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Elongated Styloid Process- An Unusual Finding- A Case Study

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Case Study

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ABSTRACT

Styloid process is approximately 2.5 cm to 3cm in length and its tip is located lateral to tonsillar fossa between external and internal carotid arteries. Elongation of Styloid process or calcification of stylohyoid ligament leads to Eagle syndrome which causes excruciating throat pain, facial pain, dysphagia, or foreign body sensation. It may be present unilaterally or bilaterally with an overall prevalence of 4% in adults out of which 0.16% are symptomatic with symptoms.

Keywords: Styloid Process, Eagle's Syndrome, Stylohyoid Ligament.

Introduction

The term "styloid process" is derived from a Greek word that stands for 'a pillar'.[1] It is a long cylindrical bony projection projecting forward, downward, and medially from the lower portion of the petrous part of the temporal bone in front of stylomastoid foramen.[1,2] Embryologically, the stylohyoid chain which initially consists of cartilage arises from second branchial arch in the second week of intrauterine life.[3] During the third month the second arch gets divided into four segments out of which through ossification, the ceratohyal, the hypohyal, and the basihyal segment forms the stylohyoid ligament, the hyoid minor horn and the hyoid body respectively and the stylohyal part along with the superior infratemporal part called tympanohyal gives rise to styloid process.[3] Elongation of this styloid process or calcification of the stylohyoid ligament results in

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Eagle syndrome which produces pain sensation on structures in the vicinity along with dysphagia and increased salivation.[1]

Case Study: A 32-year-old female came to the Department of Oral Medicine and Radiology, Teerthanker Mahaveer Dental College and Research Centre, Moradabad with the chief complaint of pain in the left side of her face and neck for 3 months. The patient had moderate pain, sharp in intensity, and intermittent in nature. It was not associated with any other lesion. The patient had difficulty in turning her head to the left side and mild pain during swallowing. On an extraoral examination, the face was symmetrical with no secondary changes noted. The involved region was non-tender over the muscles of mastication and also at the Temporomandibular Joint region. Tenderness was present in the involved region with no tenderness in muscles of mastication and in the temporomandibular joint.

On intraoral examination, 37 and 47 were missing. The patient had mild pain in the left tonsillar fossa region during swallowing and mild to moderate pain was experienced during moving her head to the left side.

The patient underwent an extra-oral radiograph such as Orthopantomogram for radiographic evaluation.

It revealed an increase in the length of the styloid process on both the right and left sides with the left side styloid process showing more elongation than the right one. (Figure1). Later the patient was subjected to Cone Beam Computed Tomography for further confirmation. Cone Beam Computed Tomography revealed an elongated left styloid process measuring 34.9 mm (Figure 2).

These finding led to the confirmatory diagnosis of Eagle syndrome.

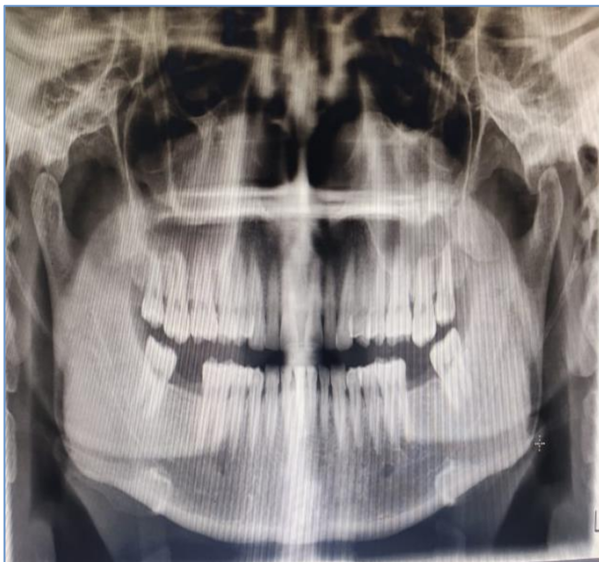

Figure 1: Panoramic radiograph showing elongated styloid process on left side.

