

Case Report

Eagle syndrome: Orthodontist's perspective

ABSTRACT

The objective of the article is to report a case of Eagle syndrome in an orthodontic patient. A 20-year-old patient reported to the Department of Orthodontics with a chief complaint of crowding in upper and lower teeth and difficulty in mouth opening. Detailed history and radiographs led to the diagnosis of elongated styloid process also termed as "Eagle syndrome."

Keywords: Three-dimensional cone-beam computed tomography, Eagle syndrome, Reichert's cartilage

INTRODUCTION

The styloid process is a bony projection, located anterior to the stylo mastoid foramen, with the tip pointing downward, forward, and medially and averaging from 20 to 25 mm in length. The tip of the styloid process is situated between the internal and external carotid arteries, lateral to the pharyngeal wall, and immediately behind the tonsillar fossa.^[1]

Attachments of styloid process include three muscles and two ligaments. Stylopharyngeus muscle attaches medially at the base of the process, stylohyoid muscle is attached laterally on the central part of the process, and styloglossus muscle originates from the anterior part of the process. The muscles are innervated by glossopharyngeal, facial, and hypoglossal nerve.^[1]

The stylohyoid ligament extends from the tip of the styloid process to the lesser cornua of the hyoid bone, and the stylo mandibular ligament commences under the attachment of styloglossus muscle and terminates at the angle of mandible.^[1]

Embryonic origin of styloid process is from Reichert's cartilage which is a derivative of second branchial arch, i.e., hyoid arch.^[2,3]

Eagle syndrome is a condition in which an elongated styloid process or calcified stylohyoid ligament causes occasional

pain in the neck, a feeling of a foreign body (in the throat), or various retromandibular-cervical pains.

This elongation was first described in 1652 by the Italian surgeon Pietro Marchetti. In 1937, Watt Eagle coined the term stylalgia to describe the pain associated with elongation of styloid process and presented two cases with symptomatology of elongated styloid process,^[4] hence the name Eagle syndrome.

Some commonly used synonyms for Eagle syndrome are elongated styloid process syndrome, styloid process and carotid artery syndrome, stylohyoid syndrome, styloid process neuralgia, stylalgia.^[5]

CASE REPORT

A 20-year-old female patient reported to the Department of Orthodontics with a chief complaint of irregularly placed

SINDHUJA K, GAUTHAM HEGDE, ROHAN RAI, ABHINAV SORAKE, NAVEEN SUVARNA

Department of Orthodontics and Dentofacial Orthopaedics, A.J. Institute of Dental Sciences, NH-17, Kuntikana, Mangalore, Karnataka, India

Address for correspondence: Dr. Sindhuja K, Department of Orthodontics and Dentofacial Orthopaedics, A.J. Institute of Dental Sciences, NH-17, Kuntikana, Mangalore - 575 004, Karnataka, India.
E-mail: dr.sindhu91@gmail.com

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upper and lower front teeth, difficulty in mouth opening, and occasional pain on mastication and swallowing.

Detailed evaluation of the symptoms revealed that patient experienced pain occasionally on mastication and swallowing which regressed on its own. The patient also revealed occasional pain bilaterally in the neck and temporal region.

Intraoral examination revealed crowding of upper and lower anterior teeth, deep bite, retained deciduous lower left second molar, missing upper left and lower right second molar, and angles class II division 2 subdivision malocclusion with increased curve of Spee and reduced mouth opening [Figures 1-3].

Radiographic evaluation, i.e., panoramic radiograph (orthopantomogram), revealed bilateral elongated styloid process [Figure 4]. Further investigation included cone-beam computed tomography (CBCT) for detailed evaluation of the styloid process. The right styloid process was measured to be 40 mm, and left styloid process was curved with irregular calcification and a length of 39.6 mm [Figures 5-7].



Figure 1: Intra oral photograph-right lateral view



Figure 3: Intra oral photograph: Frontal view

The patient was referred to the Department of ENT for evaluation and further treatment.

