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# Clinicopathological Study of benign vocal cord lesions in a tertiary care hospital

[1]Dr. Apurva Raina, Junior Resident, Department of ENT, GMC, Jammu

[2]Dr.Deepika Samotra, Junior Resident, Department of ENT, GMC, Jammu.

[3]Dr.Arti, Senior Resident, Department of ENT,GMC, Jammu.

[4]Dr.Gopika Kalsotra, Assistant Professor, Department of ENT, GMC, Jammu.

**Corresponding Author:** Dr. Apurva Raina, Junior Resident, Department of ENT, GMC, Jammu

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**Abstract**

**Background**: Benign vocal cord lesions are non-cancerous masses that occur along the edges or just below the surface membrane of one or both vocal cords. Vocal cord lesions often occur due to voice being misused or overused.The earliest symptoms of a lesion on the vocal cord include a change in voice due to impaired mobility of cord. Various vocal cord lesions are vocal nodule, vocal polyps, vocal cord cyst Reinke's oedema, granuloma, sulcus vocalis, papilloma.

**Aim**: The study is conducted to analyze the clinicopathological details of the benign lesions of vocal cords.

**Methods**: The present study included 70 patients who presented to ENT opd with hoarse voice. Detailed clinical history of the patients was noted. Indirect laryngoscopic and Fiber optic laryngoscopic examination was done on all patients and findings were noted. Diagnosis was made clinically and treatment was advised accordingly.

**Results**: In present study majority of patients with benign vocal lesions were in the age group of 31-40 years with male preponderance. Male to female ratio was 1.18:1.Teachers were most commonly affected in this study. Hoarseness of voice was the chief complaint in all patients, followed by foreign body sensation throat, dry cough, frequent clearing of throat and respiratory difficulty.Vocal nodule was the most common benign lesion seen,affecting mainly females.Vocal cyst,Reinke's oedema and Intubation Granuloma were seen in females whereas Keratosis and leukoplakia was seen in elderly males. Patients with Vocal nodule and reinke's oedema were advised voice therapy and regular follow up was done. Microlaryngeal surgery was done in patients with vocal polyps, vocal cord cysts, papilloma, keratosis, leukoplakia and biopsy was sent for HPE for confirmation of diagnosis.

**Conclusion**: Benign vocal cord lesions including vocal cord nodules, polyps, cysts, reinke's oedema, leukoplakia, granuloma all present with complaints of change in voice.It is important to differentiate these from malignant lesions and to provide definitive treatment that includes voice therapy or Microlaryngeal surgery.

**Keywords**: Vocal cord, benign, lesion, vocal nodule

**Introduction**

The larynx is a major component of upper respiratory tract [1].The larynx serves several function with the major function being airway protection, respiration and phonation. Normal voice requires laryngeal function to be coordinated and efficient. Any imbalance of this system can affect phonation [2].Benign vocal fold lesions are non-malignant growths of abnormal tissue on the vocal cords. Any lesion on the vocal fold impairs the vocal cord movement leading to change in voice quality and hoarseness.The most common vocal fold lesions are vocal nodule, vocal polyps, Reinke's oedema, granuloma, sulcus vocalis, papilloma.Mostly benign lesions of cords are caused primarily by vibratory trauma due to excessive voice use[3].Patients also present with other complaints like foreign body sensation throat and cough which occurs due to uneven surface of vocal folds leading to mucor lodgment.

The present study is conducted to find the incidence of benign lesions of vocal folds and to analyze clinical presentation and histopathological type of benign lesions of vocal folds.

**Material and Methods**

The present study was a prospective study conducted in the Department of Otorhinolaryngology over a period of 1 year from November 2019 to October 2020 in a tertiary care hospital.The study included 70 patients of either gender in the age group of 18 to 60 years who presented to us with complaints of voice change and were diagnosed with benign lesions on indirect laryngoscopic examination.

Patient with clinical diagnosis of malignant lesions and those who were not willing to participate in the study were excluded.

Detailed History with general physical examination was done. Occpational history along with social history like smoking, tobacco chewing and alcohol intake, drug allergy was also taken. Detailed ear, nose throat examination was done.Patients were evaluated by Indirect laryngoscopy and fiber optic laryngoscopic examination.

