CASE REPORT

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Panoramic radiography as an early screening for eagle syndrome with orofacial pain: a case report

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ABSTRACT

Objectives: The purpose of this case report was to report the findings of styloid process morphology in patients with orofacial pain.

Case Report: A 39-year-old man came to a private hospital with complaints of a headache near the ear. After taking a panoramic photograph, a change in the size of the styloideus processes was obtained. The styloideus processes were elongated on the right and left sides. The elongated styloid process may be symptomatic in many cases. Examination with panoramic radiographs as support can show this syndrome quite well because it shows the styloideus process bilaterally. The elongated styloideus process seen on the panoramic radiograph can be interpreted as Eagle Syndrome.

Conclusion: Elongation of the styloideus process can cause orofacial pain. The image of an elongated processus styloideus can be seen in the results of a panoramic radiograph.

Keywords: *Elongated styloideus process, orofacial pain, eagle syndrome, panoramic radiograph*
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INTRODUCTION

Eagle's syndrome, first described by Watt Weems Eagle in 1937, is a rare condition affecting around 4–8 per 10,000 people. It is more prevalent in women than in men (2:1) and in people over 50. Elongation of the styloid processes and/or calcification of the stylohyoid ligament, which is typically unilateral but less frequently bilateral, are its defining characteristics.[1] Some patients, however, might never exhibit clinical symptoms, and the diagnosis might be made as a result of another pathology during surgery, a post-mortem examination, or an accidental detection on a computed tomography scan. Temporomandibular diseases, tumors, ear pathologies, skeletal neck discomfort, and trigeminal and glossopharyngeal neuralgia are examples of differential diagnoses.[1,2]

The bony projection known as the styloid process is located directly in front of the stylomastoid foramen. It is cylindrical, extending downward from the temporal bone's inferior surface toward the front, then medially narrowing at the tip. It is also crucial to note that the tip is located directly beneath the tonsillar fossa, laterally from the pharyngeal wall, and between the internal and external carotid arteries.[3]

The styloid process, hyoid bone, and the ligament that connects them are all thought to be logically derived from the second branchial arch (Reichert cartilage) in embryos. The tympanohyal, which is the base of the styloid process, the stylohyal, which is the greater part of the styloid process, the ceratohyal, and the hypohyal, which is the lesser cornu of the hyoid bone, make up the chain of parts that we are concerned with. In the intrauterine stage, the ceratohyal develops into the stylohyoid ligament, which is essentially connective tissue. However, because it is derived from cartilage, it preserves a portion of persistent embryological cartilage that may eventually expand and mature into bone.[4]

Although the radiographic length of the styloid process has been reported to range from 20 to 35 mm, the usual length of the process in adults is 20 to 25 mm. The styloid-stylohyoid syndrome may be caused by ossification of the stylohyoid ligament or elongation of the styloid process. This condition is referred to as either "Eagle's syndrome," "elongated styloid process syndrome," "styloid process-carotid artery syndrome," "stylohyoid syndrome," or "styloid process neuralgia".[4]

Panoramic radiography can assist in preventing misinterpretation of symptoms by revealing an elongated styloid process and/or ossification of the stylohyoid ligaments in patients with or without symptoms. The best and most affordable imaging technique for seeing the styloid processus'

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elongation is panoramic radiography. Additionally, it assists in preventing the symptoms from being misinterpreted as tonsillar pain or pain originating from the mouth, throat, or muscles.[5] A 39-year-old man presented with headaches localized near the ear; a panoramic radiograph revealed alterations in the size of the styloid processes.

CASE REPORT

A 39-year-old man was referred to the clinic by an ENT doctor with a year's history of headaches in the right and left ears. There were no other medical problems; the ENT doctor had excluded pathology of the ear, nose, and throat, and no facial asymmetry. A history of systemic disease and previous illness was denied. Examination of the right and left submandibular and submental lymph nodes was not palpable or painful. There were no other complaints, such as pain when swallowing or when turning the head, or normal mouth opening.

Panoramic radiographs were taken to support treatment. After taking a panoramic photograph, a change in the size of the styloideus processus was obtained. The styloideus processus elongated on the right and left side (Figure 1). After analysis using Image-J, the right side is 37.32 mm, and the left side is 36.36 mm (Figure 2A-B). A diagnosis of Eagle's syndrome was made.

