

## Revisiting a Benign Potentially Fatal Common Airway Pathology

### Benign Potansiyel Olarak Ölümcül Bir Ortak Hava Yolu Patolojisini Yeniden İncelenmesi

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#### ABSTRACT

Laryngeal granuloma is a benign inflammatory lesion that is formed by granulation tissue that occurs primarily in the vocal process of arytenoids cartilage. It possesses multifactorial etiologies, including laryngeal trauma, gastroesophageal reflux, and vocal abuse. Acute airway obstruction represents an unorthodox complication of post-intubation laryngeal granuloma. Apart from foisting a ball-valve effect, thereby occluding the luminal airflow, a laryngeal granuloma imposes an acrimonious challenge from the perspective of airway security. Therefore, a multidisciplinary approach with a deliberate difficulty airway algorithm is paramount in averting disastrous repercussions. We present a case of laryngeal granulomas on the right posterior vocal fold in a 33-year-old female. The tumour measures approximately 10mm and acts as a "one-way valve", which rendered endotracheal intubation. An emergency tracheostomy and direct laryngoscopy were performed to excise the tumour in total. A thorough history and evaluation of airway assessment are essential in planning the best approach and management for the patient.

**Keywords:** Granuloma, laryngeal, intubation, vocal cord, surgery

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#### ÖZET

Benign Potansiyel Olarak Ölümcül Bir Ortak Hava Yolu Patolojisini Tekrar Gözden Geçirme Laringeal granülom, esas olarak aritenoid kırıkdağın vokal sürecinde meydana gelen granülasyon dokusu tarafından oluşturulan iyi huylu bir inflamatuvar lezyondur. Laringeal travma, gastroözofageal reflü ve vokal kötüye kullanımı dahil olmak üzere çok faktörlü etiyolojilere sahiptir. Akut hava yolu obstrüksiyonu, entübasyon sonrası laringeal granülomun alışılmışın dışında bir komplikasyonunu temsil eder. Bir küresel valf etkisi yaratmanın ve böylece lümen hava akışını engellemenin yanı sıra, bir laringeal granülom, hava yolu güvenliği açısından sert bir meydan okuma dayatır. Bu nedenle, kasıtlı bir zorluk hava yolu algoritması ile multidisipliner bir yaklaşım, feci yankıları ortadan kaldırmada çok önemlidir. Biz 33 yaşında kadın hastada sağ arka vokal kordda laringeal granülom olgusunu sunuyoruz. Tümör yaklaşık 10 mm'dir ve endotrakeal entübasyon sağlayan "tek yönlü bir kapak" görevi görür. Tümörü total olarak çıkarmak için acil trakeostomi ve direkt laringoskopi yapıldı. Hasta için en iyi yaklaşımın ve yönetimin planlanmasında ayrıntılı bir anamnez ve hava yolu değerlendirmesinin değerlendirilmesi esastır.

**Anahtar Sözcükler:** Granülom, gırtlak, entübasyon, ses teli, cerrahi

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**INTRODUCTION**

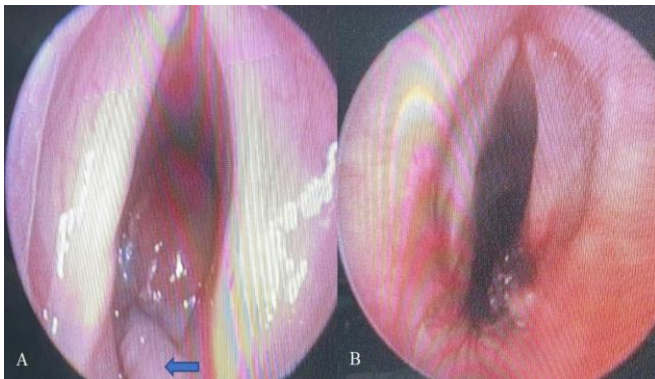
Laryngeal granuloma is a benign inflammatory lesion commonly arising from the posterior glottis and possesses multifactorial aetiologies, including laryngeal trauma, gastroesophageal reflux, and vocal abuse. Acute airway obstruction represents an unorthodox complication of post-intubation laryngeal granuloma. Apart from foisting a ball-valve effect, thereby occluding the luminal airflow, a laryngeal granuloma imposes an acrimonious challenge from the perspective of airway security. Therefore, a multidisciplinary approach with a deliberate difficulty airway algorithm is paramount in averting disastrous repercussions.

