

## Case Series

# A clinicopathological study of non-malignant lesions of the larynx

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## ABSTRACT

The study was undertaken to identify the type of laryngeal lesions, the age, sex distribution, symptomatology, sites of involvement, conservative and surgical management, histopathological analysis and outcome of the same. This is a prospective study conducted at a tertiary care centre for one and a half years. A total of 20 patients were included based on symptomatology such as hoarseness of voice, foreign body sensation, throat pain, and respiratory distress. All malignant cases were excluded. Hematological and radiological investigations, along with microlaryngoscopic procedures followed by histopathology, were employed. A male preponderance with an M: F ratio of 3:2 was observed. The majority of the patients were in the age group of 30 to 45 years. Vocal cord polyps were observed to be the commonest type of the lesion. A case of a bilobed concomitant tonsillar cyst of the larynx was the rarest encountered. In this study, hoarseness of voice, cough, foreign body sensation, and throat pain proved to be the commonest symptoms. Early diagnosis with routine clinical examination aided by radiological investigation such as contrast enhanced computed tomography (CECT) has proven to be useful in suspicious lesions of the larynx. Micro laryngeal surgery, voice rest, and postoperative speech therapy together offer a cost-effective and safe method for the management of benign laryngeal lesions.

**Keywords:** Benign lesions, Larynx, Vocal polyps, CECT, Micro laryngeal surgery

## INTRODUCTION

Benign laryngeal lesions are a spectrum of laryngeal diseases where symptoms vary from discomfort in the throat, pain in the throat, change of voice to stridor. Prompt diagnosis and intervention will reverse the conditions in certain laryngeal lesions. Benign laryngeal lesions are significant because of the importance of spoken or sung communication and the voice's contribution to identity.<sup>1</sup>

Benign lesions of the larynx constitute an interesting array of lesions. New et al defined it as "An abnormal mass of tissue in the larynx, the growth of which exceeds and is uncoordinated with that of normal tissue and persists in the same excessive manner after cessation of stimuli which evoked the change".<sup>2</sup> Hollinger defined in 1951, "a mass

of tissue in the larynx which does not present characteristics of malignancy."<sup>3</sup>

Benign lesions of the larynx generally produce common symptomatology known as dysphonia.<sup>4</sup> The symptoms which they produce by interference with the routine functioning of the vocal cord mechanism and respiratory tract, along with the necessity to distinguish them from malignant laryngeal lesions, make these lesions important to a laryngologist. The significance of the larynx's benign lesions lies in the importance of its function in speech and the contribution of voice to one's own personality. These lesions may affect voice quality, and excessive growth may cause respiratory distress. Vocal nodules, polyps or a cyst does not rule out malignancy unless the lesion is resolved with treatment or it is pathologically benign.<sup>5</sup>

Conservative management is offered for the lesions due to vocal abuse, such as voice rest and voice therapy. Failure of voice therapy to improve or alleviate vocal symptoms is the most common indication for the surgical removal of the lesions. Surgical removal with microsurgical instruments remains the mainstay of the therapy for laryngeal polyps, cysts and recalcitrant nodules.<sup>6</sup>

The study was undertaken to identify the type of laryngeal lesions, the age, sex distribution, symptomatology, sites of involvement, conservative and surgical management, histopathological analysis and outcome of the same.

This was a prospective study carried out at a tertiary health care centre (Department of otorhinolaryngology, MIMS medical college and hospital, Nellimarla, Vizianagaram) for 1 ½ year from October 2018 to March 2020. All patients presenting to OPD meeting the inclusion criteria were included in the study.

#### ***Inclusion criteria***

All patients attending ENT OPD with hoarseness of voice, foreign body sensation in the throat, vocal fatigue, difficulty in breathing. Patients of all ages and both sexes.

#### ***Exclusion criteria***

Patients with a known diagnosis of malignancy of the larynx. Patients with speech defect due to central nervous system (CNS) lesion. Patients with oral and pharyngeal pathology leading to change in voice. Patients with nose and nasopharyngeal pathology leading to change in voice.

All the patients included in the study were questioned about age, sex, occupation and area of residence. A pre-designed case sheet proforma was put forward to the patients, and detailed history was taken with respect to presenting symptoms and their duration. Thorough local examination of throat, nose and ear was done.