Figure 1. The styloideus processus elongated on the right and left side (orange arrow)

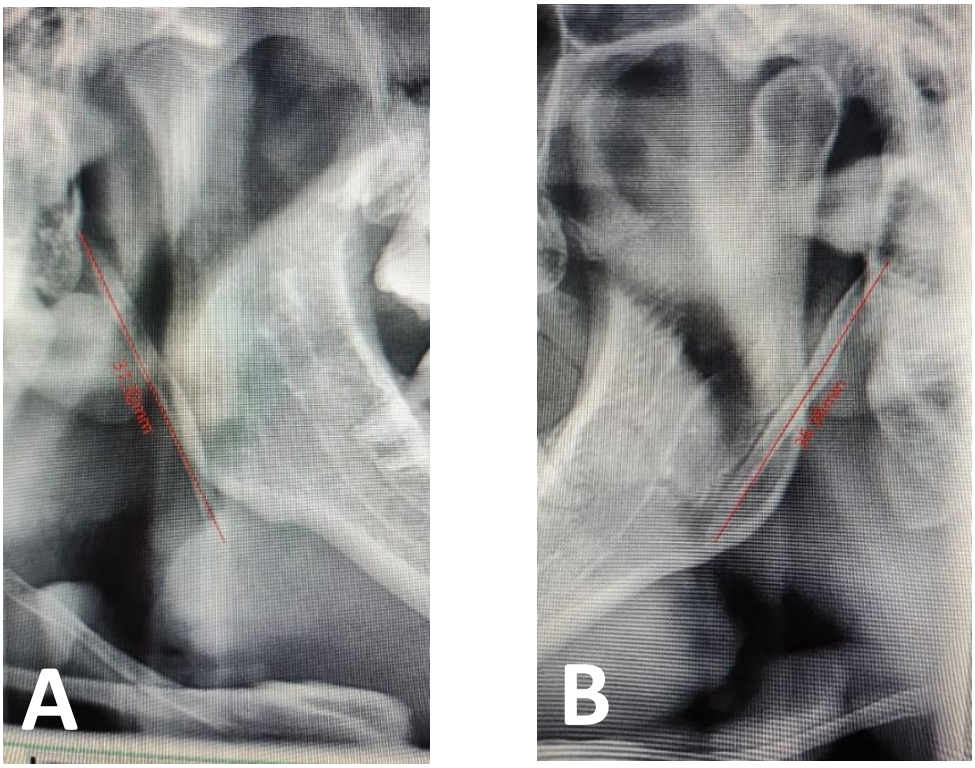

Figure 2. A. Right styloideus processus is 37.32 mm and **B**. Left styloideus processus is 36.36 mm

DISCUSSION

A rare clinical condition known as Eagle syndrome is characterized by an extended styloid process or mineralization of the stylohyoid or stylomandibular ligaments, which results in face and cervical pain, dysphagia, odynophagia, and a feeling of a foreign substance stuck in the pharynx. An adult styloid's normal length is estimated to be 25 mm, whereas an elongated styloid is thought to be greater than 30 mm. Both unilateral and bilateral elongation are possible. There are two known forms of Eagle syndrome. The first kind comprises the feeling of a foreign body in the throat following tonsillectomy and cervicofacial pain that is made worse by swallowing. The second kind, known as "stylo-carotid artery syndrome," is caused by the styloid process impinging extracranially on the ICA. This can cause compression when turning the head, resulting in a transient ischemic accident or stroke.[6]

The classical condition manifests as anterolateral neck discomfort, recurring throat pain, dysphagia, referred pain to the ear, facial pain, or foreign body sensation in the pharynx. The symptoms of Eagle's syndrome are caused by a deviation of the elongated process anteriorly and medially, rather than by the elongation of the styloid process alone, which may not be a risk factor. Eagle's syndrome may cause neurological symptoms because of the stylohyoid ligament's proximity to the glossopharyngeal nerve.[5]