All baseline routine blood examination including thyroid profile with imaging like X-ray Chest , X-ray soft tissue neck wherever required were done. Diagnosis was made clinically and treatment was done accordingly. Patients with lesions such as vocal nodule and reinke's oedema were advised voice therapy and regular follow up was done. Microlaryngeal surgery was done in patients with vocal polyps, vocal cord cysts,papilloma,keratosis,leukoplakia like patch and biopsy was sent for HPE for confirmation of diagnosis.

**Results**

A total of 70 subjects were studied who presented to ENT OPD with complaints of hoarse voice.The study was conducted after approval of Institutional ethics committee over a period of 1 year.Male to Female ratio was 1.18:1.The mean age of presentation was 34.6 ±2.8 years,with maximum number of patients belonging to age group of 31-40 years(51.4%).

Baseline characteristics of patients is shown in Table1.

Table 1: Baseline characteristics of Patients

| Variables | Frequency (%age) |
|---|---|
| Age<br>18 -30 | 10(14.3%) |
| 31-40 | 36(51.4%) |
| 41-50 | 16(22.8%) |
| 51-60 | 8(11.4%) |
| Gender<br>Male | 38(54.2%) |
| Female | 32(45.7%) |
| Occupation<br>Teacher | 26(37.1%) |
| Housewife | 16(22.8%) |
| Student | 8(11.4%) |
| Singers | 7(10%) |
| Shopkeeper | 7(10%) |
| Hawker | 6(8.6%) |

Symptomatology of Benign lesions of vocal folds in depicted in Table 2.Hoarseness of voice was the chief complaint in all patients, followed by foreign body sensation throat, dry cough, frequent clearing of throat and respiratory difficulty. Histopathological evaluation is depicted in Table 3,Fig1&2.The clinical findings of lesion is depicted in Table 4.Location of Vocal cord nodules was mostly seen at the junction of anterior 1/3$^{rd}$ and posterior 2/3$^{rd}$ in bilateral cords where as vocal cord polyp was present in 1/3$^{rd}$ of anterior Unilateral vocal cord while the least was over 1/3$^{rd}$ of posterior cords.

Distribution of lesions according to gender is depicted in Table 5.

Table 2: Clinical presentation of patients

| Symptoms | Frequency(n) | Percentage (%) |
|---|---|---|
| Hoarseness | 70 | 100% |
| Foreign body sensation throat | 20 | 28.6% |
| Dry cough | 10 | 14.3% |
| Frequent clearing of throat | 7 | 10% |
| Respiratory difficulty | 4 | 5.7% |

Table 3: Diagnosis of vocal cord lesions

| Lesion | Frequency(n) |
|---|---|
| Vocal nodule | 24 |
| Vocal polyp | 14 |
| Leukoplakia | 10 |
| Vocal cord cyst | 7 |
| Keratosis | 6 |
| Granuloma | 5 |
| Reinke's oedema | 3 |
| Papilloma | 1 |

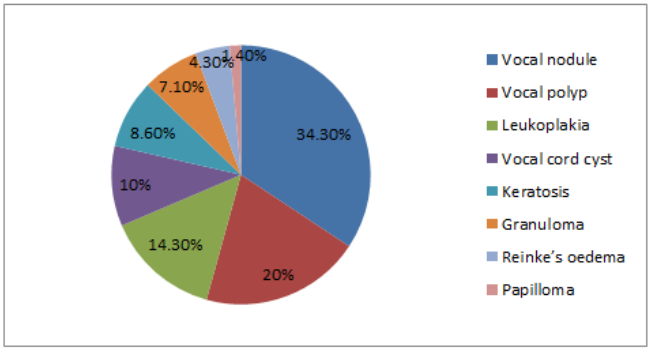


Fig. 1: Frequency of lesions

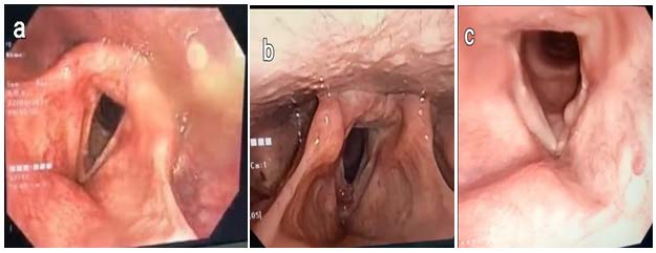

Fig. 2: Benign lesion of Vocal cord (a) Bilateral Vocal nodule (b) Vocal polyp at anterior commissure (c) Vocal cord cyst.

