

LETTER TO THE EDITOR

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A case of combined cranial nerve palsy after general anesthesia

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To the editor

We encountered concomitant paralysis of the unilateral vocal cord and tongue after upper extremity surgery under general anesthesia. This presentation is very rare but may be clinically instructive for both anesthesiologists and surgeons.

Case presentation

A 51-year-old man (165 cm, 81 kg) underwent internal fixation of a left proximal humeral fracture under general anesthesia. After inducing anesthesia with propofol, remifentanyl, and rocuronium, an 8.0-mm tracheal tube was placed using a Macintosh blade uneventfully. The depth and intracuff pressure of the tracheal tube were 23 cm and ≤ 12 cmH₂O, respectively. The 105-min long procedure was performed in the beach-chair position. Anesthesia was uneventful, except for the displacement of the patient's head and neck, which required repositioning—the head and neck were often deflected to the right while traction was applied to the left forearm during fracture reduction. After emergence from anesthesia, the patient was hoarse. On postoperative day 1, he complained of dysarthria, dysphagia, and leftward deviation of the tongue. On postoperative day 2, magnetic resonance imaging of the head did not show any abnormalities. Subsequent swallowing videofluoroscopy and laryngeal endoscopy revealed pharyngeal retention without aspiration and left vocal cord paralysis. He was diagnosed with

combined left hypoglossal and recurrent laryngeal nerve palsy. All symptoms subsided within 8 months, without systemic administration of corticosteroids.

Discussion

Combined unilateral palsy involving extracranial lesion of cranial nerves (CN) X and XII is known as Tapia's syndrome; this is primarily caused by carcinoma, inflammation, or injuries and rarely occurs after general anesthesia [1, 2]. Mechanisms underlying anesthesia-related Tapia's syndrome remain unclear. Several plausible explanations involve the path of CN X and XII in the lateral wall of the oropharynx, where these two nerves run in parallel, near the mucosa (Fig. 1) [3–5]. CN X and XII in this region might be vulnerable to direct compression by oropharyngeal instrumentation, including a laryngoscope blade, tracheal tube, supraglottic airway device, transesophageal echocardiography probe, or throat pack [1, 3–10]. Excessive head and neck displacement during airway manipulation and surgery might cause malpositioning of these instruments; it might also stretch CN X and XII against the transverse process of the first cervical vertebra, as these nerves cross each other near this process [1, 4, 5, 7–13]. Compression and/or stretching of CN X and XII could cause neurapraxia [1–3, 5, 9]. Concomitant CN X and XII neurapraxia could occur at anatomically separate sites, owing to compression by oropharyngeal instrumentation [1, 2, 8–10]. Most patients

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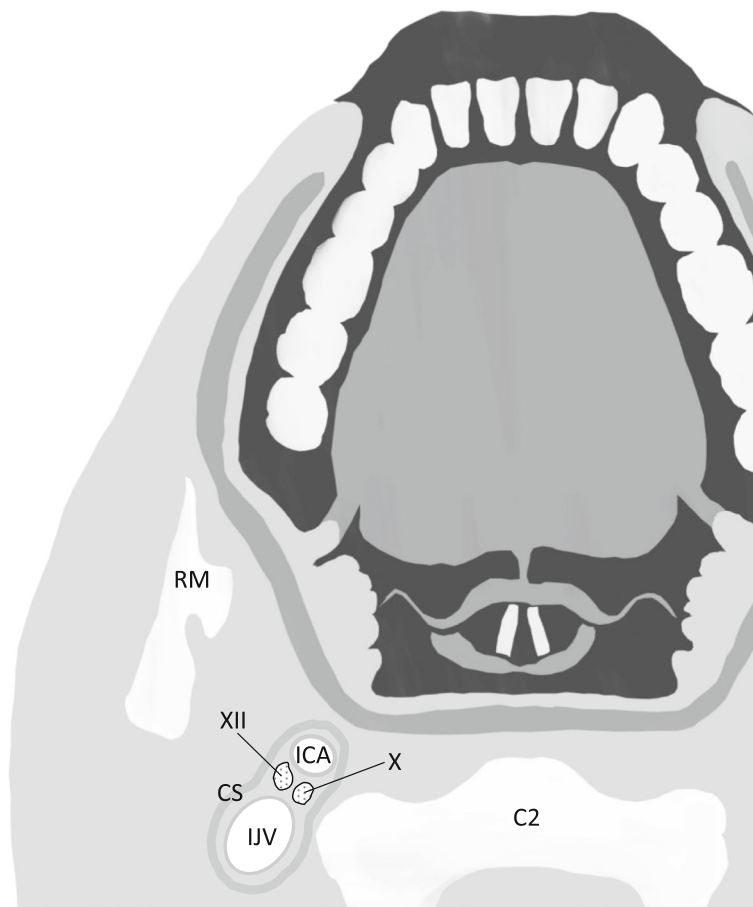