Eagle's syndrome can mimic neuralgia or pain in the mouth, teeth, and temporomandibular joints, among other clinical symptoms. A comprehensive physical examination and radiographic evaluation are necessary to make an accurate diagnosis. Pharmacological treatment (oral carbamazepine, steroid injections, or a local anesthetic solution) or surgery (intraoral or extraoral excision of the styloid process) may be used to treat the condition.[7] Eagle initially defined this illness as a unilateral sore throat accompanied by a feeling of something foreign in the throat. The symptoms were then divided into two primary categories based on whether vascular or neurological components were involved. The styloid process impinges on the lower nerves in the neck, causing odynophagia, facial and cervical discomfort, migraines, and dysphagia.[7]

According to epidemiological research, only 4–10% of those who have an extended styloid process have clinical signs and symptoms, and this condition is estimated to affect 4% of the population. There is a modest tendency for the illness to affect elderly people and women. There is no discernible correlation between the intensity of the ossification and the severity of the symptoms. Although ossification happens to those under age 31, only 1–5% of them have symptoms. Most patients with symptoms are older than forty.[8]

Compression of the neural elements, the glossopharyngeal nerve, the lower branch of the trigeminal nerve, and/or the chorda tympani by the lengthened styloid process was the pathophysiology underlying the pain caused by this process. Additionally, the compression results in the growth of granulation tissue, which puts constant pressure on the surrounding structures and produces pain.[9] Several well-accepted ideas offer a thorough explanation of an elongated styloid process by correlating anatomy, embryology, and physiology. If pharyngeal trauma properly stimulates the styloid process, ossification may continue from its tip against the stylohyoid ligament, according to the theory of reactive hyperplasia. The styloid process and stylohyoid ligament are thought to be typically ossified, according to the theory of anatomic variance, and the elongation process is merely an anatomicality. According to the dysendocrine theory, anatomic variation could be passed along through genes. According to alternative theories, the styloid may be congenitally elongated due to the persistence of its cartilaginous counterpart, the calcification of the stylohyoid ligament through an unidentified process, and the formation of osseous tissue near the stylohyoid ligament's insertion, which may also contribute to its elongation.[10] Psychosomatic, tonsillitis, otitis, migraine, trigeminal, glossopharyngeal, and other neuralgias, as well as inflammatory and malignant disorders of the orofacial region, are among the different differential diagnoses.[11]

Specialized imaging is the final step to confirm the diagnosis. The examination of the elongated styloid process is done using a variety of imaging modalities, such as CT, orthopantomogram, panoramic, Towne's projection, lateral cephalogram, lateral oblique view of the jaw, anteroposterior skull radiography, and cone beam computed tomography (CBCT). The elongated styloid process's radiographic characteristics were categorized by Langlais et al. in 1986 according to its length and calcification pattern.[8,11] Based on radiologic findings, Langlais et al. classified elongated styloid processes into three types. Type 1 is elongated: An uninterrupted elongation of the styloid process is seen radiographically (> 25 - 28 mm) (Figure 3A). Type 2 is Pseudo-Articulated: the single pseudo-articulation that connects the two remineralized segments is less common than the elongated form and is typically found at the level superior to the lower border of the mandible. (Figure 3B). Type 3 is Segmented: consists of continuous segments of mineralized ligament or long or short non-continuous sections of the styloid process. (Figure 3C).[12,13] The cases presented are classified as Type 1.

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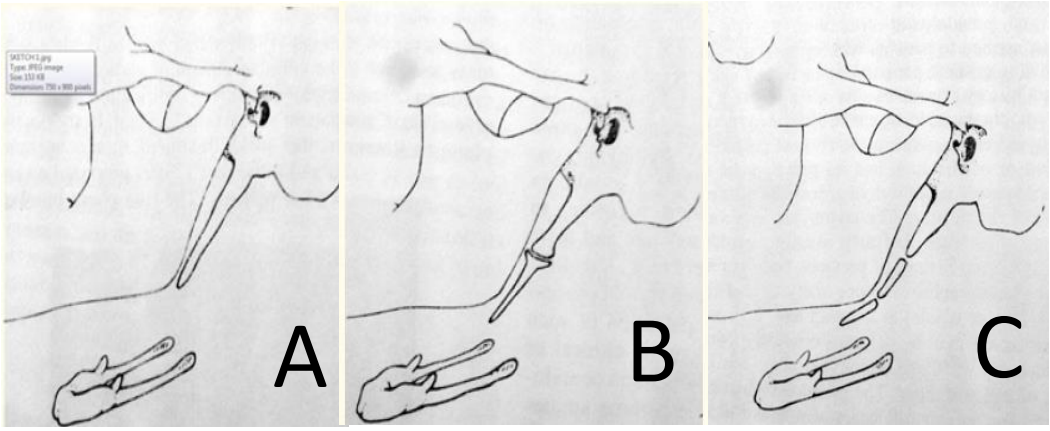

