

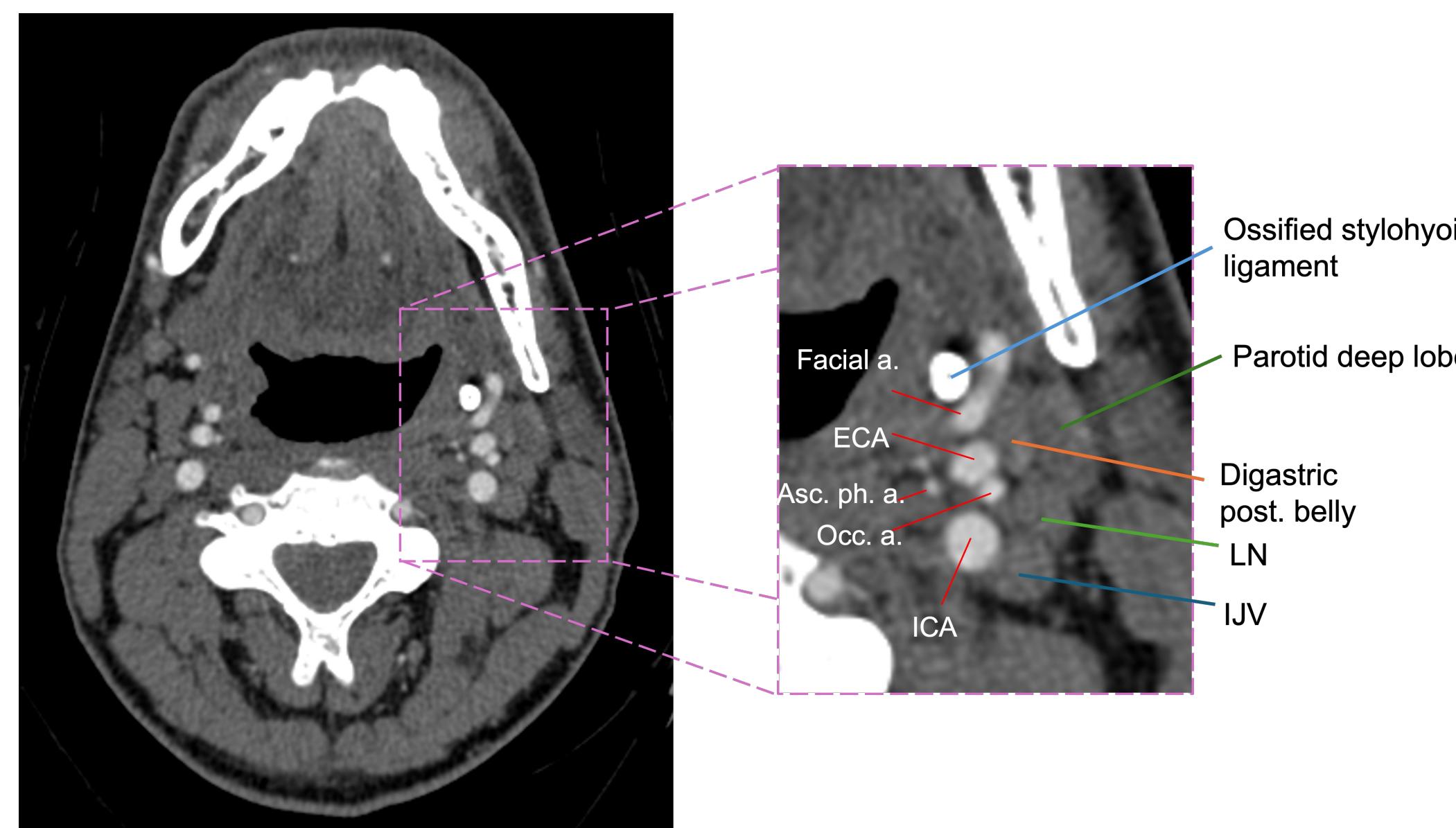
# Posterior Belly of the Digastric: Not Always the Resident's Friend?

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## Introduction

- The external carotid artery (ECA) originates at the common carotid bifurcation, giving off eight branches.
- Typically, it courses deep to the posterior belly of the digastric (PBD) before dividing into the maxillary and superficial temporal arteries.
- A superficial course of the ECA relative to the PBD is extremely rare (0.37%) (Kawai, 2016).
- Awareness of such anomalies is crucial for safe neck dissection and vessel preservation.

