Original Article

Clinical and Histopathological Evaluation of Benign Vocal Cord Lesions: A Prospective Study at a Tertiary Care Hospital

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Abstract

Background: Benign vocal cord lesions, including nodules, polyps, papillomas, Reinke's edema, and cysts, commonly cause voice changes and sometimes respiratory distress. Polyps and nodules are frequent in adults due to prolonged voice use while children may develop recurrent respiratory papillomatosis (RRP) from HPV. Occupational voice use and irritant exposure increase risk.

Objective: To assess the clinical features, histopathology, and treatment outcomes of benign vocal cord lesions in a tertiary level Medical College Hospital.

Methods: A prospective study was conducted at Jahurul Islam Medical College and Hospital from January 2017 to January 2019. Twenty symptomatic patients with laryngeal lesions were included. Detailed history, ENT examination, indirect and fibreoptic laryngoscopy were performed. Demographic, occupational and habit-related data were recorded. All lesions were managed surgically when indicated and histopathological evaluation was performed.

Results: Out of 20 patients, 14 were male and 6 female, with a mean age of 25.5±12.9 years. Polypoidal lesions were most common (60%), equally affecting right and left vocal cords. Nodules accounted for 25%, papillomatosis for 15%, and papilloma for 5%. Lesions predominantly involved the free margin of the vocal cords (65%), with bilateral involvement in 45% of cases. High-risk occupations included teachers, religious leaders, singers and drivers.

Conclusion: Benign vocal cord lesions, mainly polyps and nodules, commonly affect males with high vocal demands. Surgical excision via direct laryngoscopy is effective, though pediatric RRP may need multiple procedures.

Keywords: Benign vocal cord lesion, Indirect laryngoscopy, Recurrent respiratory papillomatosis, Vocal cord polyp.

Introduction

Benign vocal cord lesions are common causes of voice changes and can occasionally lead to respiratory distress. These lesions include vocal nodules, polyps, papillomas, Reinke's edema and and are generally non-malignant but may require surgical intervention for symptom relief.[1,2] Vocal cord polyps and nodules are the most frequently observed lesions in adults, often associated with prolonged voice use, whereas children may present with recurrent respiratory papillomatosis (RRP), caused by human papillomavirus (HPV).[3,4]

RRP typically manifests in children as multiple papillomatous lesions, often necessitating repeated surgical excisions, while adults usually present with solitary lesions requiring fewer interventions.[5,6] Occupational voice use, such as teaching, singing, or religious activities, increases the risk of developing benign vocal cord lesions.[7] The lesions commonly affect the free margin of the vocal cords, which is critical for phonation, with bilateral involvement observed in a substantial proportion of patients.[8,9]

Histopathologically, polyps are the most frequent benign lesion, followed by nodules and papillomatosis. Male predominance has been consistently reported in several studies, likely related to occupational and behavioral factors such as smoking and vocal strain.[10,11] Early diagnosis using direct laryngoscopy under general anesthesia allows precise localization and effective surgical management, minimizing recurrence and preserving voice quality.[12,13]

Recent studies indicate that benign vocal cord lesions affect approximately 10–20% of patients presenting with dysphonia, with a higher prevalence among adults aged 25-40 years and in children under 6 years for RRP.[14,15] Understanding the demographic, occupational, and histopathological patterns of these lesions is essential for timely intervention and optimal voice rehabilitation.

This study aims to evaluate the clinical presentation, histopathological characteristics, and management outcomes of benign vocal cord lesions in patients attending the Department of Otolaryngology and Head-Neck Surgery in a tertiary level Medical College Hospital. By analyzing the patients, this study seeks to contribute to the understanding of benign vocal cord lesions in the Bangladeshi population, providing insights that may inform clinical practice and guide future research in this area.

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Materials and Methods

This prospective study was conducted in the Department of Otolaryngology and Head–Neck Surgery, Jahurul Islam Medical College and Hospital (JIMCH), over a period of two years from January 2017 to January 2019. A total of 20 symptomatic, clinically suspected cases of benign laryngeal lesions were included. Patients of both sexes and various age groups were enrolled. The inclusion criteria were the presence of voice change or other laryngeal symptoms, with lesions confirmed by laryngoscope examination.

