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Intrinsic Laryngeal Lipoma Treated with Transoral CO₂ Laser Microsurgery: An Unusual Case Report

Authors' Contribution:

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Data Collection B
Statistical Analysis C
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Manuscript Preparation E
Literature Search F
Funds Collection G

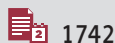
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Patient: Female, 28-year-old
Final Diagnosis: Intrinsic laryngeal lipoma
Symptoms: Dyspnoea
Medication: —
Clinical Procedure: —
Specialty: Otolaryngology

Objective: Mistake in diagnosis**Background:** Lipomas, the most common soft tissue tumors, represent almost half of all benign mesenchymal neoplasms and are characterized by the absence of symptoms. However, if they grow in a laryngeal site, they can cause dyspnea and dysphonia which represents one of the major symptoms of benign laryngeal diseases (such as polyps or nodules); these symptoms are often the first symptom of neoplastic diseases.**Case report:** We present a case of a 28-year-old female patient with a rounded pseudocyst neof ormation located in the left aryepiglottic fold that partially hid the homolateral vocal cord and limited its mobility. Due to the site of the lesion and MRI images showing a well-capsulated neof ormation without contrast enhancement, we decided to surgically remove it with a micro-laryngoscopic approach after an evaluation of the patient's upper airway by an anesthetist. This case demonstrates that a micro-endoscopic approach using transoral laser microsurgery for surgical excision was useful for removing the entire mass and avoiding relapses.**Conclusions:** Laryngeal lipomas are benign and rare lesions, in particular intrinsic lipomas are uncommon, but, if they grow, they can cause life-threatening symptoms. In our case, a lipoma reached a size of around 2 centimeters and was not pedunculated, only a histopathological examination of the surgical specimens could provide a differential diagnosis against a lipoma-like liposarcoma. The use of Transoral Laser CO₂ Micro-laryngoscopy (TLM) provided good management of a small intrinsic lipomas of the larynx, minimizing the potential for relapses.**MeSH Keywords:** Deglutition Disorders • Larynx • LipomaFull-text PDF: <https://www.amjcaserep.com/abstract/index/idArt/920528>

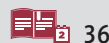
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Background

Lipoma is the most common soft tissue tumor and represents almost half of all benign mesenchymal neoplasms [1]. It is composed of mature adipose tissue, but recent studies have identified cytogenetic abnormalities in approximately 50–60% of typical cutaneous lipomas [2,3].

Lipoma incidence is 1% in the entire population with a peak incidence rate in patient aged 40 to 60 years. Lipoma size ranges from 1 to 3 cm but sometimes giant lipomas can reach a diameter of 20 cm [4,5]. Lipomas are more frequent localized in the upper trunk, abdomen, and shoulders; head and neck lipomas represent only 13% of cases and are localized in the larynx in only 1% of cases [6,7]. Only 115 cases have been reported in the literature [6,7].

Lipomas commonly are symptomless but if they grow in laryngeal sites they can cause dyspnea and dysphonia, which represents one of the major symptoms of benign laryngeal diseases such as polyps or nodules, but it is also often the first symptom of neoplastic diseases [8,9].

Lipomas of the larynx are classified into intrinsic and extrinsic forms due to the site of origin. The intrinsic form of laryngeal lipomas is rare; of the 115 cases of laryngeal lipomas reported in literature, only 30 were intrinsic forms [10,11].

Our patient had a non-pedunculated lesion on the left side of the supraglottic region, which was identified as lipoma on histopathological evaluation and classified as intrinsic lipoma.

The aim of this study was to provide evidence that using a transoral laser CO₂ microsurgery (TLM) approach was helpful for optimal visualization of a lipoma and for performing a total eradication of the tumor. TLM has been proven to be of

considerable utility in the removal of lipomas, as was found in this case. This procedure allows for a less invasive surgery, in contrast to the external lateral surgical approach, with less bleeding than open surgery, and a reduction in recovery times and hospitalization costs. Furthermore, TLM with margin photo-coagulation minimizes the risk of relapses [12].