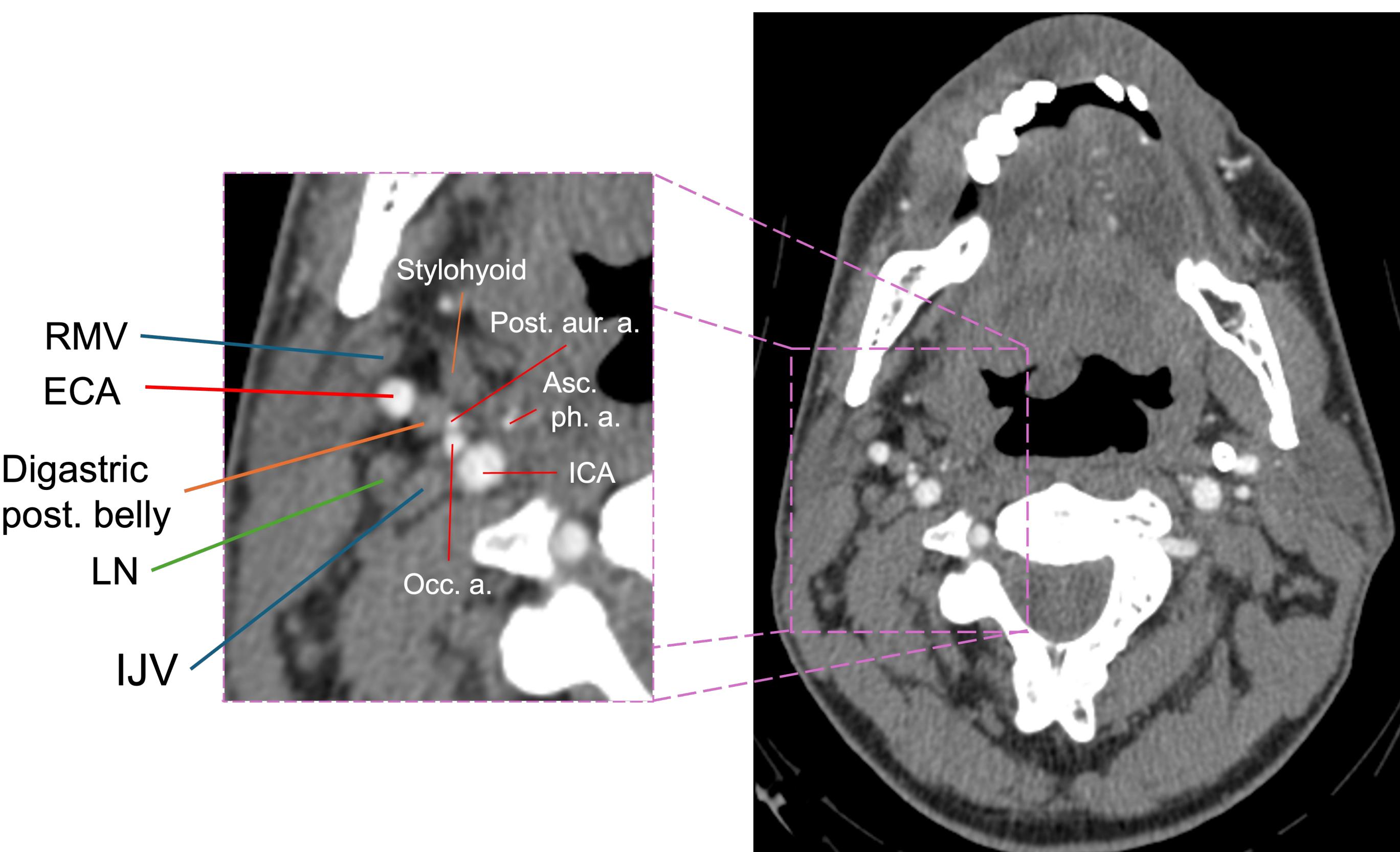
**Figure 1.**  
Head CT demonstrating normal anatomic position of the ECA deep to the PBD.