On admission, each patient underwent a detailed history and thorough ear, nose, and throat examination. Indirect laryngoscopy and fibreoptic laryngoscopy (FOL) were performed for all cases to confirm the diagnosis and localize the lesion. Relevant demographic and occupational data were recorded, including age, sex, profession and habits such as smoking or alcohol consumption. Patients were categorized by age group and site of lesion involvement.

The age of the patients ranged from 5 to 40 years. Of the 20 patients, 14 were male and 6 were female. Occupational voice use was noted among male patients, including School teachers (n= 3), Imams or Muezzins (n= 2), Singers (n= 2), Bus/truck helpers (n=2) and Union Parishad Chairmen or members (n=3). Smoking, alcohol, and cannabis use were documented where applicable.

All lesions were classified as benign based on clinical evaluation and laryngoscopic findings, which included vocal nodules, polyps, papillomas, Reinke's edema, and cysts. Surgical management was provided where indicated, followed by postoperative follow-up to assess treatment outcomes. Data were compiled and analyzed using IBM SPSS Statistics, v26 (IBM Corp., Armonk, NY, USA). Descriptive statistics were expressed as frequencies and percentages for categorical variables.

Participation was voluntary, with confidentiality maintained using coded identifiers. Informed consent was obtained, and the study adhered to the 2013 revised Declaration of Helsinki. Ethical approval was granted by the Jahurul Islam Medical College and Hospital, Kishoregonj, Bangladesh.

Results

Direct laryngoscopy under general anesthesia revealed that the majority of benign lesions were polypoidal masses (n=12, 60%), equally distributed between the right and left vocal cords (6 each). Of these, 7(58.3%) were located at the junction of the anterior one-third and posterior two-thirds of the vocal cord near the free margin. Three lesions (25%) were situated near the anterior commissure and two (16.7%) were near the posterior commissure. A single papillomatous lesion was detected at the anterior third of the right vocal cord close to the anterior commissure. Nodular lesions were identified in 5 patients (25%), all situated at the junction of the anterior and middle thirds of the free edge of both vocal cords. Multiple papillomatous lesions were found in both vocal cords of all three pediatric patients, each within the 5-6 years age group. The age distribution (Table-I) showed the highest prevalence in children aged 5-6 years (30%) followed by adults aged 26–30 years (25%). The overall mean age was 25.5±12.9 years.

All laryngeal lesions were excised using direct laryngoscopy under general anesthesia. Histopathological examination confirmed vocal cord polyps as the most common lesion, found in 12 patients (60%). Vocal cord nodules were identified in 4 patients (20%), while papillomatosis was present in 3 patients (15%). A single case (5%) was diagnosed as papilloma. Sex distribution (Figure-1) showed a marked male predominance, with 14 males (70%) and 6 females (30%).

Occupational distribution revealed that the largest proportions of patients (35%) were engaged in various other professions not listed separately. (Table II) Among specific occupational groups, school teachers and union parishad (UP) chairmen each accounted for 15% of cases, while factory workers, bus/truck helpers, and imams/muazzins comprised 8% each. A smaller proportion (4%) was doctors or singers.

Table-III shows analysis of vocal cord involvement showed that both vocal cords were affected in the majority of cases (45%), followed by the left vocal cord alone (30%) and the right vocal cord alone (25%). In Table-IV, Regarding the specific location of lesions on the vocal cords, most lesions (65%) were situated on the free margin, which is the area most critical for phonation. Lesions at the anterior commissure accounted for 15%, while those at the posterior commissure and lesions extending from the vocal cord to the epiglottis each represented 8% of cases.

Table-V shows the most common type of lesion was a vocal cord polyp (55%), followed by vocal cord nodules (25%). Multiple papillomatosis was observed in 15% of cases, and a single case (5%) was diagnosed as vocal cord papilloma.

