

## Eagle's Syndrome: A Case Report.

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**Abstract:** Styloid process is a slender bony projection, refers to a mineralized styloid ligament of the temporal bone that projects downward and forward from the mandibular surface of the temporal bone. Average length of the styloid process is 20-25 mm. An elongated styloid process, as in eagle's syndrome leads to a plethora of symptoms, ranging from mild irritation in throat to stroke. Presenting a case report of eagle's syndrome managed surgically using diode laser.

**Key Words:** Eagle's Syndrome, Styloid Process, Atypical Facial Pain

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### I. Introduction

Styloid process is derived from the Greek word "Stylos" meaning pillar. The styloid process is a slender bony projection that arises from the inferior surface of the temporal bone just beneath the external auditory meatus and in front of stylomastoid foramen. Styloid process refers to a mineralized styloid ligament of the temporal bone that projects downward and forward from the mandibular surface of the temporal bone. [1]

The symptoms produced by compression of regional structures by the elongated styloid process or ossification of the stylohyoid or stylomandibular ligaments are known to cause, what is referred to as Eagle's syndrome, described by Watt Eagle, who in 1937. He elaborated two subtypes: the "classic syndrome" and the "stylo-carotid artery syndrome."

Tonsillectomy or trauma is suggested etiological factors related to this condition. Depending on anatomical structures, compressed or irritated by the styloid process, symptoms vary greatly, ranging from cervicofacial pain to cerebral ischemia due to compression of internal carotid artery. Diagnosis is supported by radiological findings. Palpation of the styloid process in the tonsillar fossa and infiltration with anesthesia is also utilized in establishing the diagnosis. The treatment is primarily surgical; however, some conservative treatments are also being advocated. [2]

### II. Case Report

A 60 yrs. old female patient reported to the Division of Oral and Maxillofacial Surgery, with chief complaint of pain on the left inner side of the mouth and deep to left ear since last 03 yrs. She first noticed vague pain in left side of the mouth on swallowing food. Pain was mild in intensity, paroxysmal in nature and lasted for approximately 2 minutes after swallowing. She also had pain in left ear, below the left lower border of mandible (angle region). The patient also gave a history of similar episodes of pain in the throat while turning the head towards the left side with the occasional complaint of foreign body sensation in the throat. No previous history of trauma or tonsillectomy was present.

Medical history and clinical findings elicited from the patient led to a provisional diagnosis of Eagle's syndrome. The complete diagnostic work-up included palpation of the lateral tonsillar fossa, infiltration of lidocaine to the tonsillar fossa, panoramic radiograph and NCCT head with 3D reconstruction.

Lidocaine (1%) was infiltrated along the left anterior pillar and deep to lateral tonsillar fossa of the patient. Relief of pain after lidocaine infiltration by turning the head towards left side supported the diagnosis of Eagle's syndrome and a need for surgical intervention.

Orthopantomogram and NCCT head revealed a bilaterally elongated styloid process, with right side measuring 32mm and left side being 35mm long.(Fig 1) Surgical excision of the symptomatic left styloid process intraorally was planned under general anesthesia.

Since the patient was symptomatic on left side only, the decision was made to surgically intervene on left side only. Partial resection of the elongated left styloid process was performed using a transoral approach under general anesthesia. The elongated left styloid process was palpated at the superolateral corner of tonsillar fossa. Diode laser was used to incise the overlying mucosa of styloid process and the process was skeletonized for approximately 1.7mm and clipped using a bone rongeur. The incised muscles and mucosa were closed in layers to produce a smooth surgical bed.

The patient was discharged 24 hours after surgery and instructed to have soft diet. Postoperative antibiotics and analgesics were prescribed. Follow up of every 3 months was planned for the patient up to 1 year. On immediate follow up the patient was relieved of the symptoms.

### III. Discussion

“Eagle’s Syndrome”, “Styloid Process Neuralgia”, “Stilalgia”, “Elongated Styloid Process Syndrome”, “Carotid Artery Syndrome”, “Stylohyoid Syndrome”, and “Pseudohyoid Syndrome” are amongst the several terms that have been used in literature to describe symptoms associated with the elongated styloid process.<sup>[3,4,5]</sup> The Eagle’s syndrome is a clinical condition of complex etiology. Regardless of the nomenclature they all have one consistent feature: PAIN<sup>[3,4]</sup>

Styloid process tip lies in the pharyngeal wall lateral to the tonsillar fossa where it is flanked by several neurovascular structures: Internal Carotid Artery, Internal Jugular Vein and Cranial Nerves X, XI and XII lie on its medial surface.<sup>[5,6,7]</sup> There are two ligaments (stylohyoid and stylomandibular) and three muscles (styloglossus, stylopharyngeus and stylohyoid) arising from the styloid process that stabilizes the hyoid during oro-pharyngeal functions.<sup>[8,9]</sup>

A style process which was longer than 25mm was considered to be abnormal by Eagle in his landmark study in 1937 and found out that 4% of the population had elongated styloid processes, but only 4% of these individuals complained of any symptoms.<sup>[10]</sup> The incidence of elongated styloid process has been reported to be as low as 1.4% by Gossman and Tarsitano, by analyzing 4200 panoramic radiographs, and as high as 30% by Keur et al- in a study on 1135 subjects.<sup>[11,12,13]</sup>

Congenital factors<sup>[17]</sup>, reactive metaplasia after local trauma, calcification with the ageing process<sup>[15,16]</sup>, subtle neck trauma that causes an unregulated inflammatory response, call us deposition from sub clinical styloid fractures<sup>[19,21]</sup> and the theory of anatomic variations<sup>[20]</sup> are amongst the several theories that have been proposed to explain the induction of ossification.

Corresponding symptoms include pain and discomfort in the cervicofacial region during swallowing, extending the tongue, yawning or turning the head, otalgia, cough, transient ischemic attacks. Digital palpation of the styloid process in the tonsillar fossa increases pain.

Imaging helps to identify the elongated styloid process or the calcified stylohyoid ligament. Panoramic radiographs are important. Recent imaging modalities include 3D Computed tomography aid in assessing the length and anatomical relationship of elongated styloid process to adjacent vital structures and for outlining the plane of incision for surgical treatment.

Eagle’s syndrome can be treated pharmacologically or surgically, or both. The surgical management of elongated styloid process consists of 2 major procedures: the transoral approach and the extra oral approach: the choice of treatment usually depending on the experience of the surgeon. The conservative management includes analgesics and local corticosteroids or anesthetic administration.

Additionally, manual fracturing of styloid process through transpharyngeal manipulation can be applied but chances of neurovascular damage are increased and failure to relieve the symptoms has been reported.

In our patient, the resection of styloid process via transoral approach was carried out. The procedure was easy to execute, time saving and with good specificity. The exposure was adequate and the amount of dissection required was minimal. With transoral approach both the operative time and the post-operative recovery time was short. We did not encounter any complications (neurovascular damage, deep cervical infection, poor visualization of surgical field). A satisfactory symptomatic improvement was achieved in our case.

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**Figure 1:**



NCCT head revealing a bilaterally elongated styloid process (right side measuring 32mm and left side being 35mm long)