

# Benign laryngeal lesions: review of 329 cases in a single center

Hatice Bengü Çobanoğlu<sup>1</sup>, Koray Keskin<sup>2</sup>, Erdal Rahman Köprücü<sup>1</sup>, Handan Turgut Semerci<sup>3</sup>

<sup>1</sup>Department of Otorhinolaryngology, Faculty of Medicine, Karadeniz Technical University, Trabzon, Türkiye

<sup>2</sup>Department of Otorhinolaryngology, Kanuni Training and Research Hospital, Trabzon, Türkiye

<sup>3</sup>Department of Otorhinolaryngology, Medical Park Yıldızlı Hospital, Trabzon, Türkiye

**Cite as:** Çobanoğlu HB, Keskin K, Köprücü ER, Turgut Semerci H. Benign laryngeal lesions: review of 329 cases in a single center. Northwestern Med J. 2026;6(1):52-57.

## ABSTRACT

**Aim:** Benign laryngeal lesions are non-neoplastic growths of abnormal tissue on the laryngeal mucosa. They are significant because they can affect the laryngeal functions of voice production, respiration, and deglutition. This study aims to present the histopathological and clinical data of patients diagnosed with benign vocal cord lesions who were followed up and underwent surgical treatment in our tertiary referral center, evaluate the distribution percentages, and assess the pathological findings in relation to age and gender.

**Materials and Methods:** This retrospective study was conducted by evaluating the medical records of patients who were diagnosed with benign vocal cord lesions between October 2014 and May 2019 at the Department of Otorhinolaryngology, Faculty of Medicine, Karadeniz Technical University.

**Results:** Of the 329 patients included in the study, 235 (71.4%) were male, and 94 (28.6%) were female. The mean age of the patients was 48.6 ( $\pm 13.62$ ) years. Histopathological evaluation revealed that the most common diagnosis was vocal cord polyp in 223 patients (67.8%). The second most common pathology was vocal cord nodule, observed in 23 patients (7.0%). This was followed by Reinke's edema in 21 patients (6.4%) and intracordal cyst in 20 patients (6.1%). No significant relationship was found between gender and the distribution of vocal cord biopsy results. However, a significant relationship was found between age groups and pathology distribution ( $p < 0.001$ ). In particular, Reinke's edema and active chronic inflammation were more frequently observed in patients aged 49 and above.

**Conclusion:** Among patients with benign vocal cord lesions, vocal cord polyps are the most frequently encountered pathology. With increasing age, the diagnostic diversity of benign lesions also increases. Reinke's edema and inflammatory lesions are more frequently observed in older individuals.

**Keywords:** benign lesions, microlaryngeal surgery, nodule, polyp, vocal cords

**Corresponding author:** Koray Keskin **E-mail:** koraykeskinmd@gmail.com

**Received:** 30.04.2025 **Accepted:** 23.12.2025 **Published:** 09.01.2026

Copyright © 2026 The Author(s). This is an open-access article published by Bolu İzzet Baysal Training and Research Hospital under the terms of the [Creative Commons Attribution License \(CC BY\)](#) which permits unrestricted use, distribution, and reproduction in any medium or format, provided the original work is properly cited.

## INTRODUCTION

Benign lesions of the larynx are defined histopathologically as non-malignant abnormal growth or inflammation of laryngeal tissue. These lesions are of clinical significance due to their high prevalence and potential to negatively impact the quality of life. Treatment options include medical therapy and voice therapy; however, surgical intervention remains the primary approach, especially when conservative treatments fail (1).

The most common presenting symptom of benign vocal cord pathologies is dysphonia (2,3). More than half of patients presenting with hoarseness exhibit benign changes in the laryngeal epithelium. In patients undergoing surgery for diagnostic or therapeutic purposes, the main goals are to improve phonatory function and/or establish a definitive histopathological diagnosis via biopsy (4). Histopathological confirmation is essential since malignant lesions can mimic benign ones during laryngoscopic examination.

Smoking, improper or excessive voice use, chronic laryngitis, various vitamin and mineral deficiencies, and gastroesophageal reflux are among the primary etiological factors (5,6). Benign laryngeal lesions are more commonly seen in individuals using their voice professionally, such as singers, actors, and teachers. These lesions may present with mild dysphonia or with life-threatening stridor requiring emergency intervention in cases such as extensive laryngeal papillomatosis (7). Therefore, accurate histopathological diagnosis is extremely important for appropriate management.

This study analyzed the clinical characteristics and histopathological results of patients who were diagnosed with benign vocal cord lesions over five years following direct microlaryngoscopic surgery performed in our clinic.

## MATERIALS AND METHODS

This retrospective study was conducted in the Department of Otorhinolaryngology in Karadeniz Technical University. This study included patients

diagnosed with benign vocal cord lesions between October 2014 and May 2019. Prior approval was obtained from the Karadeniz Technical University Faculty of Medicine Clinical Research Ethics Committee on 31.05.2019 with decision number 2019/189.

