*Cornous Biology,* Volume:1, Issue: 3, Pages: 5-8
https://doi.org/10.37446/corbio/cr/1.3.2023.5-8
*Case Report*

# Recognizing and managing tapia syndrome: a rare complication of orotracheal intubation

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Received: 15 July 2023 / Accepted: 25 November 2023 / Published: 31 December 2023

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**Background:** Tapia syndrome is a rare postoperative complication characterized by the simultaneous paralysis of the hypoglossal and recurrent laryngeal nerves, resulting in tongue weakness, dysphonia, and dysphagia. It is most commonly associated with airway manipulation during general anesthesia, particularly, orotracheal intubation. Awareness of this condition is crucial for early diagnosis and optimal recovery from the disease.

**Case presentation:** We report the case of a 42-year-old woman who developed Tapia syndrome following elective breast explantation and reconstruction under general anesthesia with orotracheal intubation. The surgery proceeded uneventfully with adherence to the standard anesthetic protocols. On postoperative day 19, the patient presented with right-sided tongue deviation, dysphonia, and dysphagia. Laryngoscopic and neurological evaluations revealed right hypoglossal and recurrent laryngeal nerve palsies, consistent with Tapia syndrome, likely secondary to trauma related to intubation. Suspected mechanisms include mechanical compression of the hypoglossal nerve against the hyoid bone and the recurrent laryngeal nerve within the piriform fossa, possibly aggravated by cuff overinflation or intraoperative head repositioning. The patient received conservative management, including speech and swallowing therapy, resulting in complete resolution of symptoms within four months.

**Conclusion:** Tapia syndrome should be considered in the differential diagnosis of postoperative neurological deficits involving the tongue and voice, even when intubation appears uneventful. Early recognition, multidisciplinary rehabilitation, and preventive strategies, such as careful airway management and monitoring of endotracheal cuff pressure, are essential to minimize the risk of this rare but potentially debilitating complication.

***Keywords:*** *Tapia syndrome, hypoglossal nerve palsy, recurrent laryngeal nerve palsy, orotracheal intubation, postoperative complication*

## Introduction

Tapia syndrome is a rare iatrogenic lesion of the lower cranial nerves that produces simultaneous hypoglossal and recurrent laryngeal vagal dysfunction, impairing tongue mobility, phonation, and airway protection (Wiederhold, 2020). It is most often associated with orotracheal intubation, with incidence underestimated due to under recognition (Tapia, 1904).

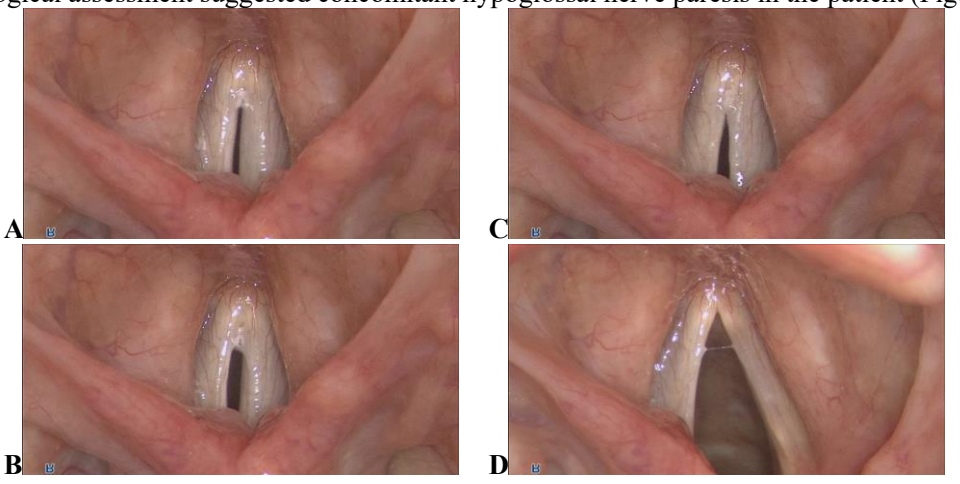
Iatrogenic mechanisms, particularly improper cuff inflation or excessive neck extension during airway instrumentation, have been identified as precipitating factors for the combined hypoglossal-recurrent laryngeal neuropathy that characterizes Tapia syndrome (Tapia, 1904; Tham et al., 2019; Wiederhold, 2020). We present a case of Tapia syndrome following elective explantation and breast reconstruction surgery, highlighting the importance of early diagnosis and multidisciplinary management.

## Case presentation

A 42-year-old woman with a history of multiple breast surgeries, hysterectomy, and prior liposuction underwent explantation of breast implants with mastopexy and abdominoplasty with rectus plication. The procedure was uneventful, with standard orotracheal intubation and routine anesthetic management. The surgical procedure proceeded uneventfully under routine anesthetic management, with successful orotracheal intubation on the first attempt, according to established protocols. Postoperative evolution during the first two weeks was satisfactory. On postoperative day 19, the patient developed new-onset dysphonia, tongue weakness, and left tongue deviation. Clinical examination confirmed dysphonia, tongue paresis with ipsilateral deviation, and unilateral vocal cord paralysis (Figure 1).

