

Laryngeal Granuloma – Experience of the ENT Clinic of “Timofei Mosneaga” Republican Clinical Hospital

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Abstract

Vocal fold granuloma is a benign laryngeal lesion located at the vocal processes of the arytenoid cartilages and characterized by the formation of granulation tissue as a response to chronic mucosal irritation. **Material and methods.** A retrospective analysis of data from 12 patients diagnosed with laryngeal granuloma and treated between 2019 and 2024 at the ENT Clinic of the “Timofei Moșneaga” Republican Clinical Hospital. **Results.** In the examined series, males predominated (58.33%). Age distribution showed a bimodal pattern: 16–30 years (33.3%) and 41–50 years (33.3%). The clinical presentation was dominated by dysphonia (58.3%), foreign body sensation (41.66%), and irritative cough (50%). Most patients sought medical care more than one month after symptom onset (41.66% of cases). Constant vocal abuse was associated with 41.66% of cases, gastroesophageal reflux disease (GERD) with 33.3%, intubation with 16.6%, and 1 case (8.35%) was idiopathic. Morphologically, medium-sized granulomas predominated (66.6%), followed by microgranulomas (25%) and large granulomas (8.35%). Conservative therapy proved effective in the vast majority of cases, 9 of 12 patients (75%). A favorable outcome after CO₂ laser ablation assisted by jet ventilation was observed in 66.6% of the patients undergoing the procedure (1 recurrence among 3 operated cases). **Conclusions.** Conservative treatment (proton pump inhibitors, corticosteroids—3 days intramuscularly followed by 7 days inhalation, proteolytic enzymes, NSAIDs, antihistamines, and phoniatric therapy) represents the initial treatment option for laryngeal granulomas. Surgery is reserved for symptomatic, treatment-refractory, or recurrent cases. Late presentation, likely associated with the gradual increase in granuloma size, combined with gastroesophageal reflux disease, increases the probability of conservative treatment failure and the need for surgical intervention.

Keywords: vocal fold, laryngeal granuloma, laser-CO₂, jet-ventilation.

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INTRODUCTION

Vocal fold granuloma is a benign laryngeal lesion located at the level of the vocal processes of the arytenoid cartilages and characterized by the formation of granulation tissue in response to chronic mucosal irritation^{1,2}. Its incidence in adults has been reported within a wide range, from approximately 1 case per 800 to 1 case per 20,000 individuals³. Although post-intubation granulomas and contact granulomas differ in terms of triggering factors, they do not present significant morphological differences, suggesting similar pathophysiological mechanisms. The main etiological factors include insufficiently relaxed, traumatic, or prolonged endotracheal intubation, vocal overuse, chronic cough, and gastroesophageal reflux disease (GERD) or laryngopharyngeal reflux (LPR)⁴. In the absence of an identifiable cause, the granuloma is considered idiopathic.

Gastroesophageal reflux disease (GERD) represents a key pathogenetic mechanism in the development of vocal fold granuloma and an important predisposing factor for recurrent post-intubation forms. Repeated exposure of the laryngeal mucosa to gastric acid, pepsin, bile, or pancreatic enzymes leads to epithelial alterations at the posterior commissure, resulting in interarytenoid pachydermia and granulation tissue formation. This phenomenon explains the high prevalence of reflux among patients with vocal fold granuloma, regardless of etiology^{2,5}.

Endotracheal intubation is a major factor contributing to laryngeal trauma. Lesions may occur during tube insertion or removal, as well as as a result of continuous pressure exerted by the cuff, which can cause ischemia, erosions, or local necrosis. The incidence of acute post-intubation laryngeal injuries in adults is estimated at 4–13%; although most resolve within 30 days, some may progress to chronic lesions. Risk factors for severe laryngeal injury include prolonged intubation, the need for reintubation, upper airway infections, the presence of LPR, tube size, and cuff pressure⁶. There are the reasons why intubation using jet ventilation presents multiple advantages in this context.

Clinical manifestations range from hoarseness, foreign body sensation, persistent throat clearing, pain and burning sensation in the cervical region, dyspnea, and even hemoptysis; however, the condition may also be asymptomatic^{4,7}.