Histopathological specimens which were obtained from mucosal lesions, benign laryngeal pathologies, and benign tumors which were excised for diagnostic or therapeutic purposes were included. Patients who had undergone surgery for laryngeal malignancy or had received chemotherapy or radiotherapy for malignant conditions were excluded. In addition, revision surgeries and blind biopsies which were performed only to rule out malignancy were not included.

Demographic data of age, gender, and postoperative pathological diagnoses were recorded. Patients were categorized by gender (male/female) and age group ("48 years and under" and "49 years and above"). Histopathological findings were compared accordingly.

No artificial intelligence–assisted technologies were used for data collection, statistical analysis, or figure generation.

An artificial intelligence–assisted language model (ChatGPT, OpenAI, USA) was used only to improve grammar, clarity, and readability of the manuscript text. All scientific content, analyses, and interpretations were created and verified by the authors.

## Statistical analysis

Statistical analysis was performed using the SPSS software. Descriptive statistics were given as numbers and percentages for categorical variables and as means for numerical variables. The relationship between pathological findings and age/gender was analyzed by using the chi-square test.  $P < 0.05$  was considered the statistical significance level.

## RESULTS

This study included 329 patients; 235 (71.4%) were male, and 94 (28.6%) were female, with a male-to-female ratio of 2.5:1. The mean age of the patients was  $48.6 \pm 13.62$  years, ranging from 11 to 88 years.

Histopathological examination showed that the most common lesion was vocal cord polyp in 223 patients (67.8%). The second most common diagnosis was vocal cord nodule which was observed in 23 patients (7.0%), followed by Reinke’s edema in 21 patients (6.4%) and intracordal cyst in 20 patients (6.1%).

The histopathological results are shown in Table 1. There is no significant association between gender and biopsy results. However, a significant relationship was found between age group and pathology distribution ( $p < 0.001$ ). In particular, Reinke’s edema and active chronic inflammation were more prevalent in patients aged 49 years and older.

In the chi-square analysis, no significant association was found between gender and vocal cord biopsy results ( $p = 0.939$ ). This finding indicates that the distribution of vocal cord lesions is similar in male and female patients, suggesting that gender does not have a significant impact on the type of lesion.

However, a significant relationship was observed when evaluated according to age groups ( $p < 0.001$ ). In particular, diagnoses such as Reinke’s edema and active chronic inflammation were more frequently observed in patients aged 49 years and older.

**Table 1.** Distribution of vocal cord pathologies by number and percentage

Diagnosis	Number (n)	Percentage (%)
Vocal cord polyp	223	67.8
Vocal cord nodule	23	7.0
Reinke’s edema	21	6.4
Intracordal cyst	20	6.1
Papilloma	9	2.7
Vocal cord cyst	6	1.8
Active chronic inflammation	6	1.8
Fibrin-exudate mass	3	0.9
Inflammatory granulation tissue	3	0.9
Laryngeal epithelial cyst	2	0.6
Laryngocele	2	0.6
Hemangioma	1	0.3
Hemorrhagic polyp	1	0.3
Candidal lesion	1	0.3
Cavernous hemangioma	1	0.3
Chronic inflammation	1	0.3
Laryngeal amyloidosis	1	0.3
Fungal hyphae	1	0.3
Oncocytic cystadenoma	1	0.3
Oncocytic papillary cystadenoma	1	0.3
Telangiectatic polyp	1	0.3
Vallecular cyst	1	0.3
Total	329	100

**Table 2.** Distribution of vocal cord biopsy results by gender and age group

Diagnosis	Male	Female	Total	≤48 years	≥49 years	Total
Vocal cord nodule	14	9	23	15	8	23
Vocal cord polyp	162	61	223	125	98	223
Vocal cord cyst	4	2	6	2	4	6
Reinke’s edema	15	6	21	6	15	21
Papilloma	7	2	9	4	5	9
Intracordal cyst	14	6	20	8	12	20
Active chronic inflammation	5	1	6	0	6	6
Others	14	7	21	4	17	21
Total	235	94	329	164	165	329

## DISCUSSION

Benign vocal cord lesions are one of the most common pathological causes of hoarseness following infectious etiologies. Although hoarseness is the primary complaint, patients may also present with symptoms such as cough, foreign body sensation in the throat, sore throat, dysphagia, and dyspnea (8). Benign laryngeal lesions generally do not pose a life-threatening risk except for rare obstructive conditions such as laryngeal papillomatosis. Their primary clinical significance lies in their impact on vocal function, vocal identity, and, indirectly, the individual's self-identity (9,10). These lesions usually do not spread or impair the function of vital organs since they are non-malignant. However, the clinical diagnosis of benign laryngeal lesions such as nodules, polyps, or cysts must always consider the potential for malignancy unless the lesion regresses with treatment or a benign nature is confirmed histopathologically.

Several studies in the literature report different findings regarding gender predominance in benign vocal cord lesions. Some of them have suggested that these lesions are more common in females, with female-to-male ratios reported as high as 3.2:1. It has been proposed that this female predominance may be related to greater awareness of voice changes among women, leading to earlier and more frequent clinical consultations. In addition, the higher proportion of female teachers, a profession associated with vocal strain, may contribute to this trend (11).

In contrast, many other studies have reported a male predominance in benign vocal cord lesions (3,7,12). Our study similarly observed a higher prevalence in males, with a male-to-female ratio of 2.5:1. This male predominance may be attributed to higher rates of smoking among the male population in the region where the study was conducted. In addition, no significant association was found between gender and the distribution of vocal cord biopsy results. The lesion distribution was similar between male and female patients, suggesting that benign vocal cord lesions occur independently of gender and that gender does not play a significant role in the diagnostic spectrum.

The most common benign lesions of the vocal cords include nodules, polyps, papillomas, polypoid degeneration (Reinke's edema), and cysts. Literature reports are inconsistent regarding which lesion is most common. While some studies cite vocal polyps as the most frequent benign lesion, others report nodules as the leading pathology (13,14).

Although vocal cord nodules causing hoarseness can be detected by indirect laryngoscopy or stroboscopy, most cases are treated conservatively or pharmacologically (15). In particular, non-surgical management is the preferred treatment for vocal cord nodules in the pediatric population. In our study, the relatively low number of histopathologically confirmed nodules may be due to the lower rate of microlaryngeal surgery performed for such cases.

Although benign laryngeal lesions can be seen at any age, they are most commonly diagnosed in individuals between the third and fifth decades of life, with an average age of presentation between 34 and 43 years (16). In a study by Zhukhovitskaya et al., certain benign laryngeal lesions were reported to be strongly associated with both age and gender. Variations in lesion distribution based on age and gender have been linked to differences in laryngeal anatomy, phonatory physiology, and the vibratory properties of the membranous vocal fold during phonotrauma (17).

In our study, lesions such as Reinke's edema and active chronic inflammation were more frequently observed in patients aged 49 and above. Similar to the findings of our study, previous literature has also reported that Reinke's edema is more frequently observed in a similar age group. In addition, it has been presented that the severity of Reinke's edema tends to increase with advancing age (18). Some diagnoses, such as "active chronic inflammation," were seen exclusively in this age group. These findings suggest that with increasing age, the diversity of vocal cord pathologies broadens, and the diagnostic process may become more complex. In addition, the diagnosis of malignancy in laryngeal lesions increases with advancing age (19). This situation further enhances diagnostic diversity and complexity in older individuals.

## Limitations

This study has several limitations. Due to its retrospective design, detailed information on potentially relevant variables—such as occupation, smoking history, and reflux history—was not consistently available in the medical records. Consequently, subgroup analyses for these factors could not be performed, and their possible influence on the distribution of benign vocal cord lesions could not be fully evaluated. In addition, the inclusion of only histopathologically confirmed cases may have led to underrepresentation of certain lesion types that are typically managed conservatively without surgical intervention. Despite these limitations, the large sample size and comprehensive histopathological assessment strengthen the validity and clinical relevance of the study.

## CONCLUSION

Vocal cord polyps were the most frequently encountered pathology in patients with benign vocal cord lesions. There was no significant association between gender and the diagnostic distribution of benign vocal cord pathologies, and lesion distribution was similar between male and female patients. However, diagnostic diversity increased with age. Reinke's edema and inflammatory lesions were more frequently observed in older individuals. These findings suggest that the increased diagnostic diversity of vocal cord lesions in older patients may complicate the diagnostic process and potentially delay the initiation of appropriate treatment. Although patients with malignancy were excluded from our study, it is well established that the incidence of malignant lesions rises with age, further contributing to diagnostic complexity. Therefore, older patients should be evaluated with greater caution, and a broader spectrum of differential diagnoses should be considered in this population to ensure accurate diagnosis and timely management.

## Ethical approval

This study has been approved by the Karadeniz Technical University Faculty of Medicine Clinical Research Ethics Committee (approval date 31.05.2019, number 2019/189).

## Author contribution

Surgical and Medical Practices: HBC, KK, ERK; Concept: HBC; Design: HTS; Data Collection or Processing: ERK; Analysis or Interpretation: HBC; Literature Search: ERK, HTS; Writing: KK. All authors reviewed the results and approved the final version of the article.

## Source of funding

The authors declare the study received no funding.

## Conflict of interest

The authors declare that there is no conflict of interest.

## REFERENCES

1. Patrial MTCRDO, Hamerschmidt R, Matias JEF, Filho EDDM, Carvalho B. Analysis of Surgical Recurrence after Larynx Microsurgery for Benign Lesions. *Int Arch Otorhinolaryngol*. 2020; 25(4): e496-503. [\[Crossref\]](#)
2. Wani AA, Rehman A, Hamid S, Akhter M, Baseena S. Benign mucosal fold lesion as a cause of hoarseness of voice—a clinical study. *Otolaryngology*. 2012; 2: 120. [\[Crossref\]](#)
3. Singhal P, Bhandari A, Chouhan M, Sharma MP, Sharma S. Benign tumors of the larynx: a clinical study of 50 cases. *Indian J Otolaryngol Head Neck Surg*. 2009; 61(Suppl 1): 26-30. [\[Crossref\]](#)
4. Noordzij JP, Woo P. Glottal area waveform analysis of benign vocal fold lesions before and after surgery. *Ann Otol Rhinol Laryngol*. 2000; 109(5): 441-6. [\[Crossref\]](#)
5. Kunieda C, Kanazawa T, Komazawa D, et al. The Correlation between the Size of Vocal Polyps, Vocal Nodules and Vocal Dysfunction, before and after Laryngeal Microsurgery. *Nihon Jibiinkoka Gakkai Kaiho*. 2015; 118(10): 1212-9. [\[Crossref\]](#)
6. Byeon H. Relationships among smoking, organic, and functional voice disorders in Korean general population. *J Voice*. 2015; 29(3): 312-6. [\[Crossref\]](#)
7. Sachdeva H, Nirupama M, Padmanabha N, et al. Histopathological Study of Benign Tumours of the Larynx: A Descriptive Study in Coastal Karnataka. *Indian J Otolaryngol Head Neck Surg*. 2022; 74(Suppl 2): 2019-23. [\[Crossref\]](#)
8. Hegde MC, Kamath MP, Bhojwani K, Peter R, Babu PR. Benign lesions of larynx—A clinical study. *Indian J Otolaryngol Head Neck Surg*. 2005; 57(1): 35-8. [\[Crossref\]](#)
9. McGlashen J. Disorders of the voice. In: Hibbert J, editor. *Scott-Brown Otolaryngology, Head and Neck Surgery*. 7th ed. London: Edward Arnold; 2008: 2192-2210. [\[Crossref\]](#)
10. Altman KW. Vocal fold masses. *Otolaryngol Clin North Am*. 2007; 40(5): 1091-108. [\[Crossref\]](#)

11. Poels PJP, de Jong FICRS, Schutte HK. Consistency of the preoperative and intraoperative diagnosis of benign vocal fold lesions. *J Voice*. 2003; 17(3): 425-33. [\[Crossref\]](#)
12. Malik P, Yadav SPS, Sen R, et al. The Clinicopathological Study of Benign Lesions of Vocal Cords. *Indian J Otolaryngol Head Neck Surg*. 2019; 71(Suppl 1): 212-20. [\[Crossref\]](#)
13. Vasconcelos DD, Gomes ADOC, Araújo CMTD. Vocal Fold Polyps: Literature Review. *Int Arch Otorhinolaryngol*. 2019; 23(1): 116-24. [\[Crossref\]](#)
14. Martins RHG, do Amaral HA, Tavares ELM, Martins MG, Gonçalves TM, Dias NH. Voice Disorders: Etiology and Diagnosis. *J Voice*. 2016; 30(6): 761.e1-9. [\[Crossref\]](#)
15. Baali MH, Shaheen MH, Khan MF, Neazy AA, Basyuni MA, Altowairqi A. Optimizing Management Strategies for Vocal Cord Nodules: A Systematic Review. *Cureus*. 2024; 16(12): e75916. [\[Crossref\]](#)
16. Shofoluwe NA, Lawal J, Quadri OR, et al. Demographic and Clinical Characteristics of Benign Laryngeal Lesions: Insights from a Decade of Experience in a Tertiary Hospital. *Niger Med J*. 2025; 65(6): 961-72.
17. Zhukhovitskaya A, Battaglia D, Khosla SM, Murry T, Sulica L. Gender and age in benign vocal fold lesions. *Laryngoscope*. 2015; 125(1): 191-6. [\[Crossref\]](#)
18. Barmak E, Altan E, Yılmaz Z, Korkmaz MH, Çadallı Tatar E. Impact of the Severity of Reinke's Edema on the Parameters of Voice. *Turk Arch Otorhinolaryngol*. 2023; 61(4): 166-74. [\[Crossref\]](#)
19. Paltura C, Güvenç A, Bektaş S, Develioğlu Ö, Külekçi M. Risk Factors and Diagnostic Methods in Vocal Cord Mucosal Lesions. *Sisli Etfal Hastan Tip Bul*. 2019; 53(1): 49-53. [\[Crossref\]](#)