Original Research

A CLINICAL PROFILE, ETIOLOGICAL FACTORS, AND MANAGEMENT OUTCOMES OF BENIGN LESIONS OF THE LARYNX: A PROSPECTIVE OBSERVATIONAL STUDY

Dr. Bharath Kanna Karunakaran[1*], Dr. Nagaraj Kirupananthan[2], Dr. Kanithavalli K.[3]

[1*]Assistant Professor, Department of Otorhinolaryngology, Pondicherry Institute of Medical Science, Puducherry, India.

[2]Assistant Professor, Department of Otorhinolaryngology, Indira Medical College & Hospitals (IMCH), Tiruvallur, Tamil Nadu, India. https://orcid.org/0000-0002-4764-6517

[3]Assistant Professor, Department of Otorhinolaryngology, Indira Medical College & Hospitals (IMCH), Tiruvallur, Tamil Nadu, India.

Corresponding Author: Dr. Bharath Kanna
Assistant Professor, Department of Otorhinolaryngology, Pondicherry Institute of Medical Science, Puducherry, India.

ABSTRACT

Background: Benign laryngeal lesions are a major cause of dysphonia and are associated with significant morbidity. These lesions arise from a complex interplay of behavioral, environmental, and physiological factors.
Objective: To evaluate the demographic profile, etiological factors, clinical presentation, and management outcomes of benign laryngeal lesions.
Methods: A prospective observational study was conducted on 50 patients presenting with symptoms suggestive of benign laryngeal lesions at a tertiary care center between November 2018 and May 2020. All patients underwent detailed clinical evaluation, videolaryngoscopy, and histopathological examination where indicated.
Results : The majority of patients were in the 21–40-year age group (58%), with a male predominance (62%). Voice abuse (68%) was the most significant etiological factor. Vocal cord polyps (36%) were the most common lesions, followed by nodules (26%). Conservative management was effective in early lesions, while surgical intervention was required in 66% of cases. Overall improvement was observed in 76% of patients.
Conclusion: Benign laryngeal lesions are predominantly non-neoplastic and strongly associated with modifiable risk factors. Early diagnosis and tailored management strategies result in favorable outcomes.

Keywords: Benign Laryngeal Lesions, Vocal Cord Polyp, Vocal Nodules, Phonosurgery, Laryngeal Tuberculosis.

INTRODUCTION

The human larynx is a complex, multi-layered biomechanical structure responsible for airway protection, respiration, and phonation. Benign vocal fold lesions (BVFLs) represent a diverse spectrum of non-neoplastic pathologies-such as polyps, nodules, cysts, and granulomas-that disrupt the viscoelastic properties of the vocal folds.[1] These structural abnormalities alter glottic closure and mucosal wave propagation, universally presenting with dysphonia or hoarseness as the cardinal symptom.[2] Dysphonia significantly diminishes voice-related quality of life, placing a severe socio-economic and emotional burden on patients, particularly those engaged in vocally demanding professions.[3]The etiology of BVFLs is distinctly multifactorial. The pathogenesis is largely driven by phonotrauma resulting from vocal abuse or misuse, which precipitates microvascular injury in the superficial lamina propria.[4] This local trauma is frequently compounded by extrinsic environmental irritants, tobacco smoking, and chronic systemic infections.[5] While modern optical advancements like videolaryngostroboscopy have vastly improved the outpatient evaluation of the glottis,[6] tangential views can occasionally mask underlying mucosal realities, making histopathological examination the gold standard to definitively characterize the lesion and exclude dysplasia.[7]

The present study aims to evaluate the clinico-epidemiological profile of benign laryngeal lesions, identify high-risk occupational and etiological factors, and objectively assess the correlation between clinical diagnoses and definitive

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histopathological findings. Furthermore, this study evaluates the therapeutic outcomes of integrating conservative voice management with surgical intervention.

MATERIALS AND METHODS

This prospective observational study was conducted in the Department of Otorhinolaryngology at Bangalore Medical College and Research Institute, including its affiliated centers—Sri Venkateswara Institute of ENT and Bowring and Lady Curzon Hospital, Bengaluru—over a period of 18 months from November 2018 to May 2020. A total of 50 patients with clinically suspected benign laryngeal lesions were included.

Sample Size Justification: The sample size of 50 was determined based on feasibility within the study duration and patient inflow at the study centers. As this was a descriptive, hospital-based study aimed at evaluating the clinical profile and patterns of benign laryngeal lesions, all consecutive eligible patients presenting during the study period were included. This approach is consistent with similar observational studies in otorhinolaryngology literature.