Clinical diagnosis is based on patient history and findings from videolaryngoscopic examination.

From a morphological perspective, granuloma size may vary from small (<5 mm), classified as microgranulomas, to medium-sized (5–10 mm), large (>10 mm), or even giant (>15–20 mm). Medium-sized granulomas typically cause dysphonia, foreign body sensation, or irritative cough. Large granulomas may lead to dyspnea, severe vocal fatigue, pronounced globus pharyngeus, and are associated with a higher risk of recurrence and failure of conservative treatment. Giant granulomas cause significant glottic compression and may require urgent surgical intervention in cases of respiratory compromise.

Histopathological evaluation is mandatory in cases of atypical, ulcerative lesions or those refractory to standard conservative treatment, in order to exclude recurrent laryngeal papillomatosis or neoplasia^{8,9}.

The literature describes various therapeutic options for laryngeal granulomas, ranging from botulinum toxin type A injections and intralesional corticosteroids to low-dose radiotherapy. Incomplete excision of a granuloma does not necessarily imply treatment failure, while complete excision does not guarantee cure. Prevention plays a crucial role. Granulomas may resolve with conservative therapies, including proton pump inhibitors (PPIs), voice and speech therapy, inhaled corticosteroids, or may even regress spontaneously^{4,10,11}.

The lack of standardized therapeutic protocols results in variable clinical approaches, and the high recurrence rate, reported between 40% and 90%, highlights the complexity of managing these lesions⁶. Surgical intervention is generally reserved for symptomatic cases that significantly impair quality of life and prove refractory to conservative treatment^{4,9,12}.

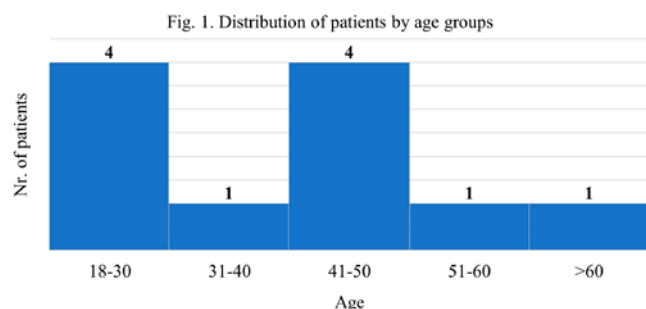
In recent years, the number of diagnosed cases of vocal fold granuloma has increased, a trend attributed to advances in endoscopic techniques and heightened clinical awareness. Given the symptomatic burden, the diversity of etiological factors, and the absence of a clear therapeutic consensus, the evaluation of clinical characteristics and treatment outcomes in vocal fold granuloma remains an important area of interest in contemporary otorhinolaryngology.

MATERIAL AND METHODS

A retrospective analysis of data from 12 patients diagnosed with laryngeal granuloma and treated between 2019 and 2024 at the ENT Clinic of the “Timofei Moșneaga” Republican Clinical Hospital was performed.

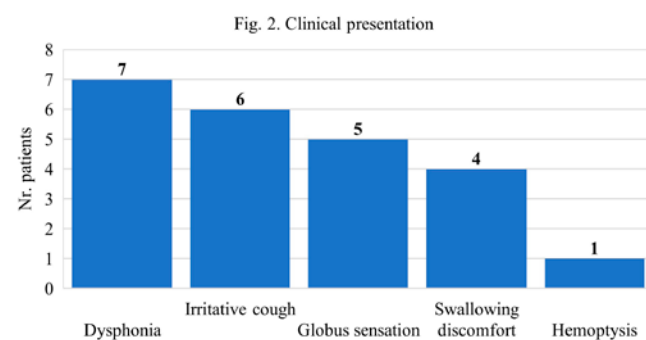
RESULTS

Age distribution showed that 4 cases occurred in individuals aged 18–30 years (33.3%), 1 case in the 31–40-year group (8.3%), 4 patients aged 41–50 years (33.3%), and one patient each in the 51–60-year group (8.3%) and in those older than 60 years (8.3%) (Figure 1).



A clear male predominance was observed among the patients - 7 of 12 cases (58.33%).

Seven patients (58.3%) sought medical consultation due to progressive dysphonia. Irritative cough was reported in 6 patients (50%). A foreign body sensation (globus) was noted in 5 patients (41.6%), swallowing discomfort in 4 patients (33.3%), and hemoptysis in 1 patient (8.3%) (Fig. 2).

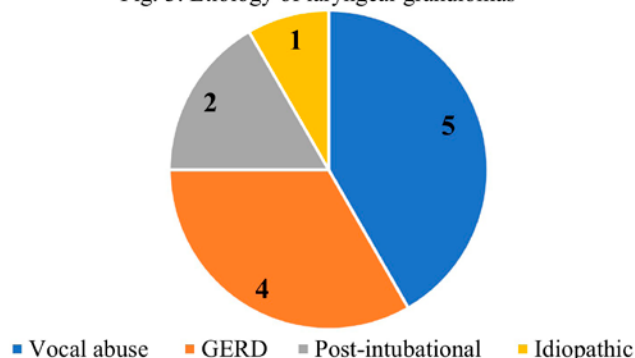


The duration of symptoms prior to presentation exceeded one month in 5 patients (41.66%), ranged from two weeks to one month in 4 patients (33.3%), and was less than two weeks in 3 patients (25%).

According to etiological criteria, 5 cases were associated with constant vocal abuse (41.66%), 4 were attributed to gastroesophageal reflux disease (GERD) (33.3%), 2 cases were post-intubational (16.6%), and 1 case was idiopathic (8.3%) (Fig. 3).

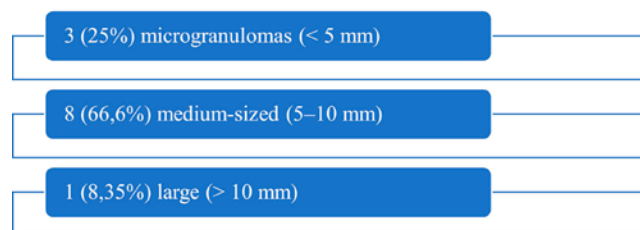
Based on morphological criteria assessed by videolaryngoscopy, 3 microgranulomas (25%), 8 medium-sized

Fig. 3. Etiology of laryngeal granulomas



granulomas (66.6%), and 1 large granuloma (8.35%) were identified. No giant granulomas were recorded (Fig. 4).

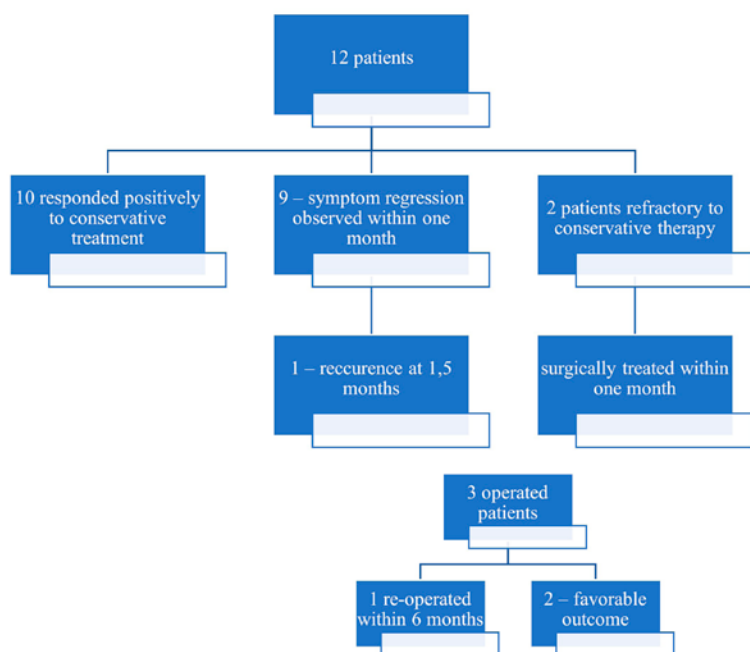
Fig. 4. Morphology of granulomas



Ten of the twelve patients (83.3%) responded positively to conservative treatment (proton pump inhibitors, corticosteroids—3 days intramuscularly followed by 7 days inhalation, proteolytic enzymes, NSAIDs, antihistamines, and phoniatic therapy), with symptom regression observed within one month. One case was recurrent and subsequently underwent surgical ablation more than three months after initial presentation. Two patients were refractory to conservative therapy without improvement and were surgically treated within one month. Among the three patients who underwent CO₂ laser ablation of the laryngeal granuloma with jet ventilation intubation, one required a repeat procedure six months after the initial surgery due to recurrence. Thus, the success rate of medical therapy was approximately 75% (9 of 12 patients did not require surgery). Concurrently, a favorable outcome was observed in 66.6% of patients undergoing surgical ablation (one recurrence among three cases) (Fig. 5).

It should be noted that all three surgically treated patients belonged to the late-presentation group (>1 month), with granulomas of medium and large size (>7 mm) and associated GERD combined with either excessive vocal abuse (1 case) or intubation trauma (1

Fig. 5. Management of patients with laryngeal granuloma



case), suggesting that this combination represents risk factors for a less favorable clinical course.

DISCUSSION

Laryngeal granulomas are benign, oval lesions located in the posterior glottis, predominantly over the arytenoid cartilage.

The male predominance in this series—7 of 12 patients (58.33%)—may be explained by persistent vocal abuse or, possibly, more frequent exposure to irritative factors, consistent with published data [13].

Age distribution showed a bimodal pattern. Patients aged 16–30 years (33.3%) are more susceptible to excessive vocal strain or laryngeal trauma, whereas the second major group, 41–50 years (33.3%), is likely associated with prolonged aggression on a background of GERD.

The clinical presentation was dominated by dysphonia (58.3%), foreign body sensation (41.6%), irritative cough (50%), and swallowing discomfort (33.3%), with occasional hemoptysis (8.35%). This pattern is consistent with the lesion’s posterior glottic location and the potential for trauma caused by excessive coughing or vocal effort.

The duration of symptoms prior to presentation exceeded one month in 5 patients (41.66%), ranged from

two weeks to one month in 4 patients (33.3%), and was less than two weeks in 3 patients (25%). In this case series, patient presentation can be considered appropriate. Ideally, according to national clinical protocol recommendations, any dysphonia persisting for more than three weeks should prompt a specialized consultation with an otolaryngologist.

From an etiological perspective, 41.66% of cases were associated with constant vocal abuse, 33.3% with GERD, 16.6% were post-intubational, and one case (8.35%) was idiopathic, consistent with the available literature.

Results. Although there is no consensus regarding the optimal treatment strategy, conservative therapy was effective in the vast majority of cases—75% (9 of 12 patients did not require surgery). Surgical intervention is reserved for symptomatic, treatment-refractory, or recurrent cases. CO₂ laser ablation of the lesion was performed in 3 cases, with a favorable outcome in 66.6% of patients undergoing the procedure (one subsequent recurrence).

Clinics with extensive experience in laryngeal pathology report repeated operations in the same patient due to recurrence of the laryngeal granuloma.

Late presentation, likely related to the gradual increase in granuloma size, combined with GERD, increases the likelihood of conservative treatment failure and the need for surgical intervention. All three surgically treated patients met these criteria.

Ethics Statement and Conflict of Interest Disclosures
 Financial support and sponsorship: All authors have declared that no financial support was received from any organization for the submitted work.

Ethics Consideration: The authors declare that all the procedures and experiments of this study respect the ethical standards in the Helsinki Declaration of 1975, as revised in 2008(5), as well as the national laws. Written informed consent was provided by the patient participant in this study. This study was approved by the Institutional Research Board and Ethics Committee.

Conflict of interest: No known conflict of interest correlated with this publication.

Availability of data and materials: The data used and/or analyzed throughout this study are available from the corresponding authors upon reasonable request.

Competing interests: The authors declared that they have no competing interests.

The use of generative AI and AI-assisted technologies: The authors did not use in this article generative AI and AI-assisted technologies.

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