



RESEARCH ARTICLE

RETROPHARYNGEAL CAROTID IN A CASE OF ORAL MALIGNANCY: A CATASTROPHE
WAITING TO HAPPEN?

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ABSTRACT

Normal Internal Carotid artery run a straight and branch free course in the neck. However, due to abnormal embryological development or atherosclerosis/ fibromuscular dysplasia there might arise an aberration in the course of the internal carotid arteries. These may be medial deviation, kinking or coiling. Medial deviation may cause a retropharyngeal location. Ignorance of this location may lead to catastrophic complications in various surgical and anesthesia procedures involving the pharynx. We present a case of a 71year old male patient with oral malignancy and right-sided retropharyngeal common and internal carotid arteries with a brief review of literature to signify the clinical importance of this anatomical variant.

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INTRODUCTION

A 71year old male patient who is a chronic smoker presented with a biopsy proven squamous cell carcinoma of the lower gingivobuccal sulcus. Patient underwent contrast enhanced computed tomography (CECT) for the purpose of local tumor staging, CECT revealed an ill-defined soft tissue mass associated with destruction of underlying body of mandible (tumor stage T4a). Arterial phase CT images revealed an aberrant medial deviation of the right common and internal carotid arteries, extending into the retropharyngeal space causing appreciable bulge in the oropharynx (Figure 1). No luminal narrowing was seen. Contralateral carotid vessels were normal. Repeat clinical examination confirmed the presence of a pulsatile bulge on the right side of oropharynx, which previously went unnoticed and this finding was well correlated with volume rendered CT images (Figure 2).

DISCUSSION

Internal carotid arteries usually have a straight course in the neck and any deviation from this is considered an aberration. Variations in the normal straight and course of the cervical carotid arteries may exist in form of medial, lateral or ventrodorsal displacement forming C or S shape or kinking and

Coiling forming a double loop. These variations are caused by abnormal embryology in children. Embryologically, the Internal carotid arteries originate from the 3rd aortic arch and dorsal aorta. The dorsal aortic roots descend downward in the chest around the 8th week, leading to the straight course of the internal carotid artery. Any variation in this normal development may lead to abnormal course of carotid. (Rojaset *et al.*, 2002) In adults, Atherosclerosis or fibromuscular dysplasia may lead to medial deviation of the internal carotids. Position of internal carotid is classified by their location into 3 types: lateral to vertebral foramen (type 1), between the foramen and uncovertebral joint (type 2) and medial to uncovertebral joint (type 3). The incidence of severe aberrations is about 2.6% and has a predilection for elderly females. (Koreckijet *et al.*, 2013) A medial deviation usually causes the carotids to lie in the retropharyngeal space. Clinically a pulsatile retropharyngeal submucosal mass may be seen. Patient is generally asymptomatic. Few present with dysphagia, hoarseness of voice or foreign body sensation. This normal variant may mimic other pathologies of oral or pharyngeal area like tonsillitis, adenotonsillitis or para/retropharyngeal mass. (Fix *et al.*, 1996; Galletti *et al.*, 2002) Imaging studies are diagnostic. CT Angiography is the modality of choice to diagnose this condition. The entire course of the internal carotid arteries with relation to surrounding structures can be visualized. Ultrasound Doppler and MR angiography can also be utilized. (Palacios *et al.*, 2005)

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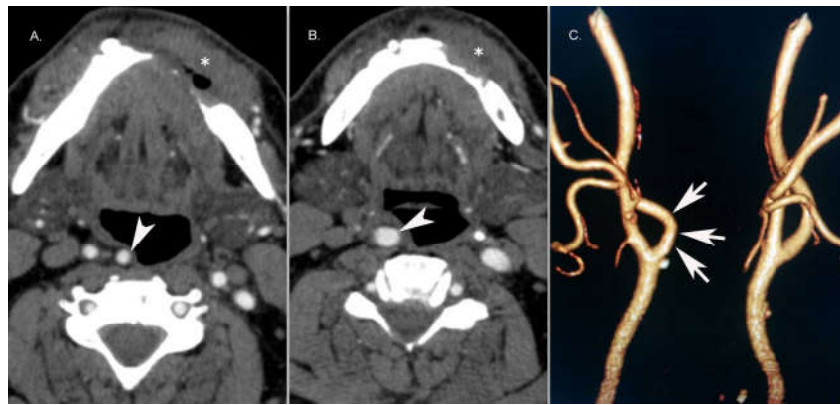