Study Population: Patients presenting with hoarseness or change in voice, foreign body sensation in the throat, vocal fatigue, throat pain, or breathing difficulty were considered for inclusion. Only those who provided written informed consent were enrolled. Patients with malignant laryngeal lesions, infective pathology, speech disorders secondary to central nervous system disease, or associated oral, nasal, or pharyngeal pathology were excluded.

Clinical Evaluation: All patients underwent detailed clinical evaluation, including history with emphasis on predisposing factors such as voice abuse, misuse, and smoking. Comprehensive otorhinolaryngological examination was performed, and findings were recorded in a structured proforma.

Investigations: Baseline investigations included routine hematological tests, chest radiography (posteroanterior view), and sputum examination for acid-fast bacilli where indicated. All patients underwent videolaryngoscopic evaluation. Definitive diagnosis was confirmed by histopathological examination of excised specimens.

Surgical Technique: All patients were managed by microlaryngeal excision under general anesthesia. Patients were positioned in Boyce position, and a suspension laryngoscope was used for laryngeal exposure. The lesion was visualized under magnification using a 400 mm lens with a Zeiss operating microscope or videolaryngoscope. Lesions were excised using microlaryngeal instruments with hydrodissection technique, ensuring preservation of the vocal ligament and lamina propria. Excised specimens were sent for histopathological analysis.

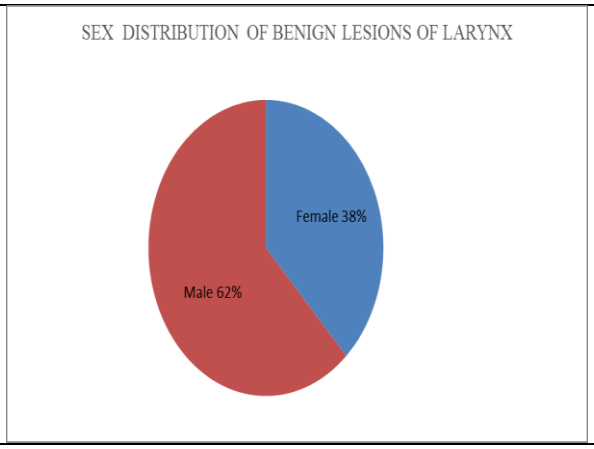
Statistical Analysis: Data were entered into Microsoft Excel and analyzed using Statistical Package for the Social Sciences version XX (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarize the data. Continuous variables were expressed as mean ± standard deviation (SD), while categorical variables were presented as frequencies and percentages.

Associations between categorical variables were analyzed using the Chi-square test or Fisher's exact test, as appropriate. A *p*-value of <0.05 was considered statistically significant.

Ethical Considerations: The study was approved by the Institutional Ethics Committee of Bangalore Medical College and Research Institute. Written informed consent was obtained from all participants prior to inclusion in the study.

RESULTS

In this study the range of age of the patient was 6 years to 70 years. It was observed that the maximum number of cases was seen in the age group of 21- 40 years. The number of cases in the extremes of age was minimal. The average age of presentation was 33.02 years.

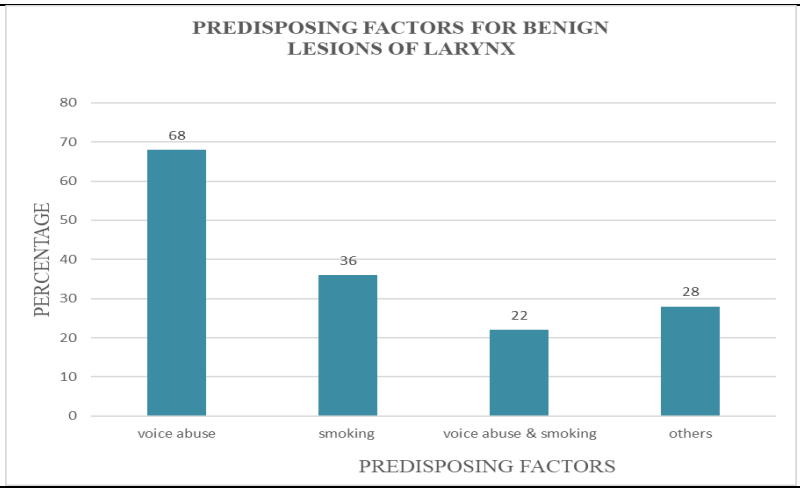


Graph 1

Majority of benign lesions were among males as they are more exposed to smoke, dust, fumes, alcohol consumption and misuse of voice etc.

Sl. No	Occupation	Number of cases	Percentage
1	Factory workers	12	24%
2	Students	10	20%
3	Teachers	7	14%
4	Shop keepers	6	12%
5	Agriculturists	6	12%
6	Drivers	4	8%
7	House wives	2	4%
8	Mechanic	2	4%
9	Professional singer	1	2%

Table 1: Occupational Variation on benign Lesions of Larynx



Graph 2

Table-2 Shows presenting complaints in patients with benign lesions of larynx. Change of voice was associated with other complaints in 49 patients. The duration of symptoms ranged from 1 month to 30 months.

Sl. No.	Symptoms	No. of Cases	Percentage
1	Change of voice alone	16	32%
2	Change of voice and weakness of voice	18	36%
3	Change of voice and cough	15	30%
4	Change of voice and Fever	8	16%
5	Change of voice and dyspnoea	6	12%
6	Change of voice and Noisy breathing	6	12%
7	Change of voice and difficulty in swallowing	3	6%

Table 2: Presenting Complaints of Benign Lesions of Larynx

Duration in Months	No of Cases	Percentage
00-03	20	40%
04-06	14	28%
07-09	5	10%
10-12	4	8%
13-24	5	10%
>24	1	2%

Table 3: Duration of Change in Voice in Benign Lesions of Larynx

Study shows duration of change in voice in patients who were diagnosed to have benign lesions of larynx. Change in voice was the commonest symptoms and its duration ranged from 1 month to 30 months. The majority of the patients (40%) presented within 3 months of change in voice. Only 1 patient presented with a history of change in voice for more than 24 months. Most of the benign lesions were present in glottis (72%). Both supraglottis and glottis were affected in 22% of cases. Only supragolttic lesions were present in 6% of cases.

Sl. No.	Type of Lesion	No. of Cases	Percentage
A	**Neoplastic**		
	1.Papilloma		
	a. Multiple	3	6%
	b. Solitary	1	2%
	2.Haemangioma	1	2%
	Total	**5**	**10%**
B	**Non-neoplastic**		
	1.Vocal cord polyp	18	36%
	2.Vocal cord nodule	13	26%
	3.Tubercular granuloma	7	14%
	4.Intubation granuloma	3	6%
	5. Vocal cord cysts	3	6%
	6. Laryngeal amyloid	1	2%
	Total	**45**	**90%**

Table 4: Different Types of Benign Lesions of Larynx based on Clinical Diagnosis

Table-4 Shows different types of benign lesions based on clinical diagnosis. Non-neoplastic lesions were more common than neoplastic lesions. Vocal cord polyps were the most frequent (36%), followed by nodules (26%) and tubercular granulomas (14%). Other lesions included intubation granulomas (6%), cysts (6%), and laryngeal amyloidosis (2%). Papilloma were common benign neoplastic lesions among true neoplastic lesions accounting for 80% of cases. Only 1 case of haemangioma was encountered accounting for 20% all true benign neoplastic lesions.

Sl. No.	Non-neoplastic lesion	No of cases	Percentage
1	Vocal cord polyp	18	40.00%
2	Vocal cord nodule	13	28.88%
3	Tubercular granuloma	7	15.55%
4	Intubation granuloma	3	6.66%
5	Vocal cord cysts	3	6.66%
6	Laryngeal amyloid	1	2.22%
	Total	**45**	**100%**

Table 5: Non-Neoplastic Benign Lesions of Larynx

Vocal cord polyps were most common in the 21–40 years age group (55.54%) with male predominance (66.7%). Voice abuse was the primary risk factor (77.78%), followed by smoking (44.44%). Polyps were predominantly unilateral, more often affecting the right vocal cord (55.55%), and were frequently observed among shopkeepers and factory workers.

Vocal nodules showed female predominance (76.92%) and were most common in the 21–30 years age group (53.84%). All cases were associated with voice abuse, with teachers forming the largest occupational group (46.14%). Most nodules were bilateral (76.92%).

Tubercular granulomas constituted 14% of cases, predominantly affecting males and associated with pulmonary tuberculosis, with most patients being sputum AFB positive. Vocal cord cysts (6.66%), intubation granulomas (6%), and laryngeal amyloidosis (2%) were less frequent. Intubation granulomas were linked to prolonged endotracheal intubation, while amyloidosis was rare and localized.

Systemic Exmination: Systemic examination was normal in most of the cases. 6 out of 7 patients with tubercular granuloma had crepitations on examination of the respiratory system. Two patients with multiple papilloma and one patient with intubation granuloma had inspiratory stridor.

Radiological Examination: Chest X-ray view was taken whenever essential. In seven cases X-ray revealed pulmonary tuberculosis.

Bacteriological Examination: Sputum for AFB was done in suspected tubercular granulomas. Out of 7 cases 6 cases were positive for AFB.

Sl. No.	Type of Lesion	No. of Cases Clinical Diagnosed	Histopathologically Confirmed
A	**Neoplastic**		
	1.Papilloma		
	c. Multiple d. Solitary	3 1	3 1
	2.Haemangioma	1	1
B	**Non-neoplastic**		
	1.Vocal cord polyp	18	12
	2.Vocal cord nodule	13	5
	3.Tubercular granuloma	7	3
	4.Intubation granuloma	3	2
	5. Local cord cysts	3	2
	6. Laryngeal amyloid	1	1
	Total	**50**	**30**

Table 6: Correlation of Clinical Diagnosis of benign Lesions of Larynx with that of Histopathological Diagnosis

Table Shows correlation of clinical diagnosis with that of histopathological diagnosis. Out of 50 cases only 30 (60%) were confirmed by histopathological examination.

All vocal cord polyps and nodules were subjected to voice therapy and voice rest before considering surgical management.

Excision of the lesions by Microlaryngeal Surgery was done in 33 cases. Emergency tracheostomy was done in two patients with multiple papilloma who presented with acute onset of stridor. Adenotonsillectomy was performed in patients who had recurrent attacks of throat of pain and upper respiratory infections and it was followed by direct laryngoscopy and excision of the vocal cord polyp.

Analysis of Results: Analysis of treatment of benign lesions of larynx. Improvement was seen in 38 cases (76%). No improvement was seen in 10 cases (20%). Recurrence was seen in two cases of multiple papilloma (4%).

DISCUSSION

The current study evaluates the demographic, clinical, and histopathological landscape of 50 patients presenting with benign laryngeal lesions. Patient age ranged from 6 to 70 years, with the highest incidence localized to the 21–40 years demographic and a mean age of presentation of 33.02 years. This demographic distribution aligns with existing literature, indicating that benign laryngeal pathologies predominantly afflict adults during their most active, occupational years, likely due to heightened vocal load and cumulative environmental exposures.[8,9]

Overall, a male predominance was observed, primarily driven by the high prevalence of vocal cord polyps (36%). Vocal polyps frequently occurred unilaterally and showed a strong association with factory workers and shopkeepers, suggesting a synergistic etiology involving occupational irritants (dust, fumes) and high smoking prevalence.[10] Conversely, vocal cord nodules (26%) demonstrated a distinct female predominance (76.92%), peaking among patients aged 21–30 years, predominantly teachers. This mirrors robust occupational health data; the female larynx's higher fundamental frequency dictates more vibratory collisions per second, rendering female educators significantly more vulnerable to the fibrotic changes characterizing vocal nodules under conditions of chronic phonotrauma.[5,11]

A crucial finding in this cohort was the significant presence of tubercular granulomas, accounting for 14% of cases. The high correlation with sputum AFB positivity highlights that laryngeal tuberculosis-while historically considered secondary to advanced pulmonary seeding-remains a highly relevant, active differential diagnosis for hoarseness in endemic areas.[12] This underscores the absolute necessity of integrating systemic respiratory evaluation in patients presenting with exophytic or granulomatous laryngeal lesions.

Diagnostic accuracy was a central metric in this study, revealing a 60% concordance between the initial clinical impression and the ultimate histopathological confirmation. While outpatient endoscopy provides a highly effective diagnostic foundation, varying degrees of submucosal infiltration and overlapping morphological presentations can blur the lines between cysts, polyps, and reactive lesions.[13] This 40% diagnostic discrepancy robustly defends the mandatory practice

of obtaining histopathological confirmation for all excised laryngeal tissues to definitively categorize the lesion and, most critically, to exclude occult squamous cell malignancies masquerading as benign disease.[7]

Management outcomes were favorable, with 76% improvement. While voice therapy is highly effective for early "soft" nodules,[14] persistent or fibrotic lesions-especially polyps-require surgical excision. Therapeutically, a sequenced approach prioritizing microlaryngeal excision followed by voice rest and therapy yielded an impressive 76% clinical improvement rate. Phonomicrosurgery is highly effective for lesions refractory to conservative treatment; by meticulously preserving the uninvolved epithelium and superficial lamina propria, the procedure restores mucosal pliability.[15,16] Recent studies emphasize that surgical precision, coupled with tailored postoperative voice rehabilitation, is essential for mitigating the vocal handicap index and minimizing the probability of recurrence.[17] Recurrence in our study (4%) was strictly confined to cases of multiple papillomatosis, an anticipated outcome given its resilient viral etiology.

