*Case Report*

# WELL-DIFFERENTIATED LIPOSARCOMA OF THE LARYNX: A CASE REPORT AND REVIEW OF LITERATURE

**Svetlana A. Mateva, Margarita R. Nikolova, Alexandar V. Valkov[1], Julia M. Todorova-Doneva[1]**

*Department of Patholoanatomy, Faculty of Medicine, Medical University – Pleven*
*[1]Department of Otolaryngology, Faculty of Medicine, Medical University – Pleven*

**Corresponding Author:**
Margarita R. Nikolova
Department of Patholoanatomy,
Medical University – Pleven
1, St. Kliment Ohridski Str.
Pleven, 5800
Bulgaria
*e-mail*: *mnikol@abv.bg*

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## Summary

Liposarcoma is one of the most common soft tissue sarcomas in adults with a relative incidence amongst other sarcomas ranging from 9.8% to 16%. It usually locates in the limbs and retroperitoneum. Primary liposarcomas of the larynx and hypopharynx are rare, comprising less than 20% of all head and neck liposarcomas. According to World Health Organization, these tumors are divided into four histologic types, and well-differentiated liposarcoma is the most common one. It is a tumor of low-grade malignancy that may recur locally, but does not metastasize. We present a case of laryngopharyngeal well-differentiated liposarcoma in an old patient with two previous removals. We also discuss recently published cases with this unusual location of liposarcoma.
**Key words:** liposarcoma, larynx, well-differentiated

## Introduction

Liposarcoma is one of the most common soft tissue sarcomas in adult life with a relative incidence amongst other sarcomas ranging from 9.8% to 16%. It ranges widely in structure and behavior from nonmetastasizing neoplasm to high-grade sarcoma with full metastatic potential [1]. The World Health Organization (WHO) divides liposarcomas into four types: atypical lipomatous tumor (ALT)/well-differentiated liposarcoma (WLS), myxoid/round cell liposarcoma (MLS), dedifferentiated liposarcoma (DLS) and pleomorphic liposarcoma (PLS). The most common type is WLS that accounts for about 40-45% of all liposarcomas. It occurs frequently in deep soft tissues of the limbs, followed by the retroperitoneum. It can be further subdivided into four main subtypes: adipocytic (lipoma-like), sclerosing, inflammatory, and spindle cell [2]. Primary liposarcomas of the larynx and hypopharynx are rare, comprising less than 20% of all head and neck liposarcomas and less than 0.5% of all laryngeal neoplasms. There is a marked male to female predominance (nearly 10:1). The majority of cases are WLS with infrequent reports of MLS and PLS [3]. We present a case of laryngopharyngeal WLS in a male patient with two previous endoscopic removals.

## Case Report

An 85-year-old man presented to the Ear, Nose and Throat Clinic with complaints of progressive dysphagia to liquid and gruel food along with slight dyspnea. Four years before he had presented to the same clinic with severe dyspnea and dysphagia. The symptoms were caused by a lipoma measuring 5-6 cm in diameter located in the left recessus piriformis, closing the esophageal ostium and pushing the larynx. Lateral pharyngotomy was performed and the tumor was excised. A year later, the patient was admitted to the clinic again, complaining of dysphagia. A pedunculated tumor measuring 3/2 cm was found attached to the left valecula. Using microlaryngosurgery the tumor was totally removed and histological examination revealed differentiated liposarcoma. At present, indirect laryngoscopy revealed a tumor with lobulated surface, involving the left recessus piriformis and obturating the esophageal and laryngeal ostia. After direct laryngoscopy and CT contrast examination, laryngectomy was performed. Gross examination of the resected larynx showed a soft, yellow, smooth-surfaced tumor involving left aryepiglotic fold, left and right recessus piriformis, penetrating to left false vocal cord and sinus of Morgani and closing the esophageal ostium. The tumor was yellow in color and lobulated on cut surface, well-circumscribed (Figure 1). Histologically, it was covered by intact mucosa on one side and showed lobular arrangement (Figure 2). The tumor consisted mainly of mature adipocytes of varying size, some of them with hyperchromatic nuclei. Univacuolar and multivacuolar lipoblasts were easily identifiable (Figure 3). Mitotic activity was very low and pathological mitoses and necroses were absent. The tumor cells were diffusely positive for vimentin and S-100. Ki67 showed positivity in less than 5% of tumor cells. Based on the typical macro- and microscopic appearance of the tumor, supported by immunohistochemical examination, the diagnosis made was well-differentiated liposarcoma, lipoma-like subtype. The patient made a full recovery and was discharged on the eleventh postoperative day.