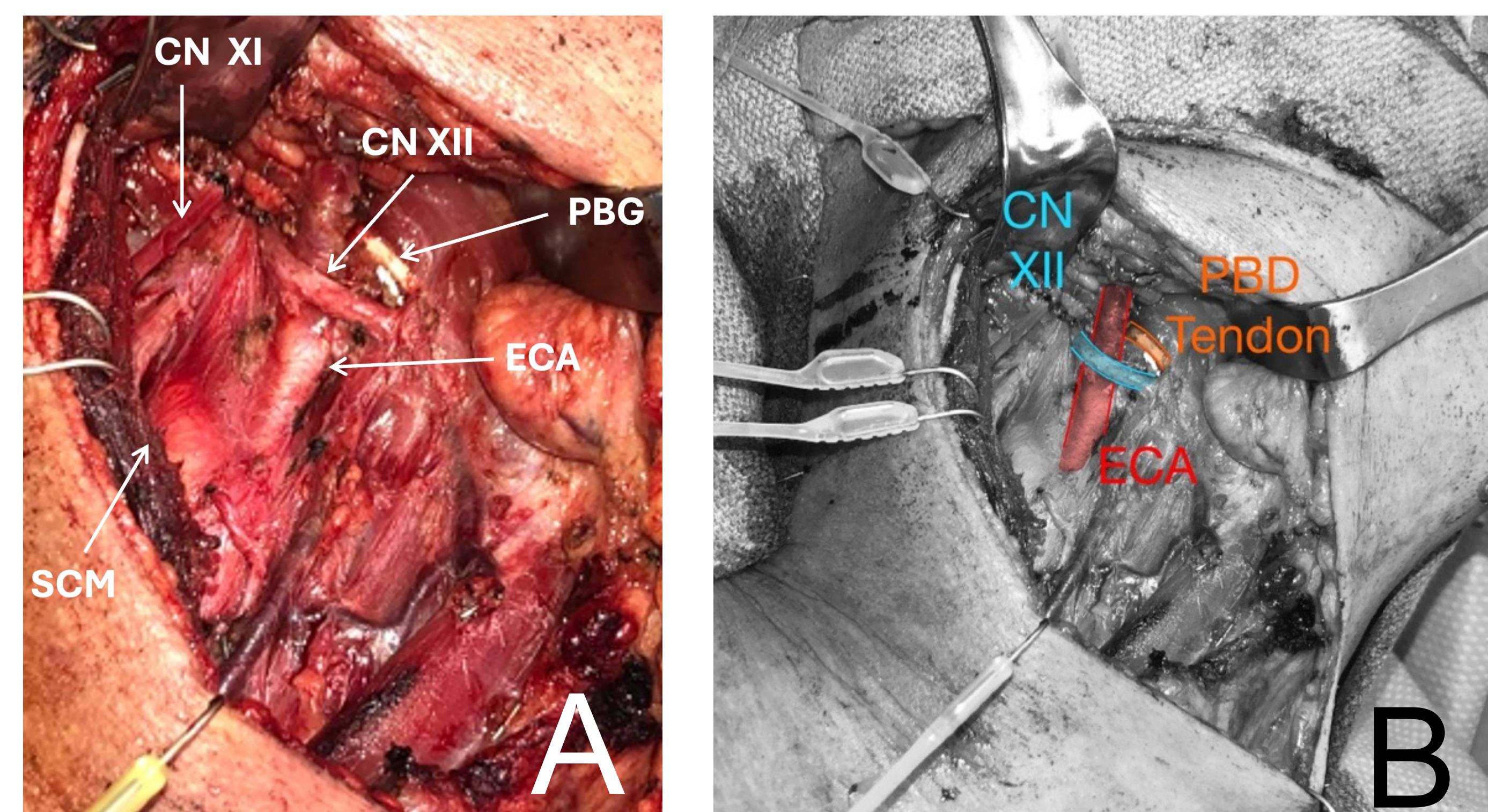
## Case Presentation

- 59 yo M undergoing surgery for tonsillar SCCa.
- Planned procedure: right radical posterolateral oropharyngectomy, pharyngoplasty, and modified radical neck dissection.
- During dissection: Landmarks (SCM, spinal accessory nerve, submandibular gland) identified.
- Unexpected finding: **The ECA was found coursing superficial (anterior) to the PBD rather than its usual deep position.**
- Required meticulous dissection to preserve the aberrant vessel.

