

## Immunohistochemical Diagnosis of Primary Laryngeal Melanoma as a Rare Malignant Laryngeal Tumour

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### Abstract

In this case presentation, the authors discuss the prevalence, diagnosis and surgical treatment of the exceedingly rare primary laryngeal melanoma. The importance of immunohistochemical investigations is emphasised since the condition tends to mimic laryngeal carcinomas. Laryngeal melanomas have a very poor prognosis; their five-year survival is less than 10% in international literature. However, the patient presented in this article is still asymptomatic and has no metastases 7 years after the removal of the lesion with transoral laser microsurgery.

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### Introduction

International scientific literature reports a few cases of rare malignant tumours of the larynx, such as neuroendocrine carcinoma, solitary extramedullary plasmocytoma or lymphangiosarcoma of the vocal cords (1, 2, 3.). However, there is hardly any mention of the primary melanoma of the larynx, since it is such a rare condition.

Mucosal melanoma accounts for approx. 9% to 10% (4) of head and neck melanoma cases, which is only 1.3% of the overall prevalence of melanomas (5, 6). Head and neck mucosal melanomas primarily affect the oral and nasal cavity, as well as the paranasal sinuses (4).

Primary laryngeal melanoma is such a rare condition, which the lesion may be considered

an epidermoid carcinoma before the histological diagnosis is established. It is most commonly detected in the glottic and supraglottic regions on direct and indirect laryngoscopy (7, 8). Similarly to the planocellular carcinoma of the larynx, it invariably affects heavy smokers. However, it has also presented as the malignant transformation of laryngeal papillomas, and chronic irritation in conjunction with other carcinogenic factors may also play a role in its development (9).

Depending on the location, patients usually present with hoarseness, laryngeal-pharyngeal irritation, pain on swallowing that radiates to the ear, and dyspnoea in the later stages.

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The scarce literature data suggest a very poor prognosis as a result of early and aggressive metastases, the five-year survival is less than 10% (7).

The aim of this paper is to draw attention to this rare condition since the clinical entity has to be taken into consideration in certain cases. In addition, we would like to present a success story, as 5 years after the removal of the lesion with transoral laser microsurgery the patient is still asymptomatic and has no metastases.

### Case presentation

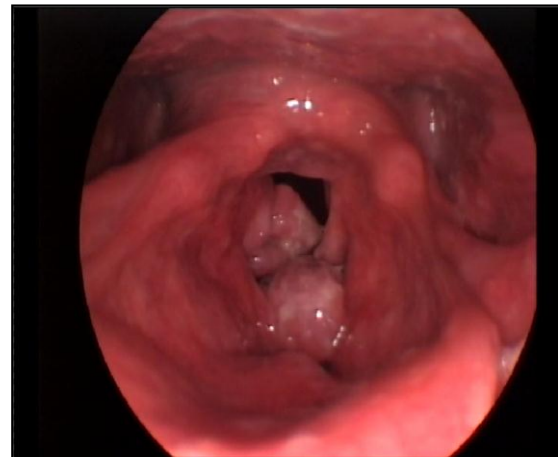
A 69-year-old male patient had been experiencing hoarseness for one year. In the previous six months, accompanying dyspnoea had also developed. He had no dysphagia or pain radiating to his ear. He also had a persistent cough as he had been smoking 20 cigarettes per day for 51 years. He consumed beer and spirits regularly. He had no concomitant diseases except for hypertension. One month prior to his admission, he underwent laryngomicroscopy and biopsy from the larynx in another institution, and histopathology revealed high-grade sarcomatoid carcinoma of the larynx. He was then referred to our clinic for further management.

On indirect laryngoscopy, a greyish, uneven-surfaced tumour was visible on the right vocal cord, extending through the anterior commissure until the anterior third of the left vocal cord, moderately narrowing the laryngeal lumen. The mobility of both vocal cords was intact and no other disease was present in the larynx or hypopharynx. Lymph nodes were not palpable on the neck.

