

ABNORMALLY ELONGATED STYLOID PROCESS (EAGLE’S SYNDROME) IN HUMAN SKULLS

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ABSTRACT

Styloid process is derived from the Greek word ‘Stylos’ meaning a pillar. The styloid process is normally a cylindrical bone which arises from the temporal bone in front of the stylo-mastoid foramen. Anatomical variation in the length of the styloid process is of profound anatomical, anthropological as well as clinical importance.

Eagle’s syndrome is defined as the symptomatic elongation of the styloid process or mineralization of the stylo-hyoid ligament complex.

In the present study a sample of 40 human adult skulls were examined for evidence of elongated styloid process. Length of styloid process on both sides measured with Vernier calipers in mm. Out of 40 skulls measured, 2 skulls or 5 % showed abnormal length in the styloid process.

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INTRODUCTION

The styloid process is attached to the inferior aspect of the petrous part of the temporal bone, just behind the pharyngeal wall in the area of the palatine fossa between the internal and external carotid arteries. A styloid process of normal length is commonly regarded 2.5 cm long. The styloid process is considered elongated if it is greater than 3 cm in length. Eagle’s syndrome is a condition in which an elongated styloid process or calcified stylohyoid ligament causes occasional pain in the neck, oro-facial pain, a feeling of a foreign body in the pharynx or some other form of retro-mandibular-cervical pain. An elongated styloid process can usually be palpated in the tonsillar fossa. In 1937 Eagle first presented two cases with symptomatology of elongated styloid process in an article entitled “Elongated Styloid Processes, Report of Two Cases¹”. The reason for the elongation of styloid processes may be continual growth at the cartilagenous base or a calcification of the stylohyoid or stylo-mandibular ligaments.

MATERIALS AND METHODS

In the present study a sample of 40 human adult skulls were taken from the department of Anatomy, Shyam Shah Medical College, Rewa, Madhya Pradesh.

The skulls were examined for evidence of elongated styloid process. For the study non pathological adult skulls of unknown sexes were included. Length of styloid process on both sides measured with Vernier calipers in mm.

The length is measured from base of the temporal bone to the tip of the styloid process. The landmark used as the base was the anatomical base of the styloid process.

OBSERVATION AND RESULTS

Out of 40 skulls measured, 2 skulls or 5 % showed abnormal length in the styloid process.

Table 1

S.No	Length of styloid process (mm)	Length of styloid process (mm)
	Right	Left
1	32	34
2	37	36



(Figure .1)Elongated styloid process (Left side) (Lateral view).

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(Figure .2)Elongated styloid process (Posterior view).

DISCUSSION

In daily practice a diagnosis of styloid process syndrome is usually made in the specialist clinic, and is most frequently made by an ENT specialist, a maxillofacial or oral surgeon. Much of the previous work on pain originating from the area of the styloid process has concentrated on elongated processes as the cause of the symptoms.^{2,3,4&5} Pathogenic mechanisms for pain arising from an elongated styloid process usually involve impingement of pharyngeal mucosa as it is drawn against an elongated process during normal function or impingement of the carotid vessels and their associated sympathetic chain. Eagle argued that pain from an elongated styloid process was due to "constant mechanoreceptor discharge in the area of the fifth, seventh, ninth and tenth cranial nerve endings" initiated by a mechanical irritation from the styloid process. If a soft-tissue lesion at the styloid process results in an inflammatory response, any post-trauma inflammatory edema that may result from such a chronic lesion could be contained in the lateral pharyngeal space. It may be possible this could create an elevation in intra-compartmental pressure which may affect the neurovascular contents of this space⁶.

Eagle's syndrome that follows a tonsillectomy procedure is characterized by symptoms of dysphagia, pain referred to the ear, dysphonia and a sensation of a foreign body in the pharynx⁷. It is assumed that the healing tonsillectomy scar tissue tightens the mucosa across the tip of the elongated styloid process⁸. Upon normal function such as yawning, eating and swallowing, the movement of this mucosa across the styloid process is may lead to the symptoms.

SUMMARY & CONCLUSIONS

Eagle's syndrome develops due to an elongation or deformation of the styloid process and "ossification" of the stylohyoid ligament. The development of this pathology is influenced by cervical osteochondrosis, frequent tonsillitis, tonsillectomy and purulent facial and cervical inflammations⁹. The styloid process and the stylohyoid ligament have been linked to Eagle's syndrome, which has a symptomatology characterized by the sensation of having a foreign body in the pharynx, causing difficult and painful swallowing and earache.

It has also been referred to as styloid syndrome, stylohyoid syndrome, stylalgia, stylohyoid disorder, neuralgia of styloid process, cervicopharyngeal pain syndrome. It can also cause vertigo, tinnitus, dysphonia, carotidynia, pain on turning the head, reduced mandibular opening, and change in voice, hypersalivation, and even alteration in taste. Although 4% of the population is thought to have an elongated styloid, only 4-10% of this group is symptomatic. Frommer observed that the direction and curvature of styloid process were more important than its length in causing symptoms¹⁰. In the study of Massey, there were only 11 cases of styloid process having length of more than 4 cm out of 2000 cases studied¹¹. Harma gives incidence of 4-7% for elongated styloid process¹². Elongation was seen four times more in males than females and in 75% of cases the elongation was bilateral. The elongation and thickening of styloid process to an extent reported here is very rare. The possible clinical course causes for thickening and surgical approaches needs to be evaluated.

Declarations

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Conflict of interest: None

Ethical approval: Study involved only cadavers, so ethical approval is not required

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