Table-I: Age distribution of patients (n=20)

Age group (years)	n	%
05–06	6	30.0
20–25	4	20.0
26–30	5	25.0
31–36	2	8.0
36–40	3	15.0
Mean± SD		25.5±12.9

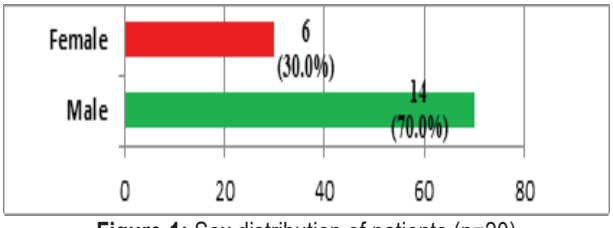

Figure-1: Sex distribution of patients (n=20)

Table-II: Profession of patients (n=20)

Profession	n	%
School teacher	3	15.0
Imam/Moazzin	2	8.0
Factory worker	2	8.0
Doctor/Singer	1	4.0
Bus/Truck helper	2	8.0
UP Chairmen	3	15.0
Others	7	35.0

Table-III: Involvement of vocal cords (n=20)

Site of involvement	n	Percentage
Right vocal cord	5	25.0
Left vocal cord	6	30.0
Both vocal cords	9	45.0

Table-IV: Location of lesions in the vocal cords (n=20)

Location	n	%
Anterior commissure	3	15.0
Posterior commissure	2	8.0
Free margin	13	65.0
Arising from vocal cord and extendin	2	8.0

Table-V: Types of lesions (n=20)

Type of lesion	n	%
Vocal cord polyp	11	55.0
Vocal cord nodule	5	25.0
Vocal cord papilloma	1	5.0
Multiple papillomatosis	3	15.0

Discussion

Benign vocal cord lesions are commonly associated with excessive voice use, trauma, and chronic irritation of the laryngeal mucosa.[16] In this study, polypoidal masses were the most frequent lesions (60%), consistent with previous reports that polyps are the predominant benign laryngeal pathology in adults.[17] Nodules were observed in 25% of patients, primarily at the junction of the anterior and middle thirds of the vocal cord, reflecting the typical site associated with phonotrauma.[18]

Multiple papillomatous lesions were noted in all pediatric cases, aligning with the known epidemiology of recurrent respiratory papillomatosis (RRP) in children which often requires repeated surgical interventions.[19] The male predominance (70%) observed corresponds with literature indicating higher lesion rates in males, likely due to occupational voice strain.[20]

Occupational analysis revealed that high vocal demand professions, including teachers, singers, and religious leaders, were most affected, highlighting voice misuse as a key contributing factor.[21] Smoking and alcohol consumption were also associated with lesion development, supporting previous findings on chemical irritants as risk factors.[17]

Bilateral involvement of the vocal cords was observed in 45% of patients, with most lesions located on the free margin (65%), emphasizing the functional significance of this area in phonation.[16] Histopathologically, polyps remained the most common lesion type (55%), followed by nodules (25%) and papillomatosis (15%), consistent with patterns reported in previous clinical studies.[17,18] Overall, these findings reinforce that benign vocal cord lesions predominantly result from mechanical trauma, occupational strain, and environmental irritants and most are amenable to microlaryngeal surgical excision with favorable outcomes, except in pediatric RRP cases that may require multiple procedures.[19]

Conclusion

Benign vocal cord lesions are predominantly polyps and nodules, commonly affecting males and individuals with high vocal demand. Most lesions involve the free margin of the vocal cords and can be effectively managed with direct laryngoscopic excision under general anesthesia, resulting in favorable outcomes. Pediatric recurrent respiratory papillomatosis may require multiple interventions.

Recommendations

Early diagnosis and timely surgical management are essential to preserve voice quality and prevent complications. Occupational voice users should be counseled on voice hygiene and avoidance of risk factors such as smoking and alcohol. Regular follow-up is advised, especially in pediatric cases with papillomatosis.

Limitations

This study is limited by a small sample size and single-center design which may affect generalizability. Long-term follow-up was not included, and outcomes in a larger, more diverse population may vary.

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