**CASE REPORT**

A 33-year-old female, working as a teacher, presented with 1 month history of persistent sore throat, progressive hoarseness with subsequent gradual aphonia and 1 week of globus sensation associated with intermittent dyspnea. Three months ago, she had post-partum hemorrhage which led to an emergency hysterectomy. She was kept under mechanical ventilation in the Intensive Care Unit for five days. Apart from voice misuse, she denied any co-relating symptoms of laryngopharyngeal reflux disease.

Upon examination, she had hoarseness and was tachypneic, with soft stridor heard upon inspiration. Flexible laryngeal endoscopy revealed a huge smooth-surfaced posterior glottic mass, which prolapsed into the glottic inlet during inspiration. The lesion acted as a “one-way valve”, rendering onerous endotracheal intubation. The lesion obscured more than 80% of the subglottic region.

She underwent an emergency tracheostomy under local anaesthesia followed by direct laryngoscopy. A succeeding direct laryngoscopy revealed a giant granuloma with its stalk attached to the posterior part of the right vocal fold (Figure 1). Laser-assisted excisional biopsy was performed and the mass was excised in toto (Figure 2).



**Figure 1:** Direct Laryngoscopy view of the glottis: The granuloma with the stalk (shown in blue arrow) arising from the posterior part of the right vocal fold (panel A); post removal of the granuloma (panel B)



**Figure 2:** The granuloma was excised in toto, measuring approximately 1cm in size

Postoperatively, she was prescribed corticosteroid and proton-pump inhibitor, and the recovery period was uneventful. She was followed up in the clinic following the removal of the tumour, and did not show any signs of recurrence.

**DISCUSSION**

Laryngeal contact granulomas represent non-neoplastic granulation tissues that often develop from the vocal process of the arytenoid cartilage (1). Risk factors leading to the formation of laryngeal granulomas include voice abuse, laryngopharyngeal reflux (LPR) and previous history of endotracheal intubation (2). With regards to gender predisposition, it is found that adult males with underlying LPR are more likely to develop laryngeal granulomas (3). However, female patients are at risk in developing the granulomas post intubation rather than any other predisposing factors. This could be due to the smaller laryngeal framework and lumen in woman. (4)

Diagnosis of laryngeal granuloma includes a thorough clinical history, physical examination inclusive of a direct or indirect laryngeal endoscopy. A grading system has been proposed based on endoscopic evaluation. Grade 1 lesion is limited to the vocal process, with no ulceration in a sessile lesion. Grade 2 lesion is limited to the vocal process and is an ulcerated or pedunculated lesion. Grade 3 lesion extends beyond the vocal process but does not cross the midline of the fully abducted vocal process. Grade 4 lesion extends beyond the vocal process and crosses over the midline of the fully abducted vocal fold. It can then be further divided into unilateral, labelled as A, or bilateral, labelled as B. (5)

The treatment options could be divided into non-surgical and surgical approaches. Non surgical options include voice therapy, antireflux pharmacotherapy, intralesional injections of steroids into the laryngeal granuloma and botox injection into the adductor muscles of the larynx.(1) Surgical treatment consists of micro laryngeal excision with direct laryngoscopy and is indicated when lesion is pedunculated and causes respiratory obstruction and distress. (6)

In our reported case, a timely and structured retaliation involving a multidisciplinary approach is paramount in managing a giant granuloma obstructing the glottic inlet. Similar to other difficult airways, good teamwork and communication between expertise remain integral to a successful and safe outcome.(7) Therefore, in this case, a rare case of intubation granuloma that caused sudden onset of airway obstruction which led to an emergency tracheostomy had been highlighted.

**CONCLUSION**

Laryngeal granulomas possess a good prognosis for a head and neck lesion. Therefore, proper management and treatment are vital. A high clinical suspicion of laryngeal granulomas should be suspected in cases of progressive or persistent hoarseness after general anaesthesia or upper airway endoscopy. The options on managing a patient can be based on the proposed grading system and nature of the granulomas.

**Conflict of interest**

No conflict of interest was declared by the authors.

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