

Surgical Significance of Variable Tendinous Attachment of Stylohyoid Muscle –A Case Report

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Abstract

Stylohyoid muscle is one of the important suprahyoid muscles. The stylohyoid muscle connects the hyoid bone to the base of the mandible and the skull. The stylohyoid muscle elevates and retracts hyoid bone. This muscle functions in association with other suprahyoid muscles. When the infrahyoid muscles stabilize the hyoid bone, these suprahyoid muscles depress the mandible and help with the wide opening of the mouth. They also play an active role in improving the flexion movement of the neck and in the production of treble sounds. It initiates a swallowing action by pulling the hyoid bone in a posterior and superior direction.

Sometimes the stylohyoid muscle may be double or may be absent .In present case the stylohyoid muscle showed tendinous attachment to the hyoid bone, instead of muscular attachment.

Keywords: Stylohyoid, Hyoid bone, Tendon

Introduction

Stylohyoid muscle in Latin is also called as musculus stylohyoideus. Its origin is by a small tendon which arises from the posterior surface of styloid process, close to its base. Then it passes downwards and forwards and inserts at the junction of the body and greater cornu of hyoid bone. At its insertion it is perforated by the intermediate tendon of digastric muscle . The stylohyoid muscle is responsible for connecting the hyoid bone to the base of the mandible and the skull. Functioning of this muscle is in association with other suprahyoid muscles. When the infrahyoid muscles are responsible for stabilization of the hyoid bone, these suprahyoid muscles causes depression of the mandible and help in the wide opening of the mouth. These muscles also play an active role in improving the movement of flexion of the neck and also help in the production of treble sounds.This muscle is also responsible for elevation of the tongue.

The muscle lies anteromedial to the superior margin of the posterior belly of the digastric muscle. The styloglossus muscle lies medially, and anterior to the stylohyoid muscle. The stylopharyngeus muscle is located between the stylohyoid and the styloglossus muscle. Near its insertion at the hyoid bone, the intermediate tendon of the digastric muscle runs in the center of the tendon of the stylohyoid muscle. This muscle confines the posteroinferior boundary of the digastric or submandibular triangle. The facial artery after arising from the external carotid artery travels upwards on the superior constrictor muscle deep towards stylohyoid muscle. The posterior auricular artery runs superficially towards the stylohyoid.

There lies an intermuscular space between the stylohyoid muscle and the styloglossus muscle. This space gives passage to the external carotid artery superiorly and the facial artery inferiorly as it courses from the retrostyloid area to the prestyloid area¹.

It initiates a swallowing action by pulling the hyoid bone in a posterior and superior direction.

This muscle is responsible for elevation of the hyoid bone, draws it backwards and elongates the floor of mouth.

The stylohyoid muscle functions during chewing, swallowing, and phonetics. Together with the infrahyoid and other suprahyoid muscles, it contributes to the fixation of the hyoid bone. The stylohyoid muscle along with two other styloid muscles, i.e. the styloglossus muscle and the stylopharyngeus muscle form the 'bunch of Riolanus.' They play an important role in improving the flexion of the neck. and in the production of treble sounds.

The stylohyoid muscle receives its vascular supply from branches of the external carotid artery i.e. facial, posterior auricular or occipital arteries. Lymphatic

drainage from this part of the neck goes into the submental and submandibular group of lymph nodes. All these lymph nodes finally drain into the deep cervical group of lymph nodes.

Nerve supply of this muscle is derived from facial nerve, the nerve of second pharyngeal arch. It is the stylohyoid branch of the facial nerve (cranial nerve VII) that innervates this muscle. Sometimes, the nerve to the posterior belly of digastric (branch of the facial nerve) also gives a branch to the stylohyoid muscle. During the extracranial course of facial nerve (after its exit from the stylomastoid foramen), the first branch to be given off from the nerve is the posterior auricular nerve. Immediately distal to this branch, two branches emerge from the facial nerve, which provides motor innervations to stylohyoid muscle and the posterior belly of the digastric muscle.

The stylohyoid muscle may be absent in some individuals. Physiological variation in its insertion area may also exist. It may be inserted into the mylohyoid muscle or omohyoid muscle².

Case Report

During routine dissection bilateral tendinous attachment was seen for the stylohyoid muscle instead of muscular. This tendon of stylohyoid muscle was traced behind to look for the origin of muscle. It was arising from the groove on the inner surface of mastoid process. At its insertion the muscle forms inverted U shaped sling around the tendon of digastric muscle, and the muscular portion gets attached to the hyoid bone.

In present case the origin of muscle was normal but at insertion muscle showed tendinous attachment instead of muscular on the hyoid bone on right as well as on left side, which is very rare.