All the cases were examined with direct laryngoscopy, and positive findings related to the lesion were noted. All the patients in this study were tried for conservative management with antibiotics, anti-edema, and voice rest for two weeks. After two weeks, the patient is followed up, and an assessment of conservative management was done by direct laryngoscopy, then declared that these patients need micro laryngeal surgery.

Preoperative assessment of the patient was done, which included evaluation and correction of nasal and sinus infections and oral hygiene. Routine blood investigations, urine microscopy, radiological investigations, X-ray paranasal sinuses, X-ray chest (posterior-anterior view), plain X-ray neck (lateral view) were done. CT scan of the neck was done in suspected cases to know the extent of the involvement of the lesion.

In this study, all the patients underwent micro laryngeal surgery followed by histopathological examination. Patients with vocal cord nodules, polyps or cysts underwent micro laryngeal Excision of the lesion. Patients with epiglottic cysts underwent direct laryngoscopy and micro laryngeal Excision of cysts followed by histopathological examination. In the case of juvenile laryngeal papilloma, a preliminary tracheostomy was done, followed by micro laryngeal surgery and excision.

Postoperative management included complete voice rest for three weeks, followed by gradual resumption of the voice in order to resume the normal function of the vocal cords. After three weeks, a video laryngoscopy was done, and the surgical site was visualized.

The patient was instructed to remain silent and not to strain his vocal cords. This process was continued for 2 weeks, and then the patient was advised to be back to his regular activity.

Along with this, the patient was also advised to avoid scorching and cold foods, foods with strong seasonings, exposure to air pollutants, smoking, tobacco, alcohol and coughing and clearing the throat.

Institutional ethical committee approval was taken.

#### ***Statistical analysis***

Results were tabulated and analyzed with the latest version of the statistical package for the social sciences (SPSS). Results obtained are presented as percentages.

### **CASE SERIES**

#### ***Case 1***

In this study, 10 cases were found to be vocal cord polyps with similar clinical presentation. A male patient aged 45 years presented with the chief complaint of hoarseness of voice, easy fatigue on phonation, low voice quality for the past two months. Discomfort and pain in the throat were present. Video Laryngoscopy examination showed polyp with the base at the junction of ant 1/3 with posterior 2/3 of the right cord. Micro-laryngeal excision was done. Histopathology confirmed Vocal Polyp.

#### ***Case 2***

In this study, 5 cases were found to be bilateral vocal cord nodules. A female patient aged 40 years presented with a chief complaint of mild hoarseness of voice, discomfort in the throat for the past two months. A history of voice abuse was present.

Video laryngoscopy showed nodules at the junction of anterior 1/3 with posterior 2/3 of both vocal cords. Conservative management was done for a period of 3 weeks and strict voice rest.

### Case 3

A male patient aged 45 years presented with the chief complaint of hoarseness of voice, discomfort in the throat and voice fatigue for the past five months. A history of voice abuse was present. Video laryngoscopy showed a unilateral nodule at the junction of anterior 1/3 with posterior 2/3 of the right vocal cord. Micro laryngeal excision was done, and HPE confirmed vocal nodule.

### Case 4

In this study, 3 cases of laryngeal cysts were seen among them one case was found to be a left aryepiglottic fold cyst, with rare presentation.

#### Left aryepiglottic fold cyst

A 60-year-old male patient presented with a history of difficulty in swallowing for three months associated with pain. However, there is no hoarseness of voice or noisy breathing, no history of any other systemic illness. Airway examination was normal. Laryngeal endoscopy revealed two submucosal lesions-bilobed laryngeal cysts over the left aryepiglottic fold and arytenoid just above the left vocal cord.

CECT was done, which shows a small oval hypodense lesion (10.9×8.8 mm), which shows thin peripheral enhancement on post-contrast images is seen in the inferior part of the left aryepiglottic fold causing mild luminal narrowing of the supraglottic larynx – likely laryngeal cyst.

Another similar small cystic lesion (6.8×6.4mm) is also seen adjacent to the above-mentioned cyst.