Figure 1. 71year old male with retropharyngeal right CCA and ICA. A. & B. Axial CECT images in arterial phase showing retropharyngeal location of right CCA and ICA (arrowheads) and an ill-defined mass (asterisk) is seen involving left gingivobuccal sulcus with destruction of underlying mandible C. Coronal volume rendered CT image showing abrupt medial deviation of the right ICA

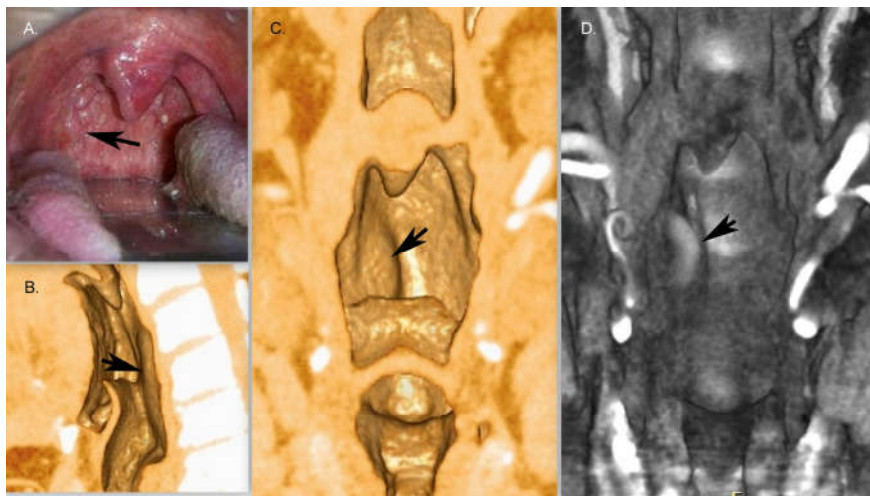


Figure 2. 71year old male with retropharyngeal right CCA and ICA. A. Clinical photograph of the patient showing a subtle bulge on the right side of oropharynx (arrow). Sagittal B. and coronal C. and D. volume rendered CT images showing bulge over right side of oropharynx caused by an aberrant ICA

Clinical implications of this variant are manifold. It may lead to obstructive sleep apnea due to its retropharyngeal location (Tsuiki *et al.*, 2008). Catastrophic complications can occur due to injury to carotids during pharyngeal interventions or surgeries if the location is not known. Interventions involving the pharynx like Tracheal intubation, nasogastric or trans esophageal echocardiography probe placement or unnecessary biopsy can lead to injury/rupture of carotid with catastrophic manifestations if the retropharyngeal location is unknown. Moreover, during surgery a careful watch should be maintained, especially in pediatric surgeries like tonsillectomy, adenoidectomy or uvulopalatopharyngoplasty. (Postma *et al.*, 1995; Galletti *et al.*, 2002) Anesthesia blocks for glossopharyngeal nerve in the pharynx can lead to instillation of anesthesia in the carotid artery leading to cardiac arrhythmias. And various other pharyngeal interventions can have implications by this abnormal location of the internal carotids.

Retropharyngeal carotids are generally discovered accidentally and per se don't require any treatment. However they should be a permanent part of the patients records once found. Retropharyngeal internal carotid arteries, though a normal anatomical variant, but has implications of pathological concern if unknown. A knowledge of this variant is a must for surgeons, anesthesiologist and clinicians.

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