## Imaging



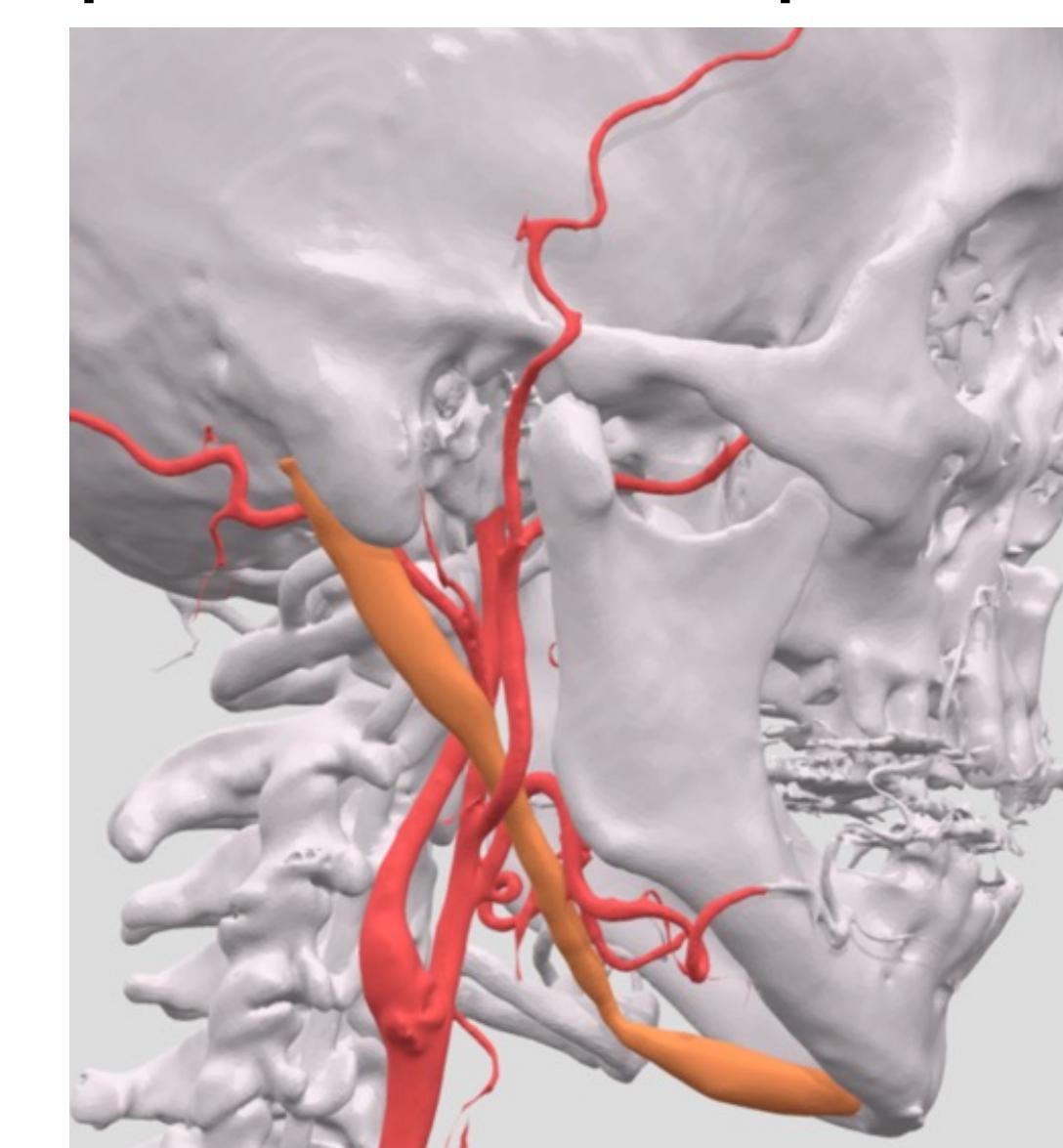
**Figure 2. CT demonstrating anterior position of ECA.**  
Retromandibular vein (RMV), External carotid artery (ECA), Posterior Belly of the Digastric (Digastric post. belly), Internal jugular vein (IJV), Posterior auricular artery (Post. aur. a.), Ascending pharyngeal artery (Asc. ph. A), Internal carotid artery (ICA), Occipital artery (Occ. a.),



**Figure 3A & 3B.** Intraoperative pictures of the right neck. Cranial nerve 12 (CN XII), external carotid artery (ECA), posterior belly of the digastric (PBD)

## Discussion

- Preservation of the ECA is critical in head and neck surgery.
- Branching variations** of the ECA are well documented<sup>2-8</sup>, but **course variations relative to suprathyroid muscles are rare**.
- Prior reports describe ECAs anterior to the **stylohyoid**, but still deep to the PBD.
- Only one cadaveric study** reported ECA superficial to the PBD (Kawai, 2016).
- To our knowledge, this is the **first in vivo case report** of this anomaly.
- Clinical relevance:** Surgeons should anticipate such variations to avoid iatrogenic injury.



**Figure 4.** 3D reconstruction of anomalous ECA relative to PBD.

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