Excision of the cyst was done under general anesthesia by micro laryngeal surgery. The two contiguous cystic lesions arose from the left aryepiglottic fold; both were dissected completely and sent for histopathological examination.

After completion of an uneventful surgery, the patient was fully awakened and extubated. Postoperatively the patient was put on antibiotics and anti-edema for 10 days. On regular follow up – no recurrence found.

HPE revealed- squamous-lined crypt-like structures and abundant follicular lymphoid tissue in the wall likely to be a tonsillar cyst.

### Case 5

A male child aged eight years presented with a change of voice six months duration and came to the hospital with Stridor; Video laryngoscopy examination of larynx showed warty glistening white mass over anterior commissure and anterior 2/3 of both vocal cords. Endoscopic Micro Laryngeal Excision of mass done and sent for HPE, suggestive of juvenile papilloma of larynx;

mitomycin applied to the lesions during MLS. The child was followed up for six months with tracheostomy as juvenile papilloma is known for recurrence, and there was no recurrence in our case.

The youngest patient in this study was 12 year old, the oldest being 65years. The maximum number of cases were seen in the age group between 30 and 45 years (9 cases) (Figure 1).

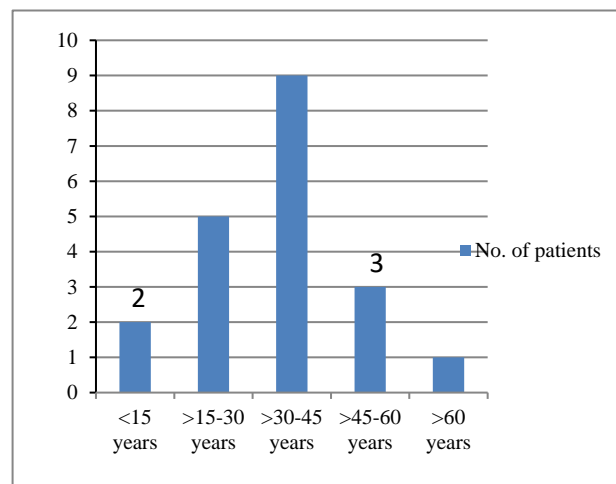


Figure 1: Age-wise distribution of cases.

Table 1: Duration of symptoms.

Duration of symptoms	Number of cases	Percentage
0-3months	14	70
3-6months	4	20
>6months	2	10

Table 2: Clinical presentation of cases.

Complaint	Present	Percentage
Hoarseness of voice	12	60
Difficulty in breathing	4	20
Cough	1	5
Foreign body sensation	2	10
Irritation in throat	1	5

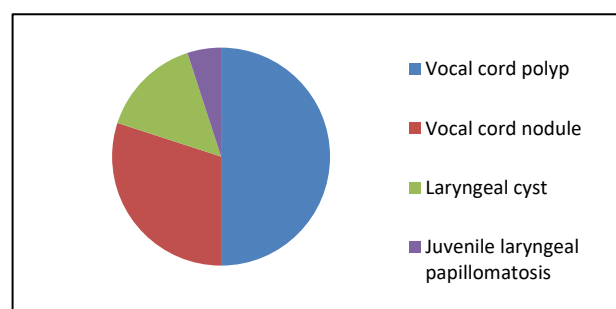


Figure 2: Histopathological reports.

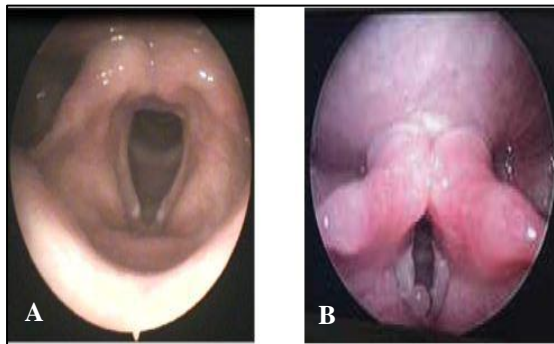
In this study, males were seen to predominate over females with a ratio of 3:2. In this study, the majority of the patients had a duration of symptoms from 0 to 3 months. (Table 1).



