

A UNIQUE AIRWAY MANAGEMENT METHOD FOR A PATIENT WITH A SUPRAGLOTTIC LIPOSARCOMA: A CASE REPORT

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Abstract

Background: Supraglottic liposarcoma can cause clinically significant airway compromise and must be considered in the differential diagnosis of airway obstruction. Airway management of a patient with a supraglottic mass is challenging.

Case Presentation: A 60-year-old man presented with a 6-month history of worsening dysphagia, globus sensation, and dyspnea when lying flat. Initial evaluation showed a supraglottic mass obstructing his vocal cords. The patient was scheduled for surgery, and airway management comprised of awake fiberoptic bronchoscopy and video laryngoscopy. Transoral robotic surgery was performed, and excision of the oral mass was uneventful. Pathologic evaluation determined that the mass was a supraglottic liposarcoma.

Conclusions: This case highlights the rare presentation of a patient with a laryngeal supraglottic liposarcoma who was treated with a combination of difficult-airway management techniques.

Keywords: airway management; liposarcoma; supraglottic mass.

Introduction

Liposarcoma of the head and neck is uncommon, and it is less common in the supraglottic region.¹ Because liposarcomas appear similar to benign soft-tissue tumors, they can easily be mistaken for simple lipomas. Despite their indolent nature, supraglottic liposarcomas can cause clinically significant airway compromise; thus, they must be considered in the differential diagnosis of airway obstruction. Airway management of a patient with a supraglottic mass is clinically challenging. Typically, a tracheostomy is used for airway management if the tumor is large, obstructs the laryngeal opening, or has multiple papillomas.^{2,3} In this case report, we describe a patient who presented for resection of a liposarcoma causing near-complete airway obstruction.

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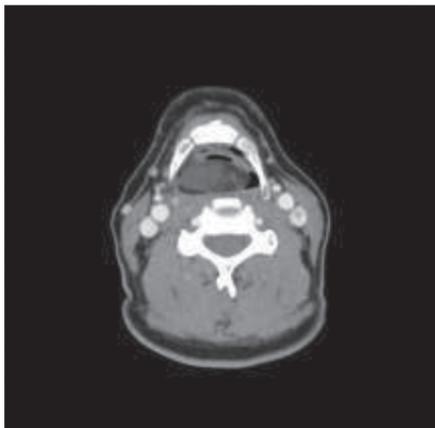
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Case Report

A 60-year-old man with an unremarkable medical history presented with a 6-month history of worsening dysphagia, dysphonia, dyspnea when lying flat, and a globus sensation. He also reported worsening cough that occasionally caused him to have the sensation of a rubbery lesion approximately the size of a golf ball falling into his throat. Computerized axial tomography of the neck showed a nonenhancing lobulated mass in the supraglottic and hypopharyngeal areas (Figure 1). Examination with a flexible fiberoptic laryngoscope showed a large cystic lesion that appeared to originate from the right tongue base and completely obstructed the view of the epiglottis.

Fig. 1

Preoperative Computerized Axial Tomographic Image Showing the Patient's Supraglottic Mass.



Because of his high risk of airway obstruction, the patient was brought to the operating room for transoral robotic resection of the supraglottic mass. To prepare the patient for awake intubation, topical oxymetazoline, 0.05%, was applied to the patient's nares. Then, a cotton swab was used to apply lidocaine ointment, 5%, and the swab was inserted progressively deeper into the nares as far as the patient could tolerate. We intravenously administered 0.4 mg glycopyrrolate to reduce salivation. While holding the tongue outside the mouth with gauze to prevent swallowing, we applied lidocaine, 5%, to the tonsillar pillars with a cotton swab, and viscous lidocaine, 2%, was applied to the posterior oropharynx by using a syringe with a 14G angiocatheter. Finally, the patient's right nare was serially dilated with 28F, 30F, and 32F nasal airways.

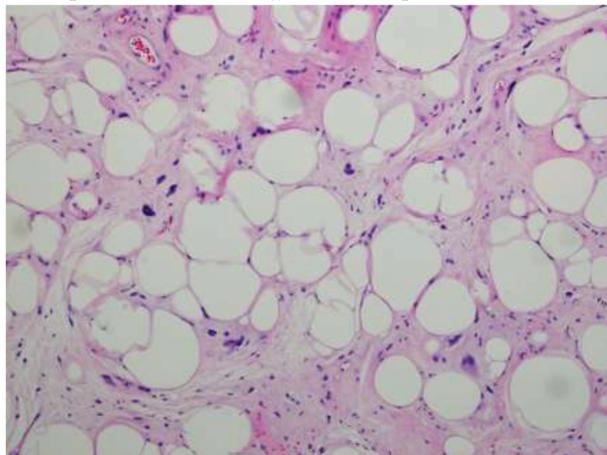
To prepare the patient for awake tracheostomy, we administered 2 mL lidocaine, 2%, without epinephrine as a transtracheal block. We administered a 1 mcg/kg bolus of dexmedetomidine, which was followed by 3 mcg/kg per hour intravenous dexmedetomidine. With the patient spontaneously breathing, awake, and responsive, a fiberoptic scope (Olympus Surgical Technologies Inc) was introduced into the right nare. The fiberoptic scope showed the supraglottic mass obstructing the vocal cords. Multiple attempts to maneuver the scope around the mass were unsuccessful. A portable video laryngoscope (GlideScope; Verathon Inc) was inserted to lift the epiglottis and to expose the vocal cords. Both devices were well tolerated by the patient. The fiberoptic scope was introduced into the trachea. A nasal Ring-Adair-Elwyn tracheal tube (internal diameter, 6.5 mm) with a TaperGuard cuff (Medtronic) was inserted over the fiberoptic scope and into the trachea. After confirmation of correct placement with end-tidal carbon dioxide monitoring and bilateral auscultation of the lung fields, general anesthesia was induced and surgery commenced.

Direct laryngoscopy showed a large mass occupying the vallecula and extending into the hypopharynx. A robotic approach to mass excision was chosen because it provided good visualization and access to the vallecula. The patient was placed in suspension with a laryngoscope. The da Vinci Surgical System (Intuitive Surgical Inc) was docked at the patient's bedside by using the standard protocol for transoral robotic-assisted surgery. The robotic instruments were used to pull the nonvisualized portion of the mass out of the upper esophagus. The mass appeared to be attached to the right oropharynx and right supraglottic larynx. These attachments were cauterized to completely detach the mass, which was removed and sent for pathologic analysis. Hemostasis was achieved, the patient's trachea was extubated, and the patient was taken to the postanesthesia care unit. His recovery was uneventful.

Pathologic analysis showed well-differentiated liposarcoma (Figure 2). After consultation with an oncologist and a radiation oncologist, the patient decided to defer treatment and to receive surveillance because of the slow-growing nature of this tumor.

Fig. 2

Typical Histologic Findings of Well-Differentiated Liposarcoma. Example image showing a mature-appearing fat set within a hyalinized background and scattered, hyperchromatic, atypical stromal cells, which are characteristic of atypical lipoma (hematoxylin-eosin, medium-power magnification). In addition, MDM2 gene amplification on fluorescence in situ hybridization is an abnormal result and is often identified in atypical lipoma, well-differentiated liposarcoma, and dedifferentiated liposarcoma [7].