DISCUSSION

The exact etiology of Eagle syndrome is not known although it is considered to be congenital.^[6-8] Elongated styloid process is one of the causes of craniocervical and referred facial pain.^[9,10] Massey conducted a study on 2000 samples and found that only 11 cases showed elongation of styloid process more than 40 mm.^[11]

Prevalence of elongated styloid process was found to be four times more in males than females, and in 75% of cases, the elongation was bilateral.^[12]

Around 4% of the population is predicted to have an elongated styloid, but only 4–10% of this group is symptomatic.^[13]

Various theories have been put forward for explaining the symptoms associated with elongated styloid process:^[14] (1) Fracture of styloid process, compressing the adjacent structures, (2) inflammation of ligaments, (3) compression of adjacent nerves and vessels, and (4) irritation of pharyngeal mucosa by the elongated styloid.



Figure 2: Intraoral photograph: Left lateral view



Figure 4: Panoramic radiograph showing elongated styloid process

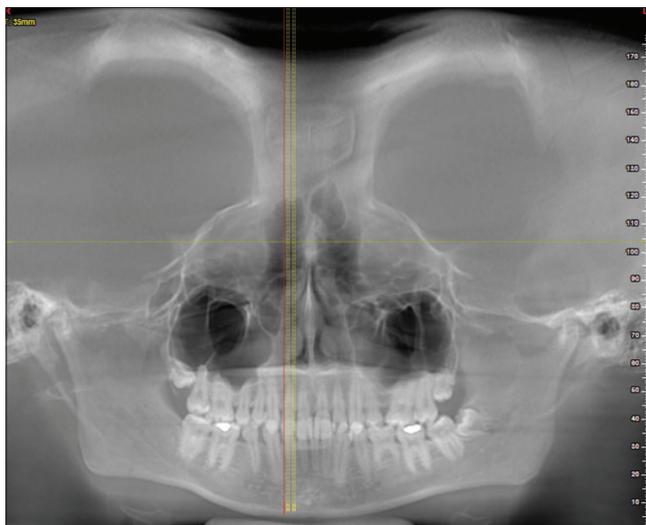


Figure 5: Cone-beam computed tomography image



Figure 6: Three-dimensional cone-beam computed tomography of right styloid process



Figure 7: Three-dimensional cone-beam computed tomography of left styloid process

The symptoms associated with this syndrome can vary in every case depending on the pathophysiology, and some of the common symptoms associated are craniocervical pain, neuralgias, reduced mouth opening, limited lateral movements of neck secondary to pain, and discomfort. Less commonly observed symptoms are changes in voice, hypersalivation, and alteration in taste.^[3]

Orthodontic implications

The major concerns for orthodontists treating a patient with Eagle syndrome are hypersalivation^[15] and reduced mouth opening, both of which are observed in this patient. These symptoms cause difficulty in isolation during moisture sensitive procedures such as bonding and reduced access to the posterior segments due to limited mouth opening. In cases with styloid process, more than 40 mm is advised for resection before beginning of orthodontic treatment. Hypersalivation can be controlled during bonding appointments by either prescribing anti-sialagogues or moisture control agents such as cotton rolls or Dri-angle pads.

The referred pain due to elongated styloid is sometimes misdiagnosed as temporomandibular joint pain, dental pain, or idiopathic jaw pain.^[16]

Treatment modalities

The treatment of elongated styloid depends on the severity of the symptoms associated. Both surgical and nonsurgical approaches are used for treatment; nonsurgical procedure includes palliative therapies such as administration of antiepileptics and antihistamines, vasodilators, neuroleptics, antidepressants, and tranquilizers.^[17]

Localized administration of corticosteroids diluted with local anesthetics is other commonly used treatment option.^[18]

Surgical excision of the styloid is advised in cases of fracture of the styloid process^[19] and in cases where elongation is more than 40 mm and presents with severe symptoms.

CONCLUSION

Assessment of styloid process is usually overlooked during routine examination. Detailed history of patients' chief complaint, careful clinical evaluation of the symptoms, and use of advanced diagnostic aids such as CBCT will help the clinician in accurate diagnosis of the patient's symptoms.

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Conflicts of interest

There are no conflicts of interest.

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