

Surgical anatomy notes in transoral approaches to the cervical spine and craniovertebral junction

Introduction

Transoral-transpharyngeal approach¹ is classified as one of the anterior surgical approaches to the craniovertebral junction which allows exposing the upper cervical spine and skull base and provides access to the C1 and C2 and also anterior clivus for surgery of the tumors, bone decompression, biopsy, drainage of infections etc.

It is important to have detailed knowledge about the surgical anatomy of the transoral approaches.²⁻⁴ Anatomy of the pharyngeal wall and vertebral artery is of great importance to be understood to do these approaches. There are two layers in the pharyngeal wall, the prevertebral fascia and the mucosa which pharyngeal arteries and veins, palatine and pharyngeal branches of the carotid exist in the retropharyngeal space between these layers. Anterior tubercle of the C1 is at the center of the prevertebral space which is located posterior to the prevertebral fascia. Longus cervicis and longus capitis muscles will go in a direction from inferolateral to superomedial. Anterior longitudinal ligament can be found with retracting of these muscles. Anterior longitudinal ligament continues as the atlanto-occipital membrane which the anterior arch of the atlas and foramen magnum would be connected with each other by this membrane. Atlantoaxial joints can be found by lateral retraction of the prevertebral fascial mucosa and muscles.^{5,6}

Vertebral artery at the C6 level, enters the osseous part of the cervical spine and ascends to C2 while being encased in transverse foramina. After reaching the C2, it goes in a posterolateral direction and then enters the transverse foramen of the C1. Then it goes in a medial direction and after continuing its course superiorly, it enters the foramen magnum. During C1 and C2 drilling, paying attention to this anatomical note which the C2 part of the vertebral artery is located more anteromedially in comparison with C1 part, is important to avoid encountering vertebral artery and causing injuries to it unexpectedly during the surgical approaches. Paying enough attention to the imaging studies of the craniovertebral junction and vertebral artery course before surgery, is necessary to avoid causing such problems.

Deep cervical fascia makes the carotid sheath which contains the common carotid artery. At the level of C4, the common carotid artery bifurcates into the external and internal carotid arteries. Paying careful attention to the internal carotid artery anatomical course is of great importance during transoral approaches to the cervical spine and craniovertebral junction. Internal carotid artery goes in an anterior direction to the upper vertebrae's transverse processes. Before it enters the skull base, it is located in an anterolateral direction to the arch of C1 and this should be of careful attention while doing the surgical approaches.⁷⁻¹¹

Having detailed knowledge about these anatomical notes and paying careful attention to them, make transoral approaches to the cervical spine and craniovertebral junction more efficient with lowest possible complications.

Volume 11 Issue 5 - 2019

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Received: July 22, 2019 | **Published:** September 16, 2019

Acknowledgments

None.

Conflicts of interest

The author declares there is no conflict of interest.

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