryngeal surgery along with speech therapy is one of the most powerful techniques to address laryngeal and voice disorders in all age groups.¹ Innovations in the field of microlaryngeal surgery have given a wide range of treatment modalities like, LASER, microdebrider, vocal cord injection techniques along with the good quality of cold instrument. Each modality has its own advantages and disadvantages, therefore treatment of choice differ from patient to patient. Even combinations of modalities have been tried with good results. The field of laryngology begins in the mid-nineteenth century after Garcia's description of mirror laryngoscopy and Bozzini's first indirect laryngoscopic surgery.² The term phonosurgery was coined in the early 1960s by Hans Von Leden and refers to surgical procedures designed primarily to

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Sex Distribution

Vocal cord nodules, vocal cord polyps, chronic laryngitis, carcinoma of larynx are more common in males while laryngeal tuberculosis is common in females (table-1).

Vocal cord nodule

Out of the total 50 patients, 14 patients had vocal cord nodule (28%) (table-1). It is more frequent in male patient and in age group between 31 – 45 years (table-2). The youngest patient was 30 years old and the oldest patient 55 years. Out of 14 patients 10 had history of voice abuse and signs of gastroesophageal reflux disease (table-4). All were subjected to microlaryngeal surgery and excision of nodule was done. 3 patients developed recurrence due to difficult microlaryngeal surgery, irregular follow up and voice abuse. All had marked improvement in voice at the end of surgery and in follow up period. Speech therapy was given to all patients. 13 patients had improvement in voice.

Vocal cord polyp

Vocal cord polyp is more common in male with male to female ratio of 2:1 (table-1). It is evenly distributed in all age group. The history of voice abuse was present in 1 out of 8 patient (table-4). All the patient were subjected to microlaryngeal surgery and excision of the polyp was done. All of them showed marked improvement of voice at the end of 14 days. In three patients, speech therapy was given. They all are having good voice at present.

Vocal cord cyst

There were 4 patients of vocal cord cyst, 2 male and 2 female with history of voice abuse and gastroesophageal reflux (table-4). Excision of cyst was done and improvement of voice was noted postoperatively after speech therapy and anti-reflux medication.

| Disease | Male | Female | Total | Percentage |
|------------------------|------|--------|-------|------------|
| Vocal cord nodule | 08 | 07 | 14 | 28% |
| Vocal cord polyp | 05 | 03 | 8 | 16% |
| Vocal cord cyst | 02 | 02 | 4 | 8% |
| Reinke's oedema | 01 | 0 | 1 | 2% |
| Laryngeal papilloma | 02 | 02 | 4 | 8% |
| Chronic laryngitis | 06 | 02 | 8 | 16% |
| Carcinoma of glottis | 09 | 01 | 10 | 20% |
| Tuberculosis of larynx | 0 | 01 | 01 | 1% |
| Total | 32 | 18 | 50 | |

Table-1: Incidence of laryngeal lesions

| Lesion | Age Group (in years) | | | | |
|--------------------------|----------------------|-------|-------|-------|---------|
| | Upto 10-20 | 20-30 | 31-45 | 46-60 | 60 – 70 |
| Reinke's Edema | - | 1 | - | - | - |
| Vocal cord nodules | - | 3 | 9 | 2 | - |
| Vocal cord Polyps | 1 | 3 | 3 | 1 | - |
| Laryngeal Papillomatosis | 2 | 2 | - | - | - |
| Chronic Laryngitis | - | - | 5 | 3 | - |
| Sulcus vocalis | - | - | - | - | - |
| Vocal cord cysts | - | 1 | 2 | - | 1 |
| Carcinoma of larynx | - | - | 2 | 6 | 2 |
| Leukoplakia | - | - | - | - | - |
| Tuberculosis of larynx | - | 1 | - | - | - |

Table-2: Age Distribution

Respiratory papillomatosis

Out of the total 50 patients, 4 patients were of respiratory papillomatosis involving one or both vocal cord (table-1). The majority of the patients were in the 2nd decade of life. All patients had history of change in voice and 1 of them had stridor (table-3). 3 patients developed recurrence.