Case Report

We present a case of a 28-year-old female patient who came to our hospital in June 2017 complaining of dysphagia, dysphonia, nighttime breathing difficulties, and throat discomfort which had started about 6 months earlier. She was a smoker of 20 cigarettes per day. We performed a laryngoscopy that revealed a large, round-shaped pseudocysts neoformation, localized in the left aryepiglottic fold, partially hiding the homolateral pyriform sinus, moving as flap with respiratory acts (Figure 1). This lesion was covered by normal, whole smooth tissue. The homolateral vocal cord was partially hidden and its mobility was limited due to the mass effect principally on the homolateral arytenoid. We performed magnetic resonance imaging (MRI) with T1wTSE-, T2wTSE-, STIR- and THRIVE-weighted sequences and the imaging reported a capsulated neoformation affecting the aryepiglottic fold, with a size of about 2 cm in its maximum diameter with a signal behavior similar to adipose tissue in all sequences examined (Figure 2).

Due to the site of the lesion and the MRI showing a well-capsulated neoformation without contrast enhancement, we decided to surgically remove the lesion using a micro-laryngoscopic approach after a consultation evaluation of the patient's upper airway with an anesthetist.

The dimension of the lesion with its well-defined capsule edging allowed us to perform an excisional biopsy using TLM

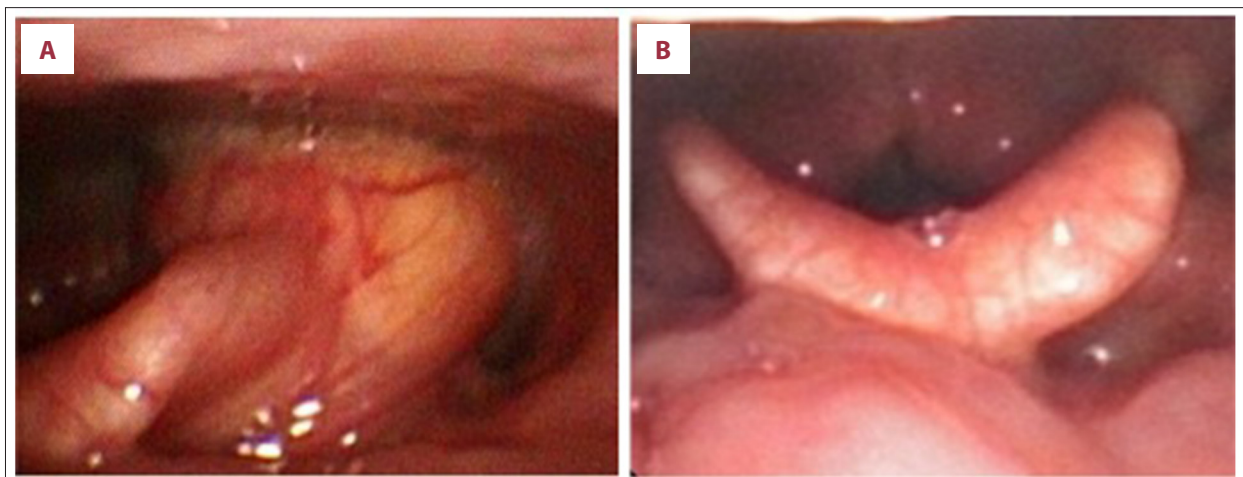


Figure 1. Laryngoscopy pre- (A) and post- (B) surgical treatment.