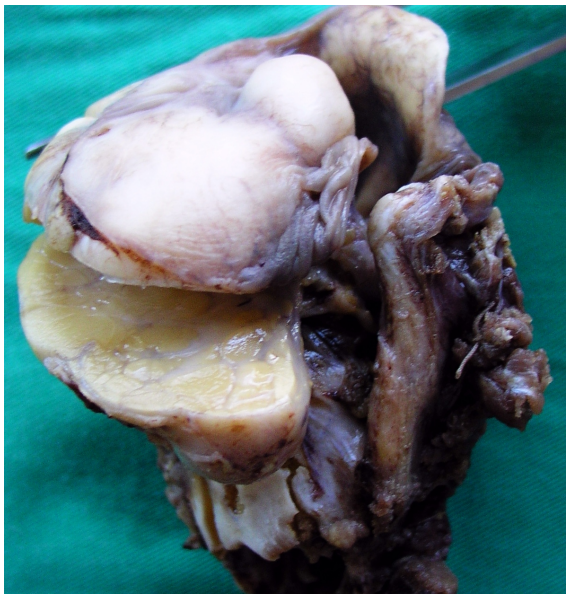

**Figure 1.** Smooth-surfaced, well-circumscribed tumor involving left aryepiglotic fold, left and right recessus piriformis, closing esophageal ostium. Cut surface is yellow in color and lobulated

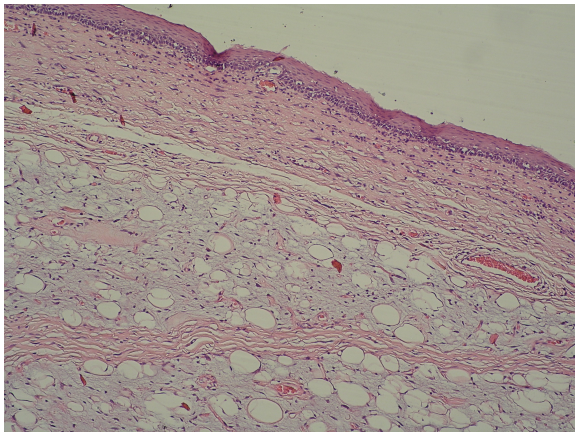

**Figure 2.** The tumor is covered by intact mucosa on one side and showed lobular arrangement

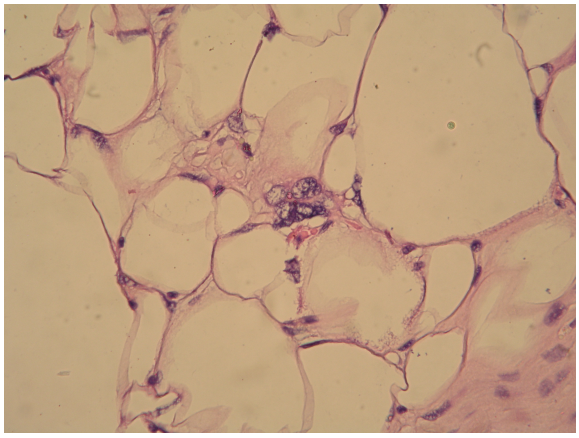

**Figure 3.** The tumor consists mainly of mature adipocytes of varying size, some of them with hyperchromatic nuclei. Univacuolar and multivacuolar lipoblasts are easily identifiable

## Discussion

Liposarcomas of the larynx and hypopharynx are very rare. We found 48 cases reported so far in the literature published in English, 3 cases - in Spanish [4-6], 2 cases – in French [7, 8], and 1 case - in German [9]. The first case of laryngeal liposarcoma was reported by Miller in 1976 [10]. The largest series of laryngopharyngeal liposarcomas were reported by Wenig et al. in 1990 (10 cases), and in 1995 other 8 cases were reported, WLS being the most common variant [8, 11-14]. Other variants of liposarcoma such as MLS [4, 15, 16] and DLS [9, 17-21] have rarely been seen in the larynx and pharynx. All reports are listed in Table 1.

