



## Case report

## Granular cell tumor of the vocal cord: Case Report and Literature Review

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## ABSTRACT

**Introduction and importance:** Granular cell tumors (GCT) are rare neoplasms. The most common places are the head and neck. The larynx accounts for 3-10% of cases.

**Presentation of case:** We present the case of a man who consulted our Department of Otorhinolaryngology due to long-term progressive dysphonia without dyspnea or dysphagia. Fibrolaryngoscopy revealed a tumor that affected the left vocal cord. The tumor was surgically resected. The histopathological report revealed a laryngeal GCT. Fourteen months after surgery, the patient had no recurrence.

**Clinical discussion:** Patients with GCT of the larynx typically have persistent hoarseness, stridor, dysphagia and otalgia, but can also be asymptomatic. A definitive diagnosis is provided by histopathology with immunohistochemistry, and the treatment of choice is surgical resection. Unlike the literature, our report concerns a young man.

**Conclusion:** Granular cell tumor is a rare tumor of the larynx and should be considered a differential diagnosis in all adult men with long-standing dysphonia.

### 1. Introduction

Granular cell tumor (GCT) or Abrikossoff's tumor is an extremely rare neoplasm that can be located anywhere in the body [1]. 50% is located in the head and neck region, mainly on the tongue [2]. In the larynx, GCT is rare, accounting for only 3–10% of all cases [3]. Laryngeal GCTs affect mainly the vocal cords, although other sites have also been described in the larynx, including the arytenoids, anterior commissure, false vocal cords, subglottis, and posterior cricoid region [4]. GCTs can affect any age group, but occur more frequently during the fourth to sixth decade of life and are maybe more common in women [5]. We present the case of a young man with an incidental finding of GCT of the vocal cord in histopathology. This case report is reported in line with the SCARE criteria [6].

### 2. Presentation of case

A 42-year-old man with no clinical, surgical, or allergy history, drug use, tobacco, or alcoholism consulted our Department of Otorhinolaryngology for persistent and progressive dysphonia of 3 years of

evolution. He did not report dyspnea or dysphagia. A fibrolaryngoscopy was performed, which revealed a lesion of 1 × 0.8 cm with a rounded appearance and a whitish coloration in the anterior and middle third of the left vocal cord (Fig. 1). The mobility of the cord was preserved.

Laryngeal microsurgery was planned in which the lesion described above was observed on the free edge of the left vocal cord. On palpation, the tumor was hard and it was covered by the epithelium. Complete resection of the lesion was performed with cold instruments, respecting the chordal ligament.

The patient was discharged on the same day of surgery. During the immediate postoperative period, no complications were reported. Subsequent treatment consisted of vocal rest for 7 days and oral corticosteroids for 3 days. The improvement in voice was evident and 15 days after the procedure; he began speech therapy.

The histopathological study of the surgical piece reported that the lesion had a squamous epithelium with a focus on pseudoepitheliomatous hyperplasia. Hematoxylin and eosin staining revealed that cells were round and polygonal, with a granular cytoplasm positive for periodic acid-Schiff and resistant to diastase. Immunohistochemistry confirmed a tumor of granular cells in the left vocal cord (Fig. 2). The

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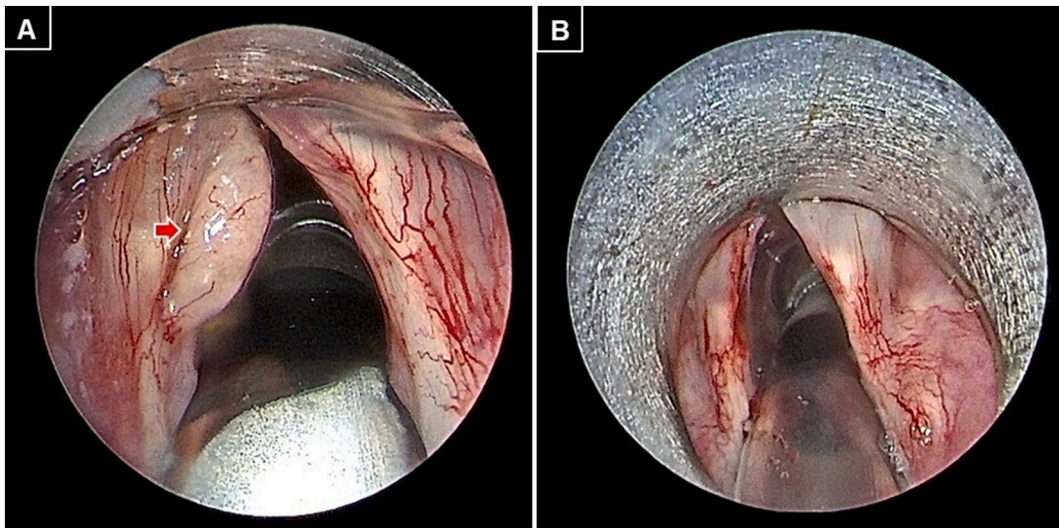
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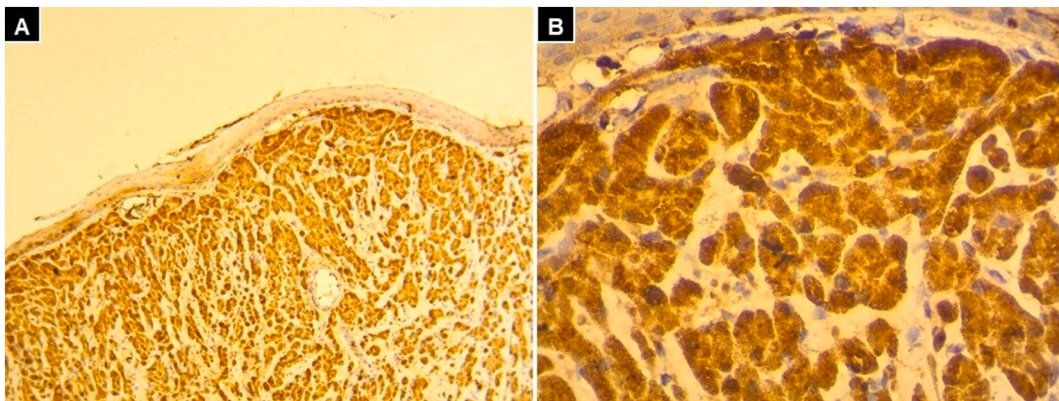
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**Fig. 1.** Endoscopic image of the tumor. A: Before surgical resection, on the left vocal cord (red arrow), involving the epithelium of the vocal cord, without invading the ligament. B: After surgical resection of the tumor, with no finding of recurrence.