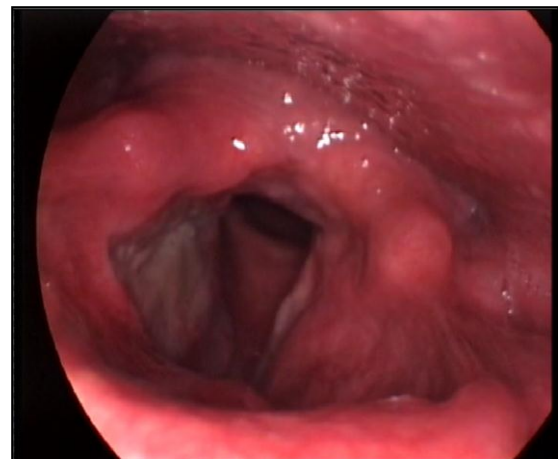
Direct pharyngo-laryngoscopy was carried out; we found the picture of a T1/b glottic tumour (Figure 1).

Laryngomicroscopy was done, during which we resected the right vocal fold with CO<sub>2</sub> laser (in order to have a better visualisation of the vocal cord) and did an extended laser

cordectomy (V/a.c. European Laryngological Society 2000) (Figure 2).



**Figure 1.** Preoperative endoscopic image of the right-sided laryngeal tumour.



**Figure 2.** Postoperative endoscopic picture: two weeks following right-sided laser cordectomy

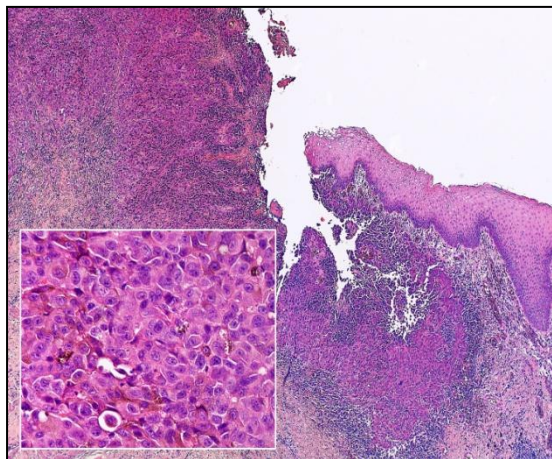
### Pathological findings

Macroscopically the specimen consisted of three tissue fragments (25×14×14, 12×10×4 and 18×12×32 mm), partly covered by surface epithelium. Approximately half of the specimen consisted of malignant tissue. Cut surfaces were grey and white. Microscopically the tumour had a predominantly solid growth pattern. The cellular infiltrate included epithelioid cells and spindle-shaped cells with large round to oval vesicular nuclei, prominent eosinophilic nucleoli and variable amount of eosinophilic to clear cytoplasm (Figure 3).

In some areas, cytoplasmic melanin pigment was seen. There was an increased mitotic

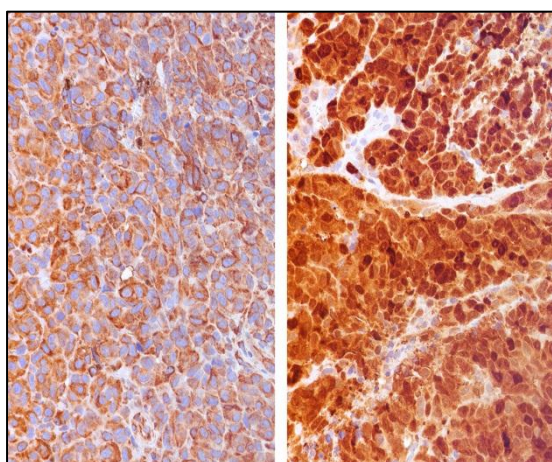
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activity (6-7 mitotic cells/HPF). The surface epithelium showed areas with hyperplasia, in other parts it was atrophic or completely ulcerated. The depth of the tumour was 5-6 mm and in some areas it reached the surgical margin (Figure 3).