**Figure 3: Video laryngoscopy of larynx showing right vocal cord polyp.**



**Figure 4: VLS of larynx showing post-op right vocal cord polyp.**



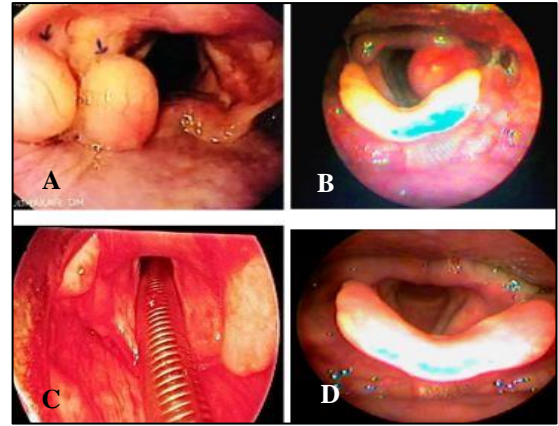
**Figure 5 (A and B): VLS of larynx showing B/L vocal cord nodules, VLS of larynx showing right vocal cord nodule.**

The patients in this study presented with hoarseness of voice (60%) as a common symptom, next are difficulty in breathing (20%). (Table 2).

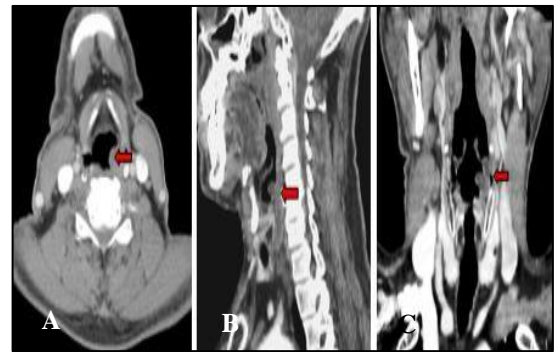
The most common predisposing factor is Vocal abuse, and next is smoking, followed by others.

In all the cases, the excised lesion is sent for HPE, and we found that the most common lesions are vocal polyps and nodules followed by laryngeal cysts (Figure 2).

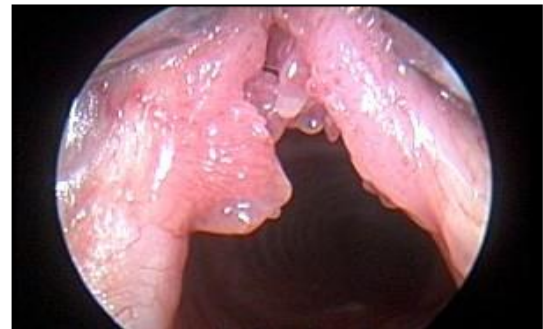
Video laryngoscopy of larynx images (Figure 3-6 and 8).



**Figure 6 (A-D): Laryngeal endoscopy view and video laryngoscopy view of the laryngeal cyst, postoperative VLS at 3 months.**



**Figure 7 (A-C): CECT neck showing axial, sagittal, coronal sections of laryngeal cyst of the larynx.**



**Figure 8: Endoscopy of larynx showing juvenile laryngeal papillomatosis.**

## DISCUSSION

Benign lesions of the larynx constitute an interesting array of lesions; etiological factors for lesions such as vocal nodules, vocal polyps, mucosal hemorrhage, intracordal cyst seems to be vibratory trauma. Secondary influences such as smoking, allergy, infection, acid reflux may also increase the mucosa's vulnerability to the kind of injuries that may occur during mucosal oscillation.<sup>7</sup>



Vocal cord nodules appear as symmetrical bilateral mass lesions, white to opaque, firm and present at the junction of anterior and middle-thirds of vocal folds. They result in hourglass closure of glottal configuration and will affect vocal fold mucosal wave and vibration. Vocal cord polyps are commonly unilateral, translucent; red pedunculated arise in the free edge of the anterior third of the vocal cord.<sup>8</sup>

The results in this study are in concurrence with most of the reviewed studies. The sex incidence with male preponderance is similar to other studies. The higher incidence of benign lesions of the larynx was reported among males (70%) as compared to females (30%) with a Male: Female ratio of 2.33:1. This is in accordance with the study conducted by Hegde et al that reported a Male: Female ratio of 2.82:1. Sinha et al in a series of 15 patients with vocal cord nodules, 73% of cases were male, and 27% were female.<sup>9</sup>

The majority of the patients belonged to the age group of 30-45 years in 9 cases, similar to the study by Singhal et al., where males constituted 60% and females 40%.<sup>10</sup> Various studies have reported a higher incidence of benign lesions of the larynx in the age groups between 20 and 60 years.

