

Laryngeal Squamous Cell Carcinoma Revealed by Retropharyngeal Abscess: A Case Report

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ABSTRACT

Background: Retropharyngeal abscess (RPA) is an uncommon deep neck infection in adults. When it occurs as the presenting manifestation of an underlying laryngeal malignancy, diagnosis is challenging and delays in treatment can be life-threatening.

Case Presentation: A 43-year-old male chronic smoker with no significant past medical history presented to the emergency department with progressive dyspnea, dysphagia, fever and alteration of his general condition. Flexible laryngoscopy revealed a narrowed laryngeal airway with purulent secretions at the base of the tongue. Cervical computed tomography (CT) demonstrated a large retropharyngeal collection extending from C2 to T1, measuring 60 mm in anteroposterior diameter and 121 mm in craniocaudal length, along with a locally advanced laryngeal process centered on the left vocal cord. Following hospitalization and broad-spectrum antibiotic therapy, direct laryngoscopy with biopsies confirmed a poorly differentiated, invasive squamous cell carcinoma. The patient underwent total laryngectomy with a satisfactory postoperative outcome.

Conclusion: This case illustrates that laryngeal malignancy can be masked by and initially revealed through a retropharyngeal abscess. A thorough workup including cervical CT and endoscopy is mandatory in all adult patients with deep neck infections to exclude a concurrent malignancy and avoid diagnostic delay.

Keywords: laryngeal carcinoma; squamous cell carcinoma; retropharyngeal abscess; deep neck infection; total laryngectomy; dysphagia; dyspnea

Introduction

Laryngeal squamous cell carcinoma (LSCC) is the most common malignancy of the larynx, representing approximately 95% of all laryngeal tumors. It predominantly affects men over the age of 50 and tobacco smoking is the leading risk factor, implicated in over 85% of cases^{1,2}. The typical clinical presentation includes progressive dysphonia, dysphagia and, in advanced disease, dyspnea secondary to airway obstruction. Diagnosis is established by endoscopic examination and biopsy. In locally advanced disease, total laryngectomy with postoperative radiotherapy remains the standard of care^{3,4}.

Retropharyngeal abscess (RPA) is a suppurative infection of the retropharyngeal space, bounded anteriorly by the posterior pharyngeal wall and posteriorly by the prevertebral fascia. Although predominantly a disease of young children, RPA is increasingly reported in adults, where etiologies include dental infections, pharyngeal trauma, vertebral tuberculosis, iatrogenic injury and malignancy^{5,6}. In adults, the condition carries significant morbidity and mortality, notably due to the risk of descending necrotizing mediastinitis and acute airway compromise^{7,8}.

The association between RPA and an underlying laryngeal malignancy is exceedingly rare. To our knowledge, few cases have been documented in which an RPA served as the initial revealing manifestation of a laryngeal cancer. This unusual presentation may delay the oncological diagnosis, as clinical attention is initially directed toward treating the infectious process. We report such a case with the aim of raising clinicians' awareness of this rare association and emphasizing the need for a thorough diagnostic evaluation in all adult patients presenting with deep neck infections.

Case Presentation

A 43-year-old male, a chronic smoker with a 30 pack-year history and no relevant past medical history, presented to the emergency department with a 5-day history of progressive dyspnea, dysphagia, fever (39.5°C) and marked deterioration of his general condition and a 2 months history of dysphonia prior to that. On physical examination, the patient appeared in moderate respiratory distress with signs of systemic sepsis. Anterior cervical soft tissue infiltration was noted, with a hard consistency on palpation, raising suspicion of an underlying deep-seated or malignant process (**Figure 1**).



Figure 1: Clinical image of the patient showing diffuse anterior cervical swelling with erythema.

After initial hemodynamic stabilization and securing a patent airway, flexible laryngoscopy was performed. It revealed significant narrowing of the laryngeal airway with pooling of purulent secretions at the base of the tongue and impaired mobility of the left vocal cord.

An urgent cervical CT scan with intravenous contrast was obtained (**Figure 2**). It demonstrated a large hypodense collection with peripheral rim enhancement filling the entire retropharyngeal space, extending from the level of C2 to T1, with an anteroposterior diameter of 60 mm and a craniocaudal extent of 121 mm, consistent with a retropharyngeal abscess with significant inferior extension. In addition, the scan identified a locally advanced laryngeal process centered on the left vocal cord with invasion of the adjacent soft tissues and thyroid cartilage invasion, findings highly suggestive of an advanced laryngeal malignancy.

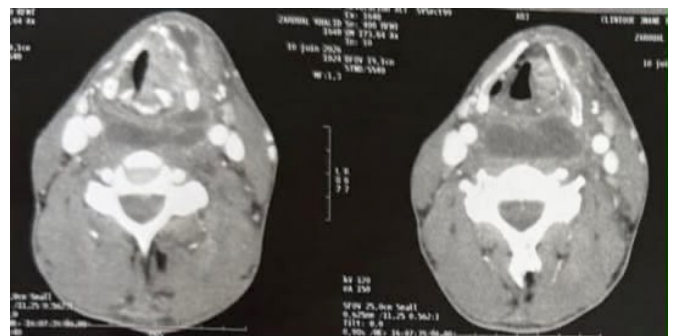


Figure 2: CT scan images (axial view) showing a large hypodense retropharyngeal collection associated with a locally advanced laryngeal mass centered on the left vocal cord with thyroid cartilage invasion.