Table 4: Site and Laterality of various lesions of vocal cords

| Lesion | Site | | | | Laterality | |
|---|---|---|---|---|---|---|
| | Anterior commissure | Anterior 1/3rd | Posterior 1/3rd | Diffuse | U/L | B/L |
| Vocal nodule | - | 24 | - | - | 22 | 2 |
| Vocal polyp | 2 | 10 | 2 | | 12 | 2 |
| Leukoplakia | 2 | 5 | 3 | | 7 | 3 |
| Vocal cord cyst | | 5 | 2 | | 7 | 0 |
| Keratosis | - | 3 | 1 | 2 | 4 | 2 |
| Granuloma | | | 3 | 2 | 4 | 1 |
| Reinke's oedema | | | | 3 | 0 | 3 |
| Papilloma | | 1 | | | 1 | 0 |

Table 5: Distribution of cases in relation to gender

| Lesion | Gender | |
|---|---|---|
| | Male | Female |
| Vocal nodule | 10 | 14 |
| Vocal polyp | 9 | 5 |
| Leukoplakia | 9 | 1 |
| Vocal cord cyst | 3 | 4 |
| Keratosis | 4 | 2 |
| Granuloma | 2 | 3 |
| Reinke's oedema | 0 | 3 |
| Papilloma | 1 | - |

**Discussion**

The present study consisted of 70 patients. Majority of patients were in the age group of 31-40 years(51.4%) followed by 41-50 years (22.8%),18-30(14.3%) and 51-60 years(11.4%).The findings are consistent with the studies conducted by Chopra H et al[4] and Baitha et al [5]who also found maximum patients with benign vocal cord lesions falling in the age group of 31-40 years. There were 38 males (54.2%) and 32 females (45.7%).Male to female ratio was 1.8:1.Male preponderance was also observed in various previous studies conducted by Parikh N, Banjara H et al ,Batra et al[6,7,8].

In present study majority of patients were teachers (37.1%) followed by Housewife (22.78%),student (11.4%), singers (10%), shopkeeper (10%) and hawker (8.6%).Chindhapeta KK et al[9] in their study also observed teaching profession to be the commonest in patients with benign vocal cord lesions. However in a study by Singhal et al [10], highest incidence was noted in housewives (24%), teachers (16%) and hawkers (16%). Hoarseness was the chief complaints present in

all patients followed by Foreign body sensation throat,dry cough,frequent clearing of throat and respiratory difficulty.This is similar to the studies done by Hegde et al and Baitha et al[11,12].

Most common lesion found in this study were vocal cord nodule (34.3%) followed by vocal polyp(20%),leukoplakia(14.3%),vocal cordcyst(10%),keratosis(8.6%),granuloma(7.1%),reinke's oedema(4.3%) and papilloma(1.4%).In study conducted by Baitha et al[12]vocal nodule was the most common benign lesion noted in subjects. However Hegde et al [11] and Singh et al[13] in their studies found vocal polyp as the most common benign lesion followed by vocal nodule. In our study 22 cases had bilateral vocal nodule and only 2cases had unilateral vocal nodule. 12 cases had unilateral vocal polyp while 2 had bilateral vocal cord polyp. Vocal cord nodule was mostly found in females (58.3%) than males whereas vocal polyp was seen in males in the age group of 18-30 years. Leukoplakia and keratosis were observed in elderly males in the present study.Reinke's oedema was present in 3 females.5 cases of granuloma was observed in this study.All cases of granuloma had a history of intubation in the past. Only 1 case of papilloma was found in our study. Swapan K Ghosh [14] in his study found 10 cases of papilloma.

Patients with lesions such as Vocal nodule and Reinke's oedema were advised voice therapy and were followed up at regular intervals. Patients with lesions like Vocal polyp ,Vocal cord cyst, keratosis, leukoplakia and papilloma were treated with surgical excision and confirmed by histopathological examination. Patients were advised voice therapy post-surgery and were followed up at regular intervals.

**Conclusion**

Vocal cords are very intricate structures that help a human being to speak, even a subtle change in its thickness can impair the quality of voice. Although Benign vocal cord lesions are not life threatening condition, but depending on their size, can affect the voice .Thus, Diagnosis of vocal cord lesion is important to not only differentiate it from malignant lesion but also for their early management to improve quality of voice in patients.

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