In this study of benign lesions of the larynx, vocal cord polyps were the commonest. This is in accordance with Dikkers et al. Regarding the site of origin of the benign lesions, and true vocal cords were found to be the commonest site for the origin of all neoplastic and non-neoplastic tumours.<sup>11</sup> These findings are in accordance with the findings reported by Baitha et al.<sup>12</sup>

Shaw et al in their series of 1505 cases, surprisingly had not a single case of vocal cord nodules and had an incidence of vocal polyps of 71.2%.<sup>13</sup>

Kambic et al had an incidence of 68.3% and evaluated the morphology of the pathologic substrate, the pathogenesis and analyzed the most frequent factors responsible for forming the vocal polyp such as vocal abuse and unfavourable microclimate during work.<sup>14</sup> They concluded that gender does not play a role, and the histological structure is not related to the time factor. However, Chopra et al had an incidence of 16% only. In their series, the incidence of vocal nodules was 33.33%.<sup>15</sup>

Higher incidence of benign lesions was observed in professional voice users viz. teachers (16%), the salesman (16%), politicians (4%), and bus conductors (6%); in the case of non-professional voice users, the highest incidence was observed in housewives (24%). These observations are similar to those of Strong and Vaughn and Baitha et al., and this may be likely because of the misuse or abuse of the voice.

Regional sepsis in the form of infection of teeth, gums and sinus sepsis was observed in 40% of cases; this contradicts

the findings of Epstein et al. However, these findings were similar to the observations of Baitha et al.<sup>16</sup>

All these studies revealed that regional sepsis might be the following predisposing factor in the causation of these lesions.

Regarding the site of origin of benign lesions, true vocal cords were found to be the commonest for the origin of all neoplastic and non-neoplastic tumours. Nearly 93% of the lesions were from the true vocal cords. Arytenoids and epiglottitis was the next common site.

Hoarseness of voice was found to be the most prominent and presenting feature of these lesions in the current series, similar to the findings of Batra et al.<sup>17</sup>

Preoperative voice assessment with voice rest and speech therapy was done for lesions arising from the voice abuse. These patients, after initial conservative management, were posted for micro laryngeal surgery with postoperative speech therapy. Cases of inflammatory etiology had good results postoperatively.

Surgical treatment was the treatment of choice in the majority of the cases studied (94%), similar to the study done by Singhal et al.<sup>10</sup> Voice rest and rehabilitation sufficed in the remaining 6% of cases. It remains the standard treatment of choice in all types of lesions and in all age groups. Voice rest and vocal rehabilitation remain the treatment of choice applicable to early stages of the vocal nodule and in preventing the recurrence of benign lesions (polyps, cysts etc.) postoperatively. However, it has been advised that surgical treatment of benign lesions of the larynx must invariably be followed by postoperative voice correction therapy; otherwise, recurrences are liable to occur. Following this process, the current study showed encouraging results as 93.6% of patients were normal without any recurrence after a single operation.

## CONCLUSION

Early diagnosis with routine clinical examination aided by radiological investigation such as CECT has proven to be useful in the suspicious lesions of the larynx. Late intervention results in more involvement of laryngeal tissues and fibrosis, which leads to derangement of the architecture of the larynx and ultimately causes persistence of hoarseness. Laryngeal cysts have been associated with rapid-onset epiglottitis, dyspnoea, stridor, and death; therefore, they should not be considered insignificant.

In this study, we have observed a rare case of a bilobed concomitant tonsillar cyst of the larynx. The lesion was completely excised by performing a simple micro laryngeal surgery, which has been shown to be safe and effective. There has been no evidence of recurrence at follow-up. Micro laryngeal surgery, postoperative voice rest and speech therapy together give significant improvement to the patient and prevent recurrences.

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