**Figure 1. Clinical photograph showing tongue deviation to the left, attributable to hypoglossal nerve neuropraxia in the context of Tapia syndrome**

The patient was jointly evaluated by the otolaryngology and anesthesiology departments. Laryngoscopic examination revealed left vocal cord paralysis with preserved contralateral mobility, which was consistent with recurrent laryngeal nerve injury. Neurological assessment suggested concomitant hypoglossal nerve paresis in the patient (Figure 2(A-D)).




**Figures 2 (A-D). Flexible fiberoptic laryngoscopy revealed immobility of the left vocal fold in a paramedian position, with a slight arching configuration and minimal pooling of saliva**

The constellation of findings established the diagnosis of Tapia syndrome, likely secondary to orotracheal intubation trauma. Conservative management with speech and swallowing rehabilitation was initiated, leading to progressive clinical improvement and complete resolution of the symptoms within four months.

## Discussion

Tapia syndrome, first described in 1904, is a rare but important cause of postoperative morbidity. It results from compression or stretching of the vagus and hypoglossal nerves at the lateral pharyngeal wall during intubation (Tapia, 1904). Risk factors include prolonged intubation, oversized endotracheal tubes, excessive cuff pressure, and head positioning (Lykoudis & Seretis, 2012). Mechanical compression of the hypoglossal nerve by an overinflated LMA (Laringeal Mask Airway) cuff against the hyoid bone, often exacerbated by nitrous oxide, together with inadvertent vagal stimulation during epiglottic elevation, constitute the principal mechanisms underlying simultaneous vagus hypoglossal neuropathy during orotracheal intubation (Takahoko et al., 2014). In addition, intraoperative head and neck repositioning can alter cuff alignment, increasing mechanical stress on both nerves and heightening the likelihood of neuropathy (Takahoko et al., 2014). The other proposed mechanism involves simultaneous injury of the hypoglossal nerve in its suprahyoid portion and the recurrent laryngeal nerve at the level of the hypopharynx (piriform fossa). In this mechanism, passage of the endotracheal tube through the oropharynx would compress the hypoglossal nerve against the greater horn of the hyoid bone, while subsequent inflation of the endotracheal cuff would press the recurrent laryngeal nerve against the posteromedial margin of the thyroid cartilage, thereby producing a direct traumatic effect (Lykoudis & Seretis, 2012; Takahoko et al., 2014). Although self-limiting in many cases, recovery is variable and may extend over months. Management focuses on supportive care, voice therapy, and rehabilitation. Corticosteroids and neurotrophic agents have been proposed, though evidence remains anecdotal (Lykoudis & Seretis, 2012). Preventive measures such as careful tube selection, monitoring cuff pressures, and minimizing manipulation are paramount (Takahoko et al., 2014). This case emphasizes the need for heightened awareness among anesthesiologists, surgeons, and otolaryngologists. Prompt recognition allows timely referral for speech therapy and reduces the risk of chronic dysphonia and dysphagia. This case highlights that Tapia's syndrome may occur even when orotracheal intubation is performed smoothly and in strict accordance with anesthetic protocols. Therefore, clinicians should remain aware of this rare complication and include it in the differential diagnosis of postoperative neurological deficits following procedures performed under general anesthesia..

## Conclusion

Tapia syndrome should be considered in postoperative patients presenting with dysphonia and tongue weakness after orotracheal intubation. Early multidisciplinary evaluation is essential for diagnosis, supportive management, and prognosis counseling. Preventive strategies during airway management remain the best safeguard against this complication.

## Acknowledgement

The authors wish to express their sincere gratitude to the surgical and nursing teams of San Isidro Hospital, Buenos Aires, Argentina, for their invaluable support during patient care and postoperative follow-up. Special appreciation is extended to the Department of General Surgery for providing the institutional framework that made this study possible.

## Author contributions

Jorge Alberto Espinosa-Reyes, MD: Conceptualized the study, performed all surgical procedures, developed the described technique, and contributed the clinical cases, images, and initial draft of the manuscript.
Raul Daza, MD: Provided expert input on reconstructive and aesthetic principles, contributed to intraoperative planning, and critically reviewed the manuscript for surgical accuracy and methodological integrity.
Freddy Rodriguez, MD: Managed the anesthetic protocol for all cases, ensured intraoperative safety, and contributed to the discussion on anesthesia-related considerations in auricular keloid surgery.
Victor Julio Hernández Alarcón, MD: Assisted in patient evaluation and postoperative follow-up, and contributed to the literature review regarding differential diagnoses and management of auricular lesions.
Juan Carlos Ochoa Alvarez, MD: Conducted the comprehensive scientific editing and revision of the manuscript, ensuring clarity, structure, and academic rigor. Coordinated the integration of contributions from all co-authors and finalized the version for submission.
Mariana Espinosa Nieto, MS3: Assisted in data collection, literature research, and preparation of tables and figures, and contributed to manuscript formatting and reference organization.

All authors have read and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

## Conflict of interest

The authors declare no conflict of interest.

## Ethics approval

This study did not involve animals. Institutional ethics committee approval was not required, as the work reports clinical cases managed according to established standards of care.

## Ethical concern and informed consent

All patient information was handled with strict confidentiality. Written informed consent was obtained from all patients for the use of their clinical data and images for academic and scientific publication. Written informed consent was obtained from all patients for the use of clinical photographs in this publication.

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