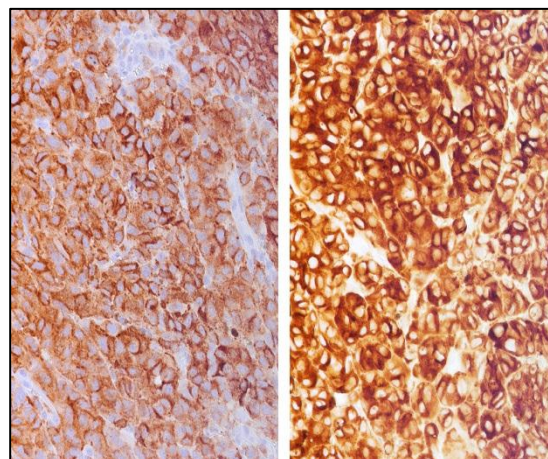


**Figure 3.** Exulcerated tumour of the larynx, with predominantly epithelioid tumour cells (hematoxylin-eosin, original magnification  $\times 50$ , insert  $\times 400$ ).

Microscopically the maximum tumour extension was 12 mm. Immunohistochemically the tumour cells showed strong Vimentin, S-100 protein HMB-45 and Melan A/MART 1 expression (Figure 4, Figure 5). KL-1 (pancytokeratin), P63 and Desmin were all negative. The pathological diagnosis was malignant melanoma of the larynx (10).



**Figure 4.** Strong Vimentin (left) and S-100 protein (right) immunoreactivity of the tumour cells ( $\times 400$ ).



**Figure 5.** Strong immunoreactivity of the tumour cells with the more specific markers of malignant melanoma HMB-45 (left) and Melan-A/MART-1 (right) ( $\times 400$ ).

### Discussion

In our case presentation, we reported a rare case of stage T1/b malignant laryngeal melanoma, which seemed to be glottic laryngeal carcinoma clinically; however, immunohistochemical staining proved otherwise. The patient is a 69-year-old long-term male smoker.

Dermatological and ophthalmological investigations and PET/CT failed to detect other affected locations. Therefore, the final diagnosis was primary malignant melanoma of the larynx, which is a very rare laryngeal malignancy (11).

Our aim is to draw attention to this rare type of laryngeal malignancy, since 90% of glottic laryngeal tumours normally turn out to be of squamous cell origin (12, 13).

According to the recommendations of the European Laryngological Society, the treatment of choice for primary laryngeal melanomas not accompanied by disability should focus on 'quality of life', since extended laser cordectomy seems to be an effective way of management in 85-95% of T1-T2 glottic carcinomas (V-VI) (European Laryngological Society 2000) (14, 15). However, the only safe surgical management of local recurrence is laryngectomy. In the literature, most authors report laser resection

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(extirpation) or total laryngectomy, depending on the extent of the melanoma within the larynx (7). Although most melanomas tend to be radioresistant, some authors still apply adjunctive irradiation postoperatively, sometimes combined with chemotherapy (8, 17).

Secondary laryngeal melanomas are melanoma metastases presenting in the larynx, which can also be managed with extended laser cordectomy (V-VI). However, local recurrence can only be managed with total laryngectomy. The above-mentioned methods of surgical management are sometimes complemented with systemic chemotherapy or chemohormonal treatment (17).

Even though melanoma is thought to be radioresistant, some authors complement the surgical treatment of secondary laryngeal melanoma (laser excision, partial resection of the larynx, total laryngectomy) with irradiation, while others apply adjuvant chemotherapy (7, 10, 18).

The macroscopic diagnosis of laryngeal melanomas is fairly unreliable. Therefore, histological and immunohistochemical findings are inevitable for an accurate diagnosis.

The color of the intralaryngeal lesion may raise physicians' suspicion: characteristic colors are grey, brown or black (19). The grey neoplastic lesion we presented could not be reliably classified as a primary or secondary laryngeal carcinoma; it may as well have been an epidermoid carcinoma. Thus, pathological immunohistological staining is essential for an accurate diagnosis.

## Conclusions

Primary laryngeal carcinoma is a very rare type of malignancy associated with a very poor prognosis. Its macroscopic appearance is hard to distinguish from an epidermoid carcinoma. Therefore, pathological immunohistological staining is essential for an accurate diagnosis.

Cases detected early can be managed with extended laser cordectomy, which is a minimal invasive intervention sparing laryngeal function. However, this clinical entity tends to be very aggressive and metastasize. Therefore, close monitoring and follow-up is necessary in the postoperative period in order to exclude regional and distant metastases. This case is considered a success story, since 7 years after the surgical intervention the patient has not developed recurrence or any metastases.

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## Conflicts of Interest

The authors declare no conflicts of interest.

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