Figure 2. Classified elongated styloid processes (Langlais et al.). **A**. Elongated. **B**. Pseudo-Articulated. **C**. Segmented

The main treatment for Eagle's syndrome is surgical excision of the extended styloid process. The illness has not yet been shown to be effectively treated or resolved, despite the possibility of medical intervention with analgesics or local steroid injections. Transoral and external transcervical procedures are the two surgical techniques that have been proposed. According to Eagle, transoral resection is technically easier. The styloid process protuberance is located, and the mucosa on top of it is cut. The superior constrictor muscle is dissected to reveal its tip, and then the muscle is skeletonized to its origin. The free process is removed with a bone nibbler as close to its base as feasible after the ligaments and muscle tendons that are linked to it are separated. Next, layers of muscle and mucosa covering the surgical bed are sealed. About 20% of surgeries fail because the symptoms are partially relieved or return, and this can be because insufficient shortening causes ongoing discomfort.[14]

Based on the literature review, this is a rare case as it occurred in a male under the age of 40. However, for clinical symptoms and radiological features, this case is consistent with the theory contained in the literature.

CONCLUSION

Panoramic radiographs can be used to view the elongation of the styloideus processus at an early screening.

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FOOTNOTES

All authors have no conflict of interest to declare for this article.

REFERENCES

1. Searle E, Searle A. An overview of Eagle's syndrome. Br J Pain. 2021;15(4):388–92.
2. Dziedzic M, Możdżeń K, Murawska A, Bonczar M, Ostrowski P, Szczepanek M, et al. Eagle's Syndrome: a Systematic Review. Polski Przegląd Otorynolaryngologiczny. 2023;12(2):25–38.
3. Ranjan V, Rai S, Misra D, Panjwani S. Eagle's syndrome veiling as pain of odontogenic origin: Report of two cases with cone beam computed tomography illustration. Natl J Maxillofac Surg. 2015;6(2):219.
4. Tyagi K, prakash sm R, Marceliano M. CORRELATION OF ELONGATED STYLOID PROCESS WITH SERUM CALCIUM LEVELS. 2016 Apr 26;8(04):29545–50.
5. Haroun HSW. Morphometric and radiological evaluation of the stylohyoid complex in man. Review Article Annals of International Medical and Dental Research. 2015;1(2):49–52.
6. Aydin E, Quliyev H, Cinar C, Bozkaya H, Oran I. Eagle syndrome presenting with neurological symptoms. Turk Neurosurg. 2018;28(2):219–25.
7. Pagano S, Ricciuti V, Mancini F, Barbieri FR, Chegai F, Marini A, et al. Eagle syndrome: An updated review. Surg Neurol Int. 2023;14:389.
8. Akpinar Z YBTNDZ. Eagle's syndrome: a case report. Yusuf Acta Med Anatol. 2014;2(4):145–6.
9. Bagga MB, Bhatnagar D, Kumar N. Elongated styloid process evaluation on digital panoramic radiographs: A retrospective study. Journal of Indian Academy of Oral Medicine and Radiology. 2020;32(4):330–4.
10. Ranjan V, Rai S, Misra D, Panjwani S. Eagle's syndrome veiling as pain of odontogenic origin: Report of two cases with cone beam computed tomography illustration. Natl J Maxillofac Surg. 2015;6(2):219.
11. Warrier S A, KC N, K S, Harini DM. Eagle's Syndrome: A Case Report of a Unilateral Elongated Styloid Process. Cureus. 2019;11(4):4430.
12. Alzarea BK. Prevalence and pattern of the elongated styloid process among geriatric patients in Saudi Arabia. Clin Interv Aging. 2017;12:611–7.
13. Hasan S. Eagles Syndrome: A Current Update. 2018;2(5):49–52
14. Al-Ekri L, Alsaei A. Incidental Finding of an Elongated Styloid Process during Tonsillectomy Procedure. International Journal of Otolaryngology and Head & Neck Surgery. 2015;04(03):236–40.