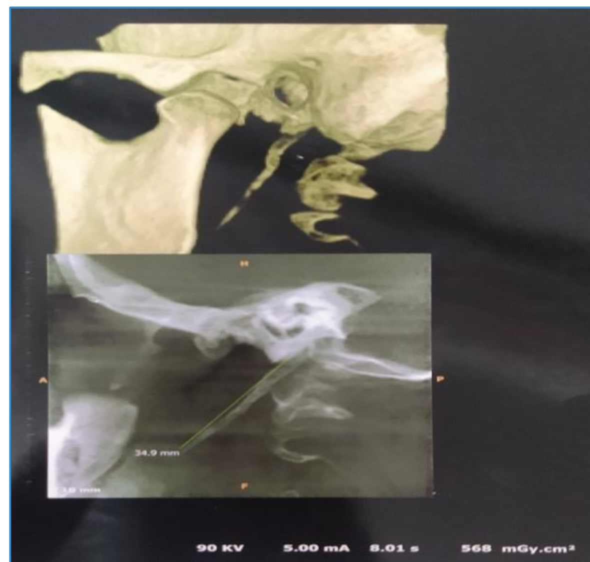

Figure 2: Cone Beam Computed Tomography revealing the length of styloid process as 34.9mm

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Later the elongated styloid process of the left side was surgically removed under general anaesthesia.

Discussion: The Styloid process is derived from the Greek word stylos which means a pillar.[1] It is a long, cylindrical, cartilaginous projection attached to the base of the skull, and extends downward and forward to the lesser cornu of hyoid bone from the tip of the styloid process and the stylohyoid ligament.[4] Eagle syndrome or stylohyoid syndrome is defined as the elongation of the styloid process or the symptomatic calcification of the stylohyoid ligament complex.[5]

Styloid process is formed by the ossification of the stylohyoid ligament. Despite many suggested hypotheses including Genetic hypothesis, degenerative process, aging developmental anomaly, reactive metaplasia exact etiology is still unknown.[2]

An elongated styloid process accounts for 4% of the general population and only 0.16% of patients are symptomatic.[5] According to the research, the incidence of the elongated styloid process has been reported to be higher in the rural Indian population with female predisposition owing to the fact that they carry heavy weight.[6]

It was first documented by an otorhinolaryngologist Watt W. Eagle in the year 1937.[7] He defined the length of a normal styloid process to be 2.5 to 3 cms.[4] He divided the syndrome into two categories naming classic syndrome and carotid artery syndrome where the former was described as persistent pain in the pharynx which aggravated by swallowing with the pain frequently referring to the side of the elongated styloid process along with increased salivation, difficulty in swallowing, gagging with a sense of foreign body whereas the latter is not associated with tonsillectomy. It is caused by mechanical irritation of the sympathetic nerve tissue in the walls of the external or/and internal carotid artery by the tip of the styloid process which produces referred pain in that specific area of vascularization.[8,9] In the present case, the patient showed symptoms of the classic syndrome type.

The diagnostic workup of an assumable patient must include a complete history along with a thorough examination of the head and neck region clinically in order to come to a provisional diagnosis[3] and this can be confirmed by observing it on panoramic radiographs.[10]

Langlais et al proposed a radiographic classification of the elongated and mineralized styloid process which included three types of abnormal radiographic appearances and four patterns of calcification/mineralization. They are**:-**

1. Three types of elongation
a. Elongated- uninterrupted elongation (>25-28mm).
b. Pseudoarticulated- styloid process joined to stylohyoid ligament by pseudoarticulation, usually located superior to the inferior border of mandible.
c. Segmented- consists of interrupted segments of mineralized ligament or short or long noncontinuous portion of the styloid process.
2. Patterns of calcification
a. Calcified outline- Reminiscent of the radiographic appearance of a long bone with a thin radiopaque cortex and a central lucency that constitutes most of the process.
b. Partially calcified- Thicker radiopaque outline, with almost complete opacification as well as a small and occasionally discontinuous radiolucent core.

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c. Nodular complex- scalloped outline and may be partially or completely calcified with varying degrees of central lucency.
d. Completely calcified- totally radiopaque with no evidence of a radiolucent inner core[10]

Hence, on the basis of radiographic examination our case was found to be Type I c.

The syndrome can be treated surgically and nonsurgically. Under the nonsurgical approach, Transpharyngeal infiltration of anaesthetics or steroids in the tonsillar fossa has been used but styloidectomy has always been the treatment of choice which can be performed by trans-tonsillar fossa excision (intraoral approach) while other authors have preferred extraoral approach because of better visualization of the surgical field and minimal risk of deep cervical infection.[10,11]

Conclusion: The elongated styloid process is a rare diagnostic entity that should be considered in the evaluation of facial pain or throat pain, dysphagia in addition to difficulty in moving the head. Eagle's syndrome accounts for 4% of the total population which requires thorough clinical and radiological examination along with styloidectomy being the treatment of choice. Cervicofacial and pharyngeal pain should be included in the differential diagnosis of this entity. Underdiagnosis of this syndrome is due to exclusion during examination resulting in underestimation of the incidences.

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