**Table1.** Review of studies on liposarcomas of larynx and hipopharynx

| Reference | Larynx 31 cases | Hypopharynx 23 cases |
|---|---|---|
| Muddaiah A. et al. [22] 2010 | 1 WLS | - |
| Mestre de Juan M.J. et al. [23] 1999 | 1 WLS | - |
| Gleinser D.M. et al. [15] 2010 | 1 MLS | - |
| Shi H. et al. [11] 2010 | 3 ALT/WLS | 2 ALT/WLS |
| Brauchle R.W. et al. [24] 2001 | 1 WLS | - |
| Fahmy F.F. et al. [25] 1998 | - | 1 WLS |
| Powitzky R. et al. [26] 2007 | 1 LS | - |
| Wambeek N.D. et al. [27] 1996 | - | 1 WLS |
| Wenig B.M. et al. [13] 1995 | 6 LS | 2 WLS |
| Wenig B.M. et al. [14] 1990 | 6 WLS | 4 WLS |
| Makeief M. et al. [17] 2010 | 1 DLS | - |
| Mandell D.L. et al. [12] 1999 | - | 1 WLS |
| El Ouakif F. et al. [7] 2011 | - | 2 WLS |
| Mouret P. [28] 1999 | - | 1 WLS |
| Nouri H. et al. [29] 2011 | - | 1 WLS |
| Sotirović J. et al. [30] 2014 | - | 1 WLS |
| Nishihoria T. et al. [31] 2011 | - | 1WLS |
| Luna-Ortiz K. et al. [16] 2009 | - | 1 MLS |
| Giordano G. et al. [18] 2006 | - | 1 DLS |
| Hurtado J.F. et al. [32] 1994 | 1 WLS | - |
| Reed J.M. et al. [33] 1996 | - | 1 WLS |
| Miller D. et al. [10] 1976 | 1 LS | - |
| Sanz Gonzalo J.J. et al. [4] 2002 | - | 1 MLS |
| Almela Cortés R. et al. [5] 2002 | 1 LS | - |
| Meis J.M. et al. [34] 1986 | 1 WLS | - |
| Allsbrook W.C. Jr. et al. [35] 1985 | 1 LS | - |
| Pérez González R. et al. [6] 2013 | 1 LS | - |
| Acharki A. et al. [8] 1989 | 1 LS | - |
| Steiger P. et al. [9] 1992 | 1 DLS | - |
| Gonzales-Lois C. et al. [19] 2002 | - | 1 DLS |
| Tobey D.N. et al. [20] 1979 | 1 DLS | - |
| McCormick D. et al. [21] 1994 | 1 DLS | - |
| Takano K. et al. [36] 2011 | - | 1 WLS |

*Abbreviations:* WLS - well-differentiated liposarcoma; MLS - myxoid/round cell liposarcoma; ALT/WLS - atypical lipomatous tumor/well-differentiated liposarcoma; LS – liposarcoma; DLS - dedifferentiated liposarcoma

WLS of the larynx and hypopharynx occurs almost exclusively in adults, usually in older age groups in the fifth to the eighth decades of life [14, 37]. There is a marked male to female predominance [3, 8, 13, 14, 37]. Most of the tumors are polypoid, usually lobulated and glistening, covered by intact mucosa, with the most frequent histological appearance of lipoma-like subtype [3, 11-14]. The most common symptoms are dysphagia and dyspnea [3, 12-14].

Although most cases of WLS can be diagnosed microscopically based on H&E sections, sometimes it may be difficult to rule out lipoma [11, 30]. Histological appearance within WLS may vary and areas of well-differentiated adipocytes can be seen. This suggests wide histological sampling and immunohistochemical staining. Both lipomas and WLS are permanently labeled with vimentin and D-100 proteins, but murine double minute 2 (MDM-2) and cyclin-dependent kinase 4 (CDK-4) are diffusely or focally positive in tumor cells of WLS and negative in lipoma, so they may be useful in differential diagnosis [11, 30, 37]. In recently published literature, WLS is characterized by 12q13-15 amplification; this genomic segment includes genes such as MDM-2 [37].

In spite of surgical treatment of laringopharyngeal WLS, multiple recurrences are common (80% of cases) [3, 13, 14, 22, 30, 31] with an average of 69 months between excision and recurrence [25, 33]. The recurrent tumor may differ histologically from the primary tumor [30].

Complete removal by wide excision is essential in treating liposarcoma of all locations, and most WLS of the larynx and hypopharynx can be cured. However, incomplete excision of the tumor may result in local recurrence [11, 30, 31]. For anatomical reasons, the extensiveness of surgery for laringopharyngeal tumors is usually restricted to some extent and surgical margins are relatively close to the tumor. Thus pharyngolaryngectomy with supplementary laser resection is the optimal choice for laryngopharyngeal WLS in order to remove the tumor as completely as possible [11, 13, 16]. Difficulties in evaluating the surgical margins are common after laser surgery and fragmentation of the tumor, and this is one serious disadvantage of laser surgery [16, 31]. Long term follow-up is necessary [30, 31]. There are controversial opinions on postoperative radiation therapy, although it may be beneficial, especially after excision of WLS recurrence [16, 23]. The risk of lymph node or distant metastasis is very low, so neck dissection is not indicated [13, 14].

## Conclusions

Most WLS of laryngopharyngeal region can be cured by complete excision. The completeness of excision must be evaluated by wide sampling of tumor margins. Careful and wide sampling of the tumor is basic for diagnosing WLS lipoma-like subtype. In some equivocal cases, immunohistochemical staining with MDM-2 and CDK-4 is helpful. Because of the high recurrence rate of laryngopharyngeal liposarcomas, long term follow-up is necessary.

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