Figure 1: Left side

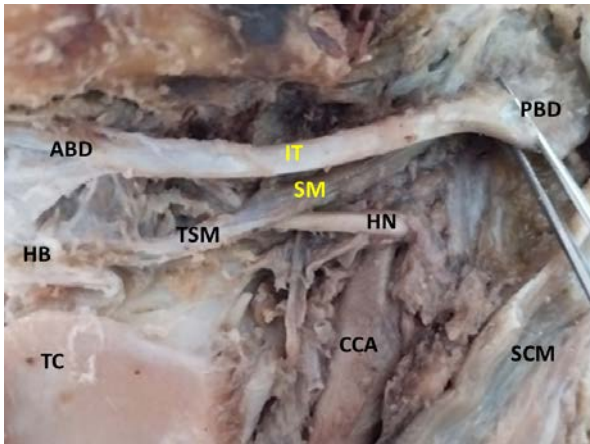
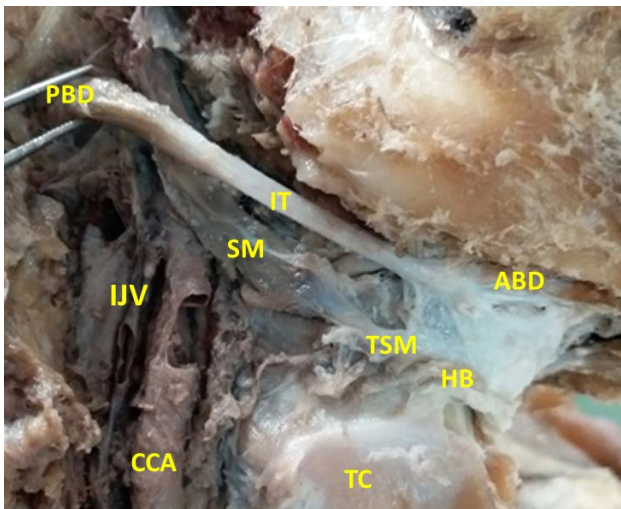


Figure 2: Right side



Discussion

The stylohyoid muscle is considered as a part of an important anatomical structure which is known as stylopharyngeal septum or it is also called as styloid diaphragm. This septum is an important Anatomical and surgical landmark while attempting an entry in the pharyngeal spaces. This septum divides the space into prestyloid and retrostyloid compartments, based on its relationship with the septum. Sometimes there is partial ossification of the ligament of stylohyoid muscle which causes Eagle syndrome, this syndrome is also known as the stylohyoid syndrome. In Eagle syndrome patient will have sharp shooting pain on one side (affected side) of the jaw. This pain may radiate into the throat,

tongue, or ear, which lead to difficulty in the process of deglutition, may cause sore throat, and tinnitus³.

In the lesion of the marginal mandibular nerve, which results in asymmetrical lips, surgical intervention is required to improve the aesthetic and functions. In such cases if the digastric muscle is not an option Stylohyoid muscle transfer is done.

Surgical resection of the ligament is required as it compresses the underlying structures⁴.

The seventh cranial nerve, the facial nerve has got a significant contribution to the oropharyngeal phase of deglutition and it is assisted by various muscles. Facial nerve give nerve supply to the stylohyoid muscle along with other muscles, such as the buccinator muscle, perioral muscles, and the posterior belly of digastrics muscle. Patients who are having peripheral facial paralysis present with difficulty in swallowing. If there is an injury to facial nerve it will lead to paralysis or weakness of the stylohyoid. The lesion of the facial nerve within the cranial cavity i.e. before its exit from the stylomastoid foramen, may occur due to some pathological changes in middle ear cavity like tumor or infection. An extracranial lesion of the facial nerve can occur due to an infection of the nerve such as herpes virus, compression during forceps delivery (since incomplete development of the neonatal mastoid process leaves the nerve unprotected), or it can be idiopathic. Pathologic conditions associated with the stylohyoid muscle may result in cervical and pharyngeal symptoms such as neck pain laterally in the area of the angle of the mandible, submandibular space, and anterior upper neck. The pain may get exacerbated by movements such as speaking, swallowing, yawning, or head-turning. Myofascial pain syndrome can result in severe pain in the stylohyoid muscle⁵.

Stylohyoid muscle is related laterally to the parotid and submandibular glands and medially to the great vessels of neck⁶, but variations are seen in these relations.

It may be absent or doubled, lie beneath the carotid artery, or be inserted into the omohyoid, or mylohyoid muscles⁷.

Conclusion

Stylohyoid muscle may have tendinous insertion on hyoid bone, which may lead to stylohyoid syndrome which causes pain in the throat, tongue, or ear, which causes difficulty in deglutition and also affects oropharyngeal phase of deglutition.

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Abbreviations for figure 1

SM-stylohyoid muscle, TSM-tendon of stylohyoid muscle, HB-hyoid bone, TC-thyroid cartilage, ABD-anterior belly of digastric, PBD-posterior belly of digastric, IT-intermediate tendon, HN-hypoglossal nerve, CCA-common carotid artery, SCM-sternocleidomastoid muscle.

Abbreviations for figure 2

SM-stylohyoid muscle, TSM-tendon of stylohyoid muscle, HB-hyoid bone, IT-intermediate tendon, TC-thyroid cartilage, ABD-anterior belly of digastric, PBD-posterior belly of digastric, CCA-common carotid artery, IJV-internal jugular vein.

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