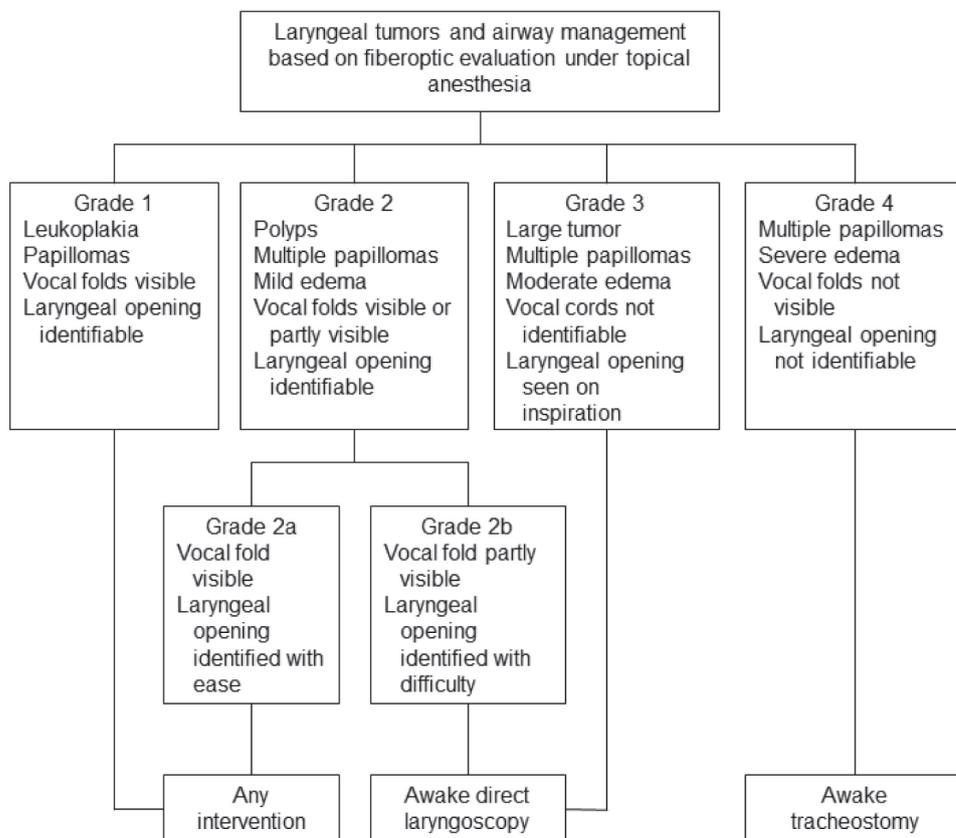
Discussion

Liposarcoma of the head and neck is rare and represents 2% to 9% of all sarcomas in this anatomical region.⁴ A review of MEDLINE articles published from 1858 to 2016 identified 70 reported cases of head and neck liposarcoma, with 38% of cases occurring in the larynx and pharynx.⁵ Of these cases, 78% were supraglottic.^{4,5,6} The most common presenting symptoms were stridor, dysphagia, hoarseness, dyspnea, and throat discomfort.

Management of these tumors requires a pathologic diagnosis, which is critical for determining prognosis. The World Health Organization⁷ classifies liposarcoma into several subtypes: dedifferentiated, myxoid, round cell, and pleomorphic. Well-differentiated and myxoid tumors rarely metastasize; pleomorphic tumors are more likely to do so. Diagnosis is typically followed by wide surgical excision of the tumor. The transoral robotic approach is an attractive option for patients and surgeons because it allows better preservation

Fig. 3

Flowchart Showing Airway Management in Patients With Laryngeal Tumors. (From Moorthy et al [2]; used with permission.)



of function and shorter hospital stay.⁸ Postsurgical neoadjuvant radiotherapy has been proposed to prevent local recurrence in patients with suspected incomplete tumor excision, but no consensus has been reached regarding its use.⁹

Treatment of complete or near-complete airway obstruction due to a supraglottic tumor is challenging. Moorthy et al² reported over 800 patients with supraglottic airway obstruction and classified their airways into 4 grades on the basis of findings on airway examination (Figure 3). Our patient had a grade 4 airway according to the criteria of Moorthy et al because of the tumor's size and complete obstruction of his pharynx, so awake tracheostomy was the recommended method for airway management.

However, we propose that awake intubation can be attempted with appropriate preparation. Before any attempt, the patient must be prepared, surgical drapes must be applied, and a surgeon must be present in case a surgical airway becomes necessary. Also, topical anesthesia must be applied to the oropharynx and nasopharynx to ensure that the patient can tolerate laryngoscopic devices.⁹ We preferred to apply topical lidocaine throughout the pharynx; however, anesthesia can be administered with oropharyngeal nerve blocks,

or aerosolized and nebulized local anesthetic agents can be used. Although awake intubation is typically performed without sedation, dexmedetomidine is an attractive sole sedative because of its unique sedative and respiration-sparing properties.¹⁰ Finally, because of the size and location of the liposarcoma, simultaneous use of multiple airway devices may facilitate airway management, as shown in the treatment of our patient by using fiberoptic bronchoscopy and video laryngoscopy.

Conclusion

Supraglottic liposarcoma is rare but has good prognosis after complete surgical excision and possible radiotherapy. Because of its location, supraglottic liposarcoma can cause life-threatening airway obstruction, particularly if the patient's airway muscles are relaxed by sedation or general anesthesia. Preoperative fiberoptic examination is critical for determining the best airway management method. Although awake tracheostomy is recommended for the largest and most obstructive tumors, awake oral or nasal intubation can be performed if appropriate precautions are taken.

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