CONCLUSION

Benign lesions of the larynx are a prominent cause of functional dysphonia, disproportionately impacting individuals in their peak occupational years. The epidemiological data reveal distinct, occupationally driven patterns: the high incidence of vocal polyps among male industrial workers exposed to environmental irritants, and the strong prevalence of vocal nodules among female educators subjected to chronic phonotrauma. Furthermore, the identification of tubercular granulomas emphasizes that systemic infectious etiologies must actively be investigated in regions where tuberculosis remains prevalent.

Most importantly, the observed 60% clinico-pathological correlation underscores that clinical endoscopy cannot safely replace definitive histopathological examination. Histopathology remains indispensable for accurate categorization and ruling out dysplasia. Ultimately, an integrated, multidisciplinary management paradigm that combines precise microlaryngeal surgery with rigorous voice therapy represents a highly effective and safe standard of care for restoring native voice quality and ensuring optimal patient outcomes.

REFERENCES

1. Amarnath SB, Anthwal P, Vulava S, et al. Micro laryngeal surgery for benign lesions of the larynx: our experience. J Med Sci Res 2022;10:191-6.
2. Malik P, Yadav SPS, Sen R, et al. The clinicopathological study of benign lesions of vocal cords. Indian J Otolaryngol Head Neck Surg 2017;71:212-20.
3. Singh D, Baruah B, Basu D, et al. A follow-up study of surgically managed benign vocal cord lesions using vocal handicap index – 10 score. J Family Med Prim Care 2022;11:4780-4.
4. Nerurkar N, Gupta VK, Chitnis T, et al. Phonotraumatic lesions. Int J Head Neck Surg 2022;12:131-43.
5. Pedersen M, McGlashan J. Surgical versus non-surgical interventions for vocal cord nodules. Cochrane Database Syst Rev 2012;2012(6):CD001934.
6. Zarachi A, Tafiadis D, Exarchakos G, et al. The utility of stroboscopy in evaluating patients with benign vocal fold lesions. Maedica (Bucur) 2023;18(3):504-9.
7. Upadhyay A, Zaidi AK, Mundra RK. A comprehensive analysis of benign vocal fold lesions causing hoarseness of voice and our experience with cold knife endolaryngeal surgery in a tertiary healthcare centre. Indian J Otolaryngol Head Neck Surg 2018;71:515-21.
8. Baitha S, Raizada RM, Singh AKK, et al. Clinical profile of hoarseness of voice. Indian J Otolaryngol Head Neck Surg 2002;54:14-8.
9. Hegde MC, Kamath MP, Bhojwani K, et al. Benign lesions of larynx-A clinical study. Indian J Otolaryngol Head Neck Surg 2005;57(1):35-8.
10. Soni S, Chouksey S. A study of clinicopathological profile of patients of hoarseness of voice presenting to tertiary care hospital. Indian J Otolaryngol Head Neck Surg 2017;69:244-7.
11. Codino J, Christensen EM. A structured pre- and post-operative voice therapy program for benign vocal fold lesions. Rev Investig Innov Cienc Salud 2023;5:254-62.
12. Agarwal R, Gupta L, Singh M, et al. Primary laryngeal tuberculosis: a series of 15 cases. Head Neck Pathol 2018;13:339-43.
13. Goud PY, Sruthi G. Spectrum of benign and malignant laryngeal lesions in patients presenting with hoarseness of voice: a cross-sectional study. Eur J Cardiovasc Med 2025;15(9):235-9.
14. Cohen SM, Garrett CG. Utility of voice therapy in the management of vocal fold polyps and cysts. Otolaryngol Head Neck Surg 2007;136(5):742-6.
15. Schindler A, Mozzanica F, Ginocchio D, et al. Vocal improvement after voice therapy in the treatment of benign vocal fold lesions. Acta Otorhinolaryngol Ital 2012;32(5):304-8.
16. Meena ML, Raidas RC, Garg AK, et al. A observation study of benign lesion of larynx.

Int J Pharm Res Technol. 2025;15(2):3556-63.

17. King RE, Novaleski CK, Rousseau B. Voice handicap index changes after microflap surgery for benign vocal fold lesions are not associated with recommended absolute voice rest duration. Am J Speech Lang Pathol 2022;31:912-22.

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