Chronic laryngitis

There were 8 patients of chronic laryngitis (table-1). Stripping of vocal cord was done in 6 patients. One showed improvement in voice after surgery and was given speech therapy postoperatively.

Malignancy of larynx

Out of the total 50 patients, 10 patients had squamous cell carcinoma of larynx (table-1). They presented with hoarseness of voice, stridor (table-3) and were alcoholic and chronic smokers. 7 patients with malignancy were tracheostomised and subsequently managed with radiotherapy.

Tuberculosis of larynx

One female patient had tuberculosis of larynx (table-1). She presented with hoarseness of voice (table 3) and weight loss. She underwent microlaryngeal surgery with removal of granulomatous lesion over right arytenoids, right false cord, right ventricle and right true cord. Histopathological report was suggestive of laryngeal tuberculosis. She was on AKT Cat-1 for the last 3 month. Her voice improved at the later stages.

DISCUSSION

Microlaryngeal surgery is a kind of surgery that involves the use of specialized laryngoscope which is inserted in larynx per orally. When endoscopic visualization is not adequate because of difficult anatomy, like: Cervical spondylosis in whom cervical spine cannot be extended and In obese individuals with short neck and in obstructive sleep apnoea. The surgeon should not compromise the result of treatment and inflict injury by attempting to complete endoscopic procedure. The advances in the instrumentation and refinement in technique both in anaesthetic and operative has increased the usefulness of microlaryngoscopic technique in the diagnosis and management of a wide variety of laryngeal pathology with minimal morbidity and mortality. We have compared our experience in the diagnosis and management of common laryngeal diseases presented with change in voice with those reported by the other workers in field.

In present series the incidence of vocal cord nodule, respiratory

papillomatosis, vocal cord cyst, Tuberculosis of larynx is more than O Kleinsasser series.⁴ The low incidence of malignancy in the present series can be explained on the basis that patients with frank malignancy are not subjected to microlaryngeal surgery as they usually present later in our country due to lack of awareness and financial constraints.

Vocal cord nodule

The most common condition in the present series is vocal cord nodule. Oscar Kleinsasser⁴ has noted very high incidence of vocal cord nodule in children, with 75% of the patients having history of vocal abuse and size of the nodule was correlated with degree of hyperfunctional behavior (Shah et al, 2005).⁵ In present series male are more affected similar to series reported by Sinha and Kacker. The history of voice abuse was present in 8 out of 14 patients (table 4). In Sinha and Kacker series⁶, 20% had habit of smoking, 7% had history of taking alcohol. In present series, four patients had habit of smoking and five patients had gastroesophageal reflux (table-4). Kuhn et al (1998) found that pharyngeal acid reflux were more often present in patient with vocal cord nodule.⁷ 3 patients developed recurrence at 3 months follow up.

Respiratory papillomatosis

Clinically there are two forms:

- Adult onset recurrent respiratory papillomatosis (AORRP)
- Juvenile onset recurrent respiratory papillomatosis (JORRP)

Adult onset recurrent respiratory papillomatosis has slightly male predominance presenting between 20 and 40 years of age. Juvenile onset recurrent respiratory papillomatosis has no gender predominance and peak age of diagnosis is 2 – 4 years of age. In the present series, there were 4 patients (8%) of recurrent respiratory papillomatosis (table-1).

Recurrent respiratory papillomatosis is associated with human papilloma virus serotype 6 and 11. Looking at propensity to recur, the goal of surgery is to establish a safe airway, to

reduce tumor burden, to improve voice quality, to minimize disease spread and to extend the interval between surgical procedures. The two most common modalities for removal of the papilloma are CO₂ LASER ablation and microdebrider. 3 patients developed recurrence.

Vocal cord cyst

In the present series, only 4 patients (8%) had vocal cord cyst out of 50 patients (table-1). Present series reported an incidence of 8% in comparison with series reported by B M Abrol and PR Natrajan⁸ the incidence of vocal cord cyst was 3.5%. Diagnosis is made by flexible fiberoptic laryngoscopy, strobolaryngoscopy finding and during microlaryngeal surgery. Usually surgical management is with marsupialization and microflap subepithelial dissection. In present series, 2 patient of vocal cord cyst was treated with marsupialization of cyst and other 2 patients with excision of cyst. Both patients had marked improvement postoperatively.

