

Bilaterally Elongated Styloid Process - A Case Report

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Abstract

Styloid process a slender pointed piece of bone projects downwards from the inferior surface of temporal bone and serves as an anchor point for muscles and ligaments. Elongated styloid process bilaterally was found in a dry human skull during a routine osteology class for undergraduate students. The length of styloid process on left side was 5.5 cm and on right side was 6 cm. The styloid process is developed at the cranial end of the second or hyoid arch. Variations in the length of styloid process reported by many authors is been discussed. The anatomy of styloid process has immense clinical, embryological, surgical importance.

Keywords: Eagle syndrome, Elongated, Styloid process

INTRODUCTION

The styloid process is a slender pointed piece of bone projects downwards from the inferior surface of temporal bone and serves as an anchor point for muscles and ligaments. The normal length of styloid process approximates 20-25 mm. The tip of styloid process is important because it is present between Internal carotid and external carotid artery. The facial, glossopharyngeal, accessory and vagus nerves are in close proximity to the styloid process. The approximation of glossopharyngeal nerve with the styloid ligament is the basis for the glossopharyngeal neurological symptoms seen in eagles syndrome.

Eagle's syndrome or elongated styloid process syndrome was first described by Eagle, an Otorhinolaryngologist, who first presented two cases with symptomatology of elongated styloid process, in his article of 1937.¹

Elongated styloid process and mineralization of stylohyoid and stylomandibular ligament is considered if its length exceeds 30 mm. The elongated styloid process can cause craniofacial and cervical pain, difficulties in swallowing, secondary glossopharyngeal neuralgia radiating pain into the orbit and maxillary region.

The internal carotid artery and the internal jugular vein lie posteriorly to the tip of the styloid process; if the process

was a little further elongated and deviated posteriorly, it could impinge the vessels.²

CASE REPORT

Elongated styloid process bilaterally was found incidentally in a dry human skull during a routine osteology class for undergraduate students. The length from base (where SP leaves tympanic plate) to tip of SP was measured using sliding caliper. The length of SP on left side was 5.5 cm and on right side was 6 cm. Right sided Styloid process had smooth surface compared to left side and medial angulation of left Styloid process was more compared to right side medially.

DISCUSSION

Stylos means a pillar derived from greek word. The probable embriological basis of styloid process pathology may be explained as below. Styloid process, stylohyoid ligament and small horn of the hyoid bone developmentally originate from the second branchial or hyoid arch. The formation of which the above structures originate consists of the following parts:

- 1) Tympanohyal part - the base of the styloid process
- 2) Stylohyal part - forms a large part of the styloid process
- 3) Ceratohyal part - precursor of the stylohyoid ligament

- 4) Hypohyal part - development precedes the small horn of the hyoid bone.

It is believed that the ceratohyal part of the second branchial arch contains small parts of embryonic cartilage that may or may not, at a later stage, mature into bone.³

The elongation of styloid process may be congenital or calcification of stylohyoid/stylomandibular ligament as a result of ageing and degenerative process.

Because it is of cartilaginous origin, the ligament has the potential to mineralize.

There is a difference between true Styloid Process elongation and secondary ossification of the stylohyoid ligament. True elongation results in a smooth, regular, well corticated bone of varying lengths projecting continuously from the skull base. Secondary stylohyoid ligament ossification usually results in an irregular surface with thickened areas that extend toward the lesser horn of the hyoid bone, usually with marked medial angulations. The ossified complex may be segmented with a thin cortex or a bulky irregular contour.⁴

Many different names have been coined to describe the presence of symptoms associated with an elongated stylohyoid chain, including “Eagle’s Syndrome”, “Elongated Styloid Process Syndrome”, “Carotid Artery Syndrome”, “Styloid Process Neuralgia”, “Stilalgia”, “Stylohyoid Syndrome” and “Pseudohyoid Syndrome”. Regardless of nomenclature, they are a constellation of subtle head and neck pain syndromes associated with true SP elongation or stylo-hyoid chain ossification.⁵

Numerous authors have studied to find out the length of styloid process and there is a lot of variation among the authors.

Kaufman et al. reported that 30 mm is the upper limit for normal styloid processes.⁶ Moffat et al. performed a cadaver study on the styloid process and reported that the normal length is between 1.52 cm and 4.77 cm.⁷ Monsour and Young concluded that the diagnosis of an elongated styloid process could be made whenever the styloid process was longer than 40 mm.⁸ In radiological studies, the length of the styloid process is reported to be no longer than 25 mm.⁹

Ahmet Savranlar et al, reported 3 cases of elongated styloid process, length of the styloid process in the one case right styloid process was 45.6 mm & left styloid process, 37 mm. In the second case the length of the left styloid process was 41.1 mm & right styloid process, 40.2 mm. In the one more case the length of the right styloid process was 40.6 mm

& left styloid process, 38.9 mm.¹⁰ Prabhu et al reported that a dry human skull showed elongated bilateral styloid processes measuring 6.0 cm on the right side and 5.9 cm on the left side and the present case is almost close to this report.¹¹ Kosar et al found that Double-sided elongated SP was found in 19 of 22 cases and single-sided elongated SP in 3 patients.

Eagle’s syndrome should be kept in mind for the differential diagnosis of pains localized in the head-neck area, especially in persons over 30 years old.¹²

Eagle’s syndrome is an uncommon but important cause of chronic head and neck pain. Elongated styloid process may cause compression on a number of vital structures and can produce inflammatory changes like chronic pain in the pharyngeal region, radiating otalgia, phantom foreign body sensation (globus hystericus), pain in the pharyngeal region, and dysphagia¹¹. The elongated styloid process can cause craniofacial and cervical pain, difficulties in swallowing,



Figure 1: Inferior view of skull - showing bilaterally elongated styloid process



Figure 2: Lateral view of skull - arrows showing elongated styloid process

secondary glossopharyngeal neuralgia, radiating pain into the orbit and maxillary region.¹² Anatomy of Styloid process is important for Otolaryngologist's and Dentist.

CONCLUSION

Eagle syndrome should be kept in mind in patients with a sore throat radiating to the ears with swallowing and an observed non-compliance between the complaints such as feeling a foreign body in the throat and facial pain, and physical examination of those who do not have a response to long-term medical therapy should be performed.¹²

Evaluation of calcified stylohyoid complexes on panoramic radiographs might be of no value for diagnosis of Eagle's syndrome but clinicians consider the possibility of Eagle's syndrome when both the clinical and radiographic evidence support the diagnosis.¹³

The length of styloid process in the present case is exceptionally long compare to previous reports except by Prabhu et al, which makes this case report an unique.

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How to cite this article: Pushpalatha K, Bhat D. Bilaterally Elongated Styloid Process - A Case Report. *Int J Sci Stud* 2014;2(4):100-102.

Source of Support: Nil, **Conflict of Interest:** None declared.