**Fig. 2.** Positive immunohistochemical technique for S-100. A: (H&E  $\times 10$ ), the stroma under the squamous epithelium of the larynx shows a neof ormation composed of round and polygonal cells, of granular cells with well-defined borders. B: (H&E  $\times 40$ ), the detail of the granular appearance of the cells can be seen.

margins were free and there was no evidence of necrosis, atypical mitoses, or increased mitotic activity.

After 30 days, endoscopic control was performed with flexible fiber optic and local anesthesia, where good healing and reepithelialization of the vocal cord with good glottic closure were observed. Fourteen months after surgery, the patient had no recurrence.

### 3. Discussion

Granular cell tumor was first described in 1926 [7]. The first theory suggested a myogenic origin, ruled today ruled out by the presence of the tumor in areas without muscle fibers and the absence of myoglobin in the granular cells [8]. Currently, the neurogenic origin of the cells (Schwann cells) that form the tumor has begun to be defended, mainly on the basis of immunohistochemical studies [9]. They can occur in both pediatric and adult populations and predominantly female [8]. In contrast to the literature, our report affects a man.

The behavior of GCT is generally benign and slow-growing; however, on occasions, it can present local aggressiveness and even malignancy with distant involvement (1–2%) [10]. Laryngeal GCT most commonly presents with hoarseness but it can also manifest as dysphagia and globus pharyngeus [11]. Our case coincides with this presentation and despite its considerable size, it did not generate dyspnea or obstruction at the glottic level. In terms of location, the larynx is a rare site for this

tumor to appear, so it is not generally considered the first diagnosis in the case of dysphonia. The differential diagnoses that we initially considered were benign lesions commonly found in vocal cords, such as mucous retention cysts, with a whitish and rounded appearance, and epidermoid cysts of the vocal cord. Other less common lesions are polyps and granulomas. Polyps are lesions usually related to vocal abuse and have a smaller and more gelatinous appearance, unlike GCTs which have a more fibrotic appearance [12]. The etiology of granulomas is local trauma, due to physical or chemical aggression to the larynx. The macroscopic appearance resembles that of the GCT, but it has smaller dimensions and is usually located in the posterior portion of the larynx [12]. We should also consider papillomas as differential diagnoses, although they are more common in children. The appearance of GCT in laryngoscopy, associated with its slow evolution, can lead the doctor to carelessly treat this disease, without giving it the proper importance it deserves.

Histologically, the presence of overlying pseudoepitheliomatous hyperplasia and occasional normal mitosis can be confused with squamous cell carcinoma. However, the lack of nuclear hyperplasia or pleomorphisms and the presence of granular cells may differentiate this condition [4]. This coincides with our finding, and we consider a complete histopathological study of the surgical specimen to be relevant.

Treatment is surgical and consists of complete resection of the lesion with preservation of structures and wide margins [12]. The risk of

recurrence with free borders is 2% to 8% and with affected borders is 21% to 50% [10]. In our patient, the tumor was completely resected, and no recurrence was reported.

Long-term follow-up is recommended to detect possible recurrences and/or malignant transformation [1]. Follow-up should include an endoscopic examination and can be performed yearly due to slow growth [2]. In our department, we consider periodic follow-up up to 14 months after surgery by fiberoptic laryngoscopy to confirm recurrence.

Our report shows that although GCTs of the vocal cord are considered unusual and generally have benign behavior, it is important that all otorhinolaryngologists are familiar with this entity and the current concepts in its management.

#### 4. Conclusion

Granular cell tumor is a rare tumor of the larynx and should be considered as differential diagnosis in any adult male who presents with long-standing dysphonia. Its careful evaluation with endoscopic studies, as well as its complete surgical resection that preserves the chordal ligament, reverses symptoms, significantly improves vocal quality, and prevents future recurrences.

#### Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

#### Provenance and peer review

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#### Patient perspective

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#### Ethical approval

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#### Guarantor

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#### CRediT authorship contribution statement

Dr. Melisa B. Cura (writing the paper, literature review, and approved the final version).

Dr. Geraldine Labeledz (literature review, and interpretation).

Dr. Luciana Degli Uomini (literature review, and data analysis).

Dr. René M. Palacios Huatuco (literature review, study concept, and approved the final version).

#### Declaration of competing interest

There is no conflict to be declared.

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