Chronic laryngitis

In the present series, vocal cord thickening, keratosis and pachydermia were included as chronic hyperplastic laryngitis. It is characterised by diffuse inflammatory process which involves predominantly the vocal cord and eventually leads to epithelial hyperplasia. In the present series, 8 patients had chronic laryngitis accounting for 16% (table-1) of the total number of patients. O'Kleinsasser et al have reported it in 10.3% of their patients.⁶ In the present series, history of smoking was present in 5 patients and 3 patient also had gastroesophageal reflux (table-4). This condition has to be differentiated from early malignancy of the larynx. Microlaryngoscopy is indicated in order to rule out early malignancy, to produce voice improvement and to rule out the possibility of subsequent malignant transformation. The noxious substances exposure and voice exertion were avoided postoperatively and voice therapy was advised.

Tuberculosis of larynx

In present series only one female patient (4%) had laryngeal tuberculosis (table-1). In Soni and Chatterjee series⁹ the incidence of laryngeal tuberculosis is 4%. She presented with change in voice and weight loss. All routine investigations are within normal limit except increased erythrocyte sedimentation rate. She underwent microlaryngeal surgery and biopsy from ulcerative lesion present over right side arytenoids, right false cord, right ventricle, and right true cord with histopathology suggestive of laryngeal tuberculosis. She was on AKT category-1 for 3 months and is on regular follow up and has showed marked improvement.

| Lesions | Change in voice | Difficulty in respiration- stridor |
|--------------------------|-----------------|------------------------------------|
| Reinke's Edema | 1 | - |
| Vocal cord nodules | 14 | - |
| Vocal cord Polyps | 08 | - |
| Laryngeal Papillomatosis | 03 | 01 |
| Chronic Laryngitis | 08 | - |
| Vocal cord cyst | 04 | - |
| Carcinoma of larynx | 03 | 07 |
| Tuberculosis of larynx | 01 | - |

Table-3: Presenting Symptoms

| Lesions | Causes | | | | | | |
|--------------------------|------------|---------|---------|------|-------------|---------------|------------|
| | Idiopathic | Smoking | Alcohol | GERD | Voice Abuse | HPV Infection | URTI/ LRTI |
| Reinke's Edema | 1 | - | - | - | - | - | - |
| Vocal Cord Nodules | 02 | 02 | - | 02 | 08 | - | - |
| Vocal Cord Polyp | 03 | 01 | - | 03 | 01 | - | - |
| Laryngeal Papilloma | - | - | - | - | - | 02 | 02 |
| Chronic Laryngitis | - | 05 | - | 03 | - | - | - |
| Vocal Cord Cyst | 01 | 01 | - | 02 | - | - | - |
| Pre-Malignant /Malignant | - | 07 | 03 | - | - | - | - |
| Laryngeal tuberculosis | - | - | - | - | - | - | 1 |

Table-4: Etiology of laryngeal lesions

Malignant lesions of larynx

In our present series, there are 10 patients (20%) of squamous cell carcinoma of larynx and 9 were male (table-1). In O Kleinsasser¹⁰ series malignancy account for 28.9%. All the patients are presented with hoarseness of voice and 7 patients had stridor (table-3). In one patient difficulty was encountered in taking biopsy due to anteriorly placed larynx and had minimal trauma.

At last, many conditions can be treated safely and effectively through endoscopic laryngeal microsurgery. Advances in our understanding of voice pathology, improved diagnostic capabilities and technological advances in instrumentation have expanded the utility of endoscopic surgery. In properly selected patients microlaryngoscopy can produce consistent and excellent results.

CONCLUSIONS

From the study, the following conclusions were drawn: Vocal cord nodules (28%) are the most commonly encountered lesions of vocal cord followed by carcinoma of glottis (20%), Vocal cord polyp and Chronic laryngitis (16%). Smoking and alcohol were the most important etiology in carcinoma of glottis in our study. In our study two patients had difficulty in intubation and difficult microlaryngeal surgical manipulation. Patients of laryngeal tuberculosis were treated with AKT giving excellent response while those with GERD showed complete resolution with medical line of treatment.

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