Fig. 1 A sectional illustration of the oropharynx at the level of the second cervical vertebral body (C2). Note that cranial nerves X and XII are adjacent to the carotid sheath (CS) and are located immediately behind the mucosal surface of the lateral oropharyngeal wall. RM ramus of the mandible, IJV internal jugular vein, ICA internal carotid artery

recover from neurological deficits, but some may require corticosteroid therapy [2, 7, 12]. Anesthesiologists and surgeons should consider the possibility of combined CN X and XII palsy occurring in various procedures not involving direct access to these nerves [7, 12]. Communication between anesthesiologists and surgeons about posture may prevent this complication. Moreover, close attention should be given to coexisting symptoms in patients with hoarseness, a common complication of general anesthesia; this will ensure the accurate and timely diagnosis of Tapia's syndrome, possibly preventing poor recovery or a life-threatening outcome, such as aspiration [4, 11, 14].

Abbreviations

CN: Cranial nerve

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Authors' contributions

CU and TI conducted perioperative anesthetic management of the patient. TY wrote the manuscript. All authors read and approved the final manuscript.

Ethics approval and consent to participate

Not applicable

Consent for publication

The authors obtained written consent for publication from the patient.

Competing interests

The authors declare that they have no competing interests.

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References

1. Wadelek J, Kolbusz J, Orlicz P, Staniaszek A. Tapia's syndrome after arthroscopic shoulder stabilisation under general anaesthesia and LMA. *Anaesthesiol Intensive Ther.* 2012;44:31–4.

2. Varedi P, Shirani G, Karimi A, Khiabani K, Bohluli B. Tapia syndrome after repairing a fractured zygomatic complex: a case report and review of the literature. *J Oral Maxillofac Surg*. 2013;71:1665–9.
3. Lykoudis EG, Seretis K. Tapia's syndrome: an unexpected but real complication of rhinoplasty: case report and literature review. *Aesthet Plast Surg*. 2012;36:557–9.
4. Emohare O, Peterson E, Slinkard N, Janus S, Morgan R. Occam paradox? A variation of Tapia syndrome and an unreported complication of guidewire-assisted pedicle screw insertion. *Evid Based Spine Care J*. 2013;4:132–6.
5. Park CK, Lee DC, Park CJ, Hwang JH. Tapia's syndrome after posterior cervical spine surgery under general anesthesia. *J Korean Neurosurg Soc*. 2013;54:423–5.
6. Fujiwara S, Yoshimura H, Nishiya K, Oshima K, Kawamoto M, Kohara N. Tapia's syndrome following transesophageal echocardiography during an open-heart operation: a case report (in Japanese with English abstract). *Rinsho Shinkeigaku*. 2017;57:785–7.
7. Coninckx M, Cardoen S, Hemelsoet D. Tapia's syndrome in the intensive care unit: a rare cause of combined cranial nerve palsy following intubation. *Acta Neurol Belg*. 2015;115:533–7.
8. Brandt L. Tapia's syndrome: rare complication of securing airways (in German with English abstract). *Anaesthesist*. 2015;64:122–7.
9. Mumtaz S, Henry A, Singh M. Tapia's syndrome. *Anesth Prog*. 2018;65:129–30.
10. Silva-Hernandez L, Gil Rojo C, Gonzalez Garcia N, Porta-Etessam J. Tapia syndrome following orotracheal intubation: a case report. *Neurologia*. 2018. <https://doi.org/10.1016/j.nrl.2018.05.007>.
11. Lim KJ, Kim MH, Kang MH, Lee HM, Park EY, Kwon KJ, Lee SK, Choi H, Moon HS. Tapia's syndrome following cervical laminoplasty -a case report. *Korean J Anesthesiol*. 2013;64:172–4.
12. Gevorgyan A, Nedzelski JM. A late recognition of Tapia syndrome: a case report and literature review. *Laryngoscope*. 2013;123:2423–7.
13. Silva AH, Bishop M, Krovvidi H, Costello D, Dhir J. Tapia syndrome: an unusual complication following posterior cervical spine surgery. *Br J Neurosurg*. 2017;1–2. <https://doi.org/10.1080/02688697.2017.1318109>.
14. Jee C, Kim HJ, Kwak K-H. A case report of Tapia's syndrome after mastectomy and breast reconstruction under general anesthesia. *Medicine*. 2018;97:e10980.

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