The patient was admitted to the Intensive Care Unit (ICU). A comprehensive infectious and oncological workup was initiated, including blood cultures, complete blood count, inflammatory markers and serology. Broad-spectrum intravenous antibiotic therapy combining amoxicillin-clavulanate and metronidazole was started empirically. Significant clinical and biological improvement was observed within 72 hours, with defervescence and resolution of the septic state. CT imaging confirmed the persistence of the collection and a surgical drainage was performed simultaneously with direct laryngoscopy.

Examination revealed an ulcero-budding mass arising from the left vocal cord, extending to the left aryepiglottic fold and the posterior wall of the piriform sinus. Multiple deep biopsies were taken from the tumor. Histopathological analysis returned a diagnosis of poorly differentiated invasive squamous cell carcinoma.

Following multidisciplinary team discussion, the decision was made to proceed with primary surgical treatment. The patient underwent total laryngectomy with bilateral selective neck dissection (levels II-IV). The operative course was uneventful. Final histopathological analysis of the surgical specimen confirmed a T4a N1 poorly differentiated squamous cell carcinoma of the left glottic-supraglottic larynx with clear resection margins. The patient had an uneventful postoperative recovery and was subsequently referred for adjuvant radiotherapy.

Discussion

This case is notable for the extreme rarity of its clinical presentation: a locally advanced laryngeal squamous cell

carcinoma initially revealed by a large retropharyngeal abscess, in an adult with no prior known malignancy.

RPA is predominantly observed in children under 6 years of age, as the retropharyngeal lymph nodes, which are the primary source of infection, undergo involution after childhood. In adults, the condition is uncommon and its clinical features may mimic other deep neck space pathologies^{5,6}. The clinical presentation typically includes progressive dysphagia, odynophagia, neck stiffness and fever, to which respiratory distress may be added when there is significant airway compromise^{6,9}. Physical examination findings, such as posterior pharyngeal wall bulging, neck rigidity or anterior cervical induration, as observed in our patient, are important diagnostic clues.

Contrast-enhanced cervical CT is the imaging modality of choice and the gold standard for diagnosis, allowing accurate mapping of the collection, assessment of airway patency and early detection of mediastinal extension.⁹ The management of adult RPA requires prompt initiation of broad-spectrum intravenous antibiotics and, in cases of large, multiloculated or non-responding collections, surgical drainage via a transcervical or transoral approach. Failure to treat promptly may result in descending necrotizing mediastinitis, a life-threatening complication with a reported mortality rate of 20-40%⁸. In our patient, the massive size of the collection (121 mm craniocaudal extent from C2 to T1) highlighted the potential severity of RPA, yet antibiotic therapy alone led to clinical resolution, enabling timely oncological management.

Deep neck infections in the context of head and neck cancer represent a rare but well-recognized clinical challenge. Several mechanisms may explain why a laryngeal tumor can lead to retropharyngeal abscess formation: tumor-induced mucosal barrier disruption, local tissue necrosis, lymphatic obstruction impairing normal drainage and the accumulation of necrotic debris creating an anaerobic environment favourable to bacterial growth. Cases of squamous cell carcinoma of the larynx or hypopharynx presenting with atypical soft tissue masses have been previously described¹⁰. Similarly, prevertebral and spinal abscesses have been reported as late complications following chemoradiation for laryngeal SCC, further illustrating the capacity of laryngeal carcinoma to generate adjacent suppurative complications¹¹.

What makes our case particularly unusual is the temporal sequence: the abscess was the patient's initial presentation, leading to the discovery of the underlying malignancy. This reverse diagnostic trajectory is uncommon. In most reported cases, an abscess in the context of laryngeal cancer occurs as a complication of treatment rather than as an inaugural symptom. Our case suggests that clinicians should always perform a careful CT evaluation and endoscopic examination of the laryngopharynx in adult patients presenting with deep neck infections, especially in those with a history of tobacco use, to exclude a concurrent malignant process.

The management of locally advanced LSCC (cT3-T4a) requires multidisciplinary discussion. Organ-preservation protocols using concurrent platinum-based chemoradiation are an established option in selected patients. However, for T4a disease with extensive cartilage invasion, primary total laryngectomy followed by adjuvant radiotherapy is associated with superior locoregional control and remains the recommended approach^{3,4}.

Rodrigo et al. demonstrated that total laryngectomy maintains a central role in the treatment of locally advanced laryngeal cancer even in the organ-preservation era, with acceptable disease-free and overall survival rates³. Gorphe, et al. reported 5-year overall survival rates of approximately 58% for T4a LSCC treated with primary total laryngectomy and postoperative radiotherapy, supporting primary surgery in such cases⁴.

In our case, the co-existence of an active deep neck infection additionally precluded upfront chemoradiation, further supporting the choice of a primary surgical strategy once the infectious process had been controlled. The patient's clear resection margins and satisfactory postoperative outcome confirm the appropriateness of this approach.

Conclusion

We present a rare case of locally advanced laryngeal squamous cell carcinoma revealed by a large retropharyngeal abscess in a 43-year-old chronic smoker. This case highlights an unusual diagnostic challenge: a malignant disease presenting under the guise of an infectious process. It emphasizes the importance of systematic cervical CT scanning and flexible endoscopy in all adult patients with deep neck infections, particularly in those with risk factors for malignancy. Sequential management, antibiotic control of the infection followed by total laryngectomy, led to a favourable outcome. Clinicians must maintain a high index of suspicion for underlying malignancy in adult patients with deep neck space infections to prevent diagnostic delay and ensure timely oncological treatment.

Declarations

Ethics approval and consent to participate

Ethical approval was not required for this single case report as per institutional guidelines. Written informed consent was obtained from the patient.

Consent for publication

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Availability of Data and Materials

All data are contained within the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

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