



A Case Report of Bilateral Elongated Styloid Process Presenting with Symptoms of Eagle Syndrome

Authors

**Dr Ambath D. Momin¹, Gautam Chandra Das², Amitav Sarma³, Pranab Debbarma⁴
Biraj Bhuyan⁵, Nirmalya Saha⁶, T. Dineshor Singh⁷**

^{1,2}Senior Resident Doctor, Department of Anatomy, North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences, Shillong

³Associate Professor, Department of Anatomy, North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences, Shillong

⁴Assistant Professor, Department of Anatomy, A.G.M.C & G.B.P, Hospital, Agartala

⁵Curator of Museum, North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences, Shillong

⁶Assistant Professor, Department of Anatomy, Tripura Medical College & Dr. B. R. A. M. Teaching Hospital, Tripura, India

⁷Sr. Medical officer, Dist. Hospital Bishnupur, Imphal

Abstract

Introduction: The styloid process of temporal bone is a slender projection attached to the base of the skull. The normal length of styliod process is 2-3cm. When it is more than 3 cm it is known as elongated styloid process. Elongated styloid process may give raised to group of symptoms known as Eagle syndrome.

Materials: A 36 year old male presented in the ENT OPD, North Eastern Indira Gandhi Regional Institute of Medical Sciences, Shillong, Meghalaya, with a complaint of mild bilateral recurrent pain in the upper lateral part of the neck and tonsillar fossa.

Observation: On inspection no sign of inflammation but there is mild tenderness on palpation. X Ray of the neck AP and lateral view was advised which shows long styloid process. 3D CT scan was advised to measure the actual length of the styloid process. CT scan shows bilateral elongated styloid process measuring 3.45cm in length.

Conclusion: Any case of pain or irritation in the upper part of the neck or throat can be due to elongated styloid process.

Keywords: Eagle syndrome, Tonsillar fossa, Reichert's cartilage.

Introduction

The styloid process of temporal bone is a slender projection attached to the base of the skull. Its base is partly ensheathed by the tympanic plate and it descends anteromedially, with its tip usually reaching a point medial to the posterior margin of

the mandibular ramus. However, the styloid process is very variably developed, and ranges in length from a few millimetres to a few centimetres.¹ The normal length of styliod process is 2-3cm.² When it is more than 3 cm it is known as elongated styloid process.³ Eagle syndrome is

an aggregate of symptoms that includes recurrent throat pain, foreign body sensation, dysphagia, and/or facial pain as a direct result of an elongated styloid process or calcified stylohyoid ligament.⁴ Elongation was seen four times more in males than females and in 75% of cases the elongation was bilateral.⁵

Material

A 36 year old male presented in the ENT OPD, North Eastern Indira Gandhi Regional Institute of Medical Sciences, Shillong, Meghalaya, with a

complaint of mild bilateral recurrent pain in the upper lateral part of the neck and tonsillar fossa.

Observation

On inspection no sign of inflammation seen but there was mild tenderness on palpation of tonsillar fossa. X Ray of the neck AP and lateral view was advised which shows long styloid process. 3D CT scan was advised to measure the actual length of the process. CT scan shows bilateral elongated styloid process measuring 3.45 cm in length.

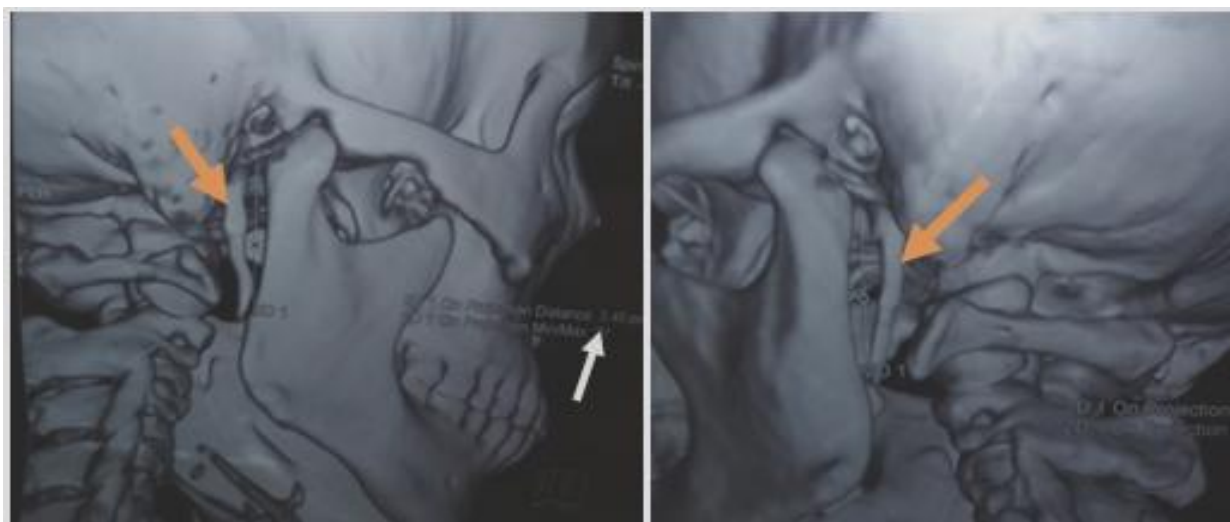


Fig: Brownish arrow pointing at elongated styloid process whereas white arrow points towards the length of the styloid process(3.45cm) as printed on the CT scan film.

Discussion

The styloid process is derived from Reichert's cartilage, a structure of second branchial arch. Degeneration of Reichert's cartilage produce divisions, which includes the tympanohyal, stylohyal, ceratohyal and the hypohyal. Failure of degeneration and subsequent calcification of the portion of Reichert's cartilage may results in elongated styloid process or lesser cornu of the hyoid, calcification of stylohyoid ligament or rarely a solid bar of bone from the styloid process to the hyoid bone.⁶ The styloid process and the stylohyoid ligament have been linked to Eagle's syndrome. The symptoms of Eagle's syndrome are a foreign body sensation in the pharynx, causing difficult and painful swallowing and earache. 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. It has also been referred to as styloid syndrome, stylohyoid syndrome, stylalgia, stylohyoid disorder, neuralgia of styloid process, cervicopharyngeal pain syndrome.⁷ The styloid process was significantly closer to the tonsillar fossa in patients with Eagle syndrome.⁸

Physical examination and history are the most important diagnostic elements. An elongated styloid process may be palpated during intraoral examination and may elicit symptoms of Eagle syