

An Anatomical Variant: Low Lying Common Carotid Artery Bifurcation

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ABSTRACT

The common carotid artery usually bifurcates into the internal and external carotid arteries at the level of C3-C4. Injury to common carotid artery during neck dissection is encountered rarely. Knowing the anatomical variation of common carotid like low lying bifurcation would prevent inadvertent injury especially by budding head-neck surgeons. We report a case of 46-year-old male undergoing surgery for carcinoma of tongue with Supraomohyoid neck dissection. He had low-lying bifurcation of the common carotid artery.

Keywords: Low lying common carotid artery, Supraomohyoid neck dissection, Carcinoma of tongue.

How to cite this article: Chauhan YS, Mukherji S. An Anatomical Variant: Low Lying Common Carotid Artery Bifurcation. *Int J Head Neck Surg* 2013;4(2):105-106.

Source of support: Nil

Conflict of interest: None declared

INTRODUCTION

Neck dissections of any type is performed to selectively or radically removes level Ia-Ib, IIa-IIb, IIIa-IIIb, IV, V and VI lymph node groups, along with sternocleidomastoid muscle, internal jugular vein, spinal accessory nerve, submandibular glands along with deep cervical fascia. It is performed depending on the site of lesion and aggressive nature of lesion. The common carotid artery (CCA) divides into two terminal branches: Internal and external carotid artery. Ozgur et al¹ emphasized that knowledge of the CCA and its branches are important for vascular surgical procedure in the neck region. Gulsen et al² mentioned that the CCA generally bifurcates into the internal and external carotid arteries at the level of C3-C4. Ito et al³ found that the location of the external and internal arteries was reversed. Lucev et al⁴ mentioned that lack of experience regarding possible variations could lead to fatal errors. The great blood vessels and their exploration are essential for a better anatomic knowledge of the neck. This knowledge is very important in choosing surgical approaches and neck dissection by head and neck surgeons for benign and malignant tumors of head and neck region including skull base surgeries. It also includes the list of vascular surgeons, neurosurgeons and interventional radiologists working in collaboration with head and neck surgeons.

CASE REPORT

In this article, we report the case of 46 years old male presented with an ulceroproliferative lesion of tongue and diagnosed

as carcinoma of tongue. The patient underwent near total glossectomy with supraomohyoid neck dissection.

During dissection of carotid triangle, low lying bifurcation of CCA was noted (Fig. 1). The bifurcation was seen at the level of C6 (Fig. 2). Superior thyroid artery was found to be directly branching at C6 to form superior vascular pedicle.

Due rarity of presentation of such low lying bifurcation, we add to the knowledge of head and neck surgeons about such anatomical variation of great vessel.

DISCUSSION

The Carotid Bifurcation

Several anatomic textbooks state that the CCA bifurcates into the external and internal carotid arteries at the level of the

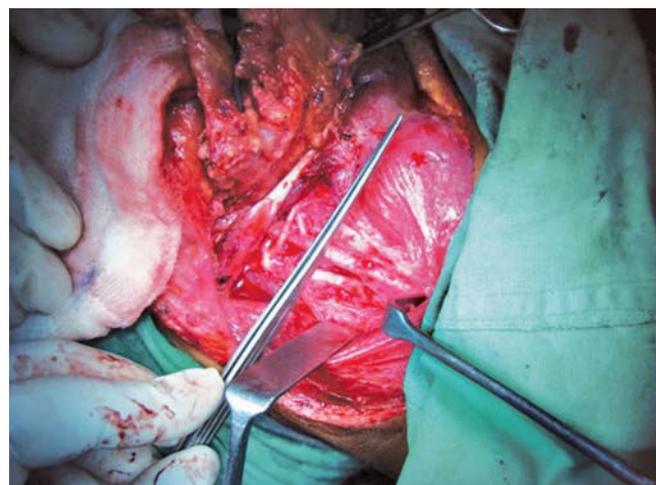


Fig. 1: Upper border of thyroid cartilage

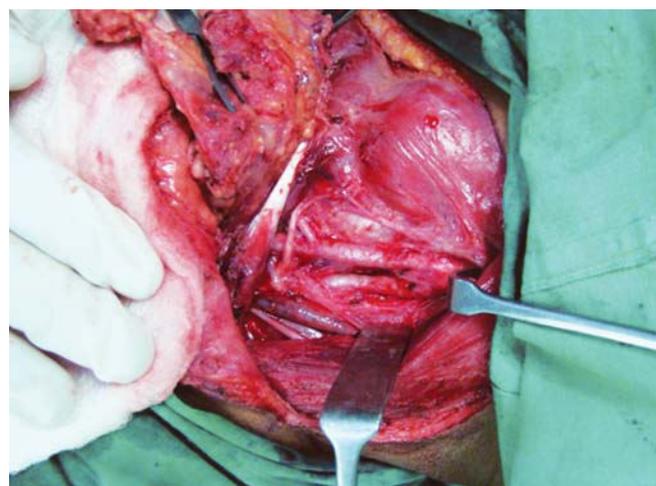


Fig. 2: Low lying bifurcation of CCA

superior border of the thyroid cartilage.^{1,5-7} Lucev et al² found this to be true in 50% of cases and Ilic et al⁸ reported a similar finding in 58% of cases. In addition, Espalieu et al⁹ found it to be true in 65% of cases, as well as Von Poisel and Golth⁷ who found it in 67%. CCA may bifurcate higher or lower than the usual; a high bifurcation is more common. The bifurcation can occur as high as the hyoid bone or even higher than, or as low as, the lower border of thyroid cartilage. These variations are of clinical importance for surgical approaches in the head and neck region.

Standring⁶ mentioned a higher level of bifurcation opposite the hyoid bone. Ito et al³ found this level in 31.2% and it was detected in 12.5% of the cases examined by Lucev et al.² It was also described by Kipre et al¹⁰ in 13% of his examined cases.

Ilic et al⁸ in his study found carotid bifurcation at the level below the upper border of the thyroid cartilage in 11% of his cases. Lucev et al² found it in 12.5% of cases, and Kipre et al¹⁰ recorded it in 15% of cases.

The present article with respect to available literature suggests that vessels show great variability. Thus, surgeons must be very cautious and take all possibilities into consideration during neck dissections.

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