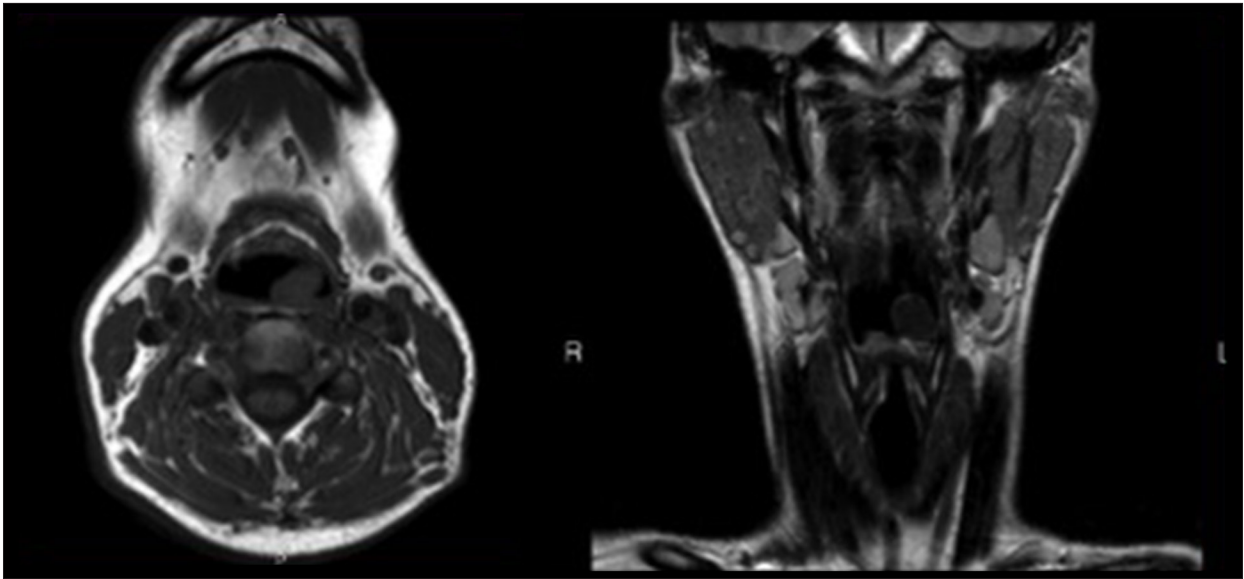


Figure 2. Magnetic resonance imaging performed with T1wTSE-, T2wTSE-, STIR, and THRIVE weighted sequences.

with CO₂ laser; in addition, we made a continuous wave laser treatment on the excisional margins and to the wound bed to avoid relapses.

The patient was administered os (nothing per mouth) on the first post-operative day and she went home 2 days after the surgery; she had no dysphagia or respiratory difficulties.

She was enrolled in a follow-up program to evidence any possible relapse, and 10 months later she did not show signs of pathology.

The patient gave her consent for data collection and treatment.

Discussion

Lipomas are mesenchymal tumors, frequently located in the subcutaneous tissue where fat is more abundant. Localization in the neck is more frequent in the subcutaneous posterior area while it is rare in the upper aerodigestive tract (almost 0.6%) [13,14].

The etiology of lipomas is unknown. Lipomas are richly vascularized [15] and can occur, as in our patient case, in the form of isolated lesions, or as multiple lesions such as in Gardner's syndrome or neurofibromatosis [16,17]. From a histological point of view, based on the different mesenchymal components, lipomas can be classified as fibrolipomas, mixolipomas, or pleomorphic lipomas [18].

The origin of a laryngeal lipoma is unknown. Intrinsic lipomas can occur where fat is represented as subepithelial tissue, such

as in aryepiglottic folds, false vocal cord (rarely in true vocal folds) and epiglottis [19].

Lipomas grow slowly and they create principally cosmetic problems, but, depending on size and positions, they can cause problems by mass effect on surrounding structures. Lipomas located in the larynx can cause dysphagia, dyspnea, hoarseness, and throat discomfort. In our case, the patient's symptoms were dysphagia (due to the extension of the lesion towards the side of the piriformis sinus), throat discomfort, sleep apnea, and slight dysphonia caused by the mass effect on the homolateral arytenoid.

The challenge of these lesions is their differential diagnosis from other conditions such as malignancy, laryngocele, or retention cyst. The appearance of a larynx lipoma at clinical examination by endoscopic techniques is a submucosal or yellow polypoid mass, sometimes pedunculated, covered by normal tissue. With imaging, it is possible to have good indications for differential diagnosis. A computed tomography (CT) scan provides a definitive diagnosis of lipoma in virtually all cases by calculating the actual density of the suspected mass. Fat has a negative CT attenuation number. Thus, lipomas have typical CT characteristics of a homogeneous mass with few septations, a low CT attenuation number, and no contrast enhancement [20]. An MRI identified lipoma has typical signal intensity patterns simulating that of subcutaneous fat (i.e., high signal intensity on T1-weighted images and intermediate intensity on T2-weighted images, with a weak signal on fat-suppressed images). Moreover, in an MRI, the 'black-rim' defines the lipoma's margin to distinguish the lesion from surrounding normal fat tissue, a distinction that cannot be made from CT images. It is possible to also identify a capsule of the lesion [21].

However, Satirovic et al. showed an unusual case of well-differentiated liposarcoma of the hypopharynx, initially classified as a benign lipoma that had already been removed 3 times. Well-differentiated liposarcoma is a tumor with a low degree of malignancy, which does not metastasize but has a strong tendency to recur locally [22].

There are 4 main histological types of liposarcomas: well-differentiated, myxoid or round cell, pleomorphic, and differentiated liposarcomas. Well-differentiated liposarcoma can be divided into 3 subtypes and among these is the more common lipoma-like liposarcoma mimics the lipoma both macroscopically and microscopically [23].

Because the clinical signs and the imaging are not specific and can hide the real nature of the lesion, lipomas will have a firm diagnosis only after the histopathological examination of the surgical specimen.

Usually, the distinction between lipoma and well-differentiated liposarcoma is based on the following 2 differences: the first is its homogeneous nature with an imaging appearance identical to that of the subcutaneous adipose tissue or it is largely adipose with only thin septa (<2 mm); the second is characterized by a lower percentage of fat (<75% of the lesion), the presence of calcification, lesion dimensions greater than 10 cm, thick septa (>2 mm), and non-lipomatous nodular or globular foci [24–26]. In our case, MRI reported a lesion similar to lipoma of the larynx surrounded by a well-defined capsule. These results were fundamental to the diagnosis, but histopathology remains the cornerstone as only biopsies of the deeper tissues will prove conclusively a case of lipoma.

Surgery is the treatment of choice for lipoma. For small dimension lipomas of less than 2 cm, it is possible to perform the TLM with or without CO₂ laser approach, while for larger tumors of more than 2 cm, non-pedunculated, an external approach is indicated [27–32]. Our mass was not pedunculated, was measured at 2 cm, and therefore we were at the limit of choosing the most appropriate treatment: endoscopic versus lateral surgical approach.

Before using the CO₂ laser, we perform a perilesional infiltration of 1 cc of saline solution with norepinephrine diluted 1: 10 000. This infiltration was similar to the one we usually use for the excision of benign lesions affecting the vocal cords [33,34]. It allows for the procedure to be performed in a

bloodless condition, facilitating its removal, and helps to control the thermal damage on the surrounding tissues by acting as a heat sink.

The use of the TLM CO₂ laser reduces bleeding, allows for total eradication of the lipoma, and avoids leaving residues that could lead to relapses. In addition, the margin photocoagulation technique makes this a preferred choice of treatment.

Usually, in the treatment of early glottic cancer of the larynx an excisional biopsy with photocoagulation of the lesion margins is used because this technique has better surgical radicality and reduces the recurrence of neoplastic lesions. For these reasons, photocoagulation of the margins and the wound bed can prevent an unlikely but still possible histopathological surprise such as lipoma-like liposarcoma, as well as in cordectomy [35]. We think that the choice of the endoscopic approach using a CO₂ laser and the use of the photocoagulation technique was a rational approach given the fact that sometimes these lesions are only identified on histological examination can be defined as benign lesions because preoperative imaging has a probative but not absolute value and only the histopathological examination allows to define the lesion exactly [36].

Conclusions

Lipomas of the larynx are rare lesions and in particular intrinsic lipoma are rare. Although they are benign lesions, if they grow, they can cause life-threatening symptoms. In the literature, lipomas of 2 cm represent the maximum limit beyond which an open surgery approach must be used. In our case, the lipoma reached a size of around 2 centimeters, was not pedunculated, and only the histopathological examination of the surgical specimens could provide a differential diagnosis against a lipoma-like liposarcoma. For these reasons, we believe that the use of the TLM with CO₂ laser allowed us to carry out a less invasive surgery, with less bleeding than conventional surgery with a complete eradication of the lesion, a reduction of recovery times, and hospitalization costs. Furthermore, laser surgery with margin photocoagulation minimized the risk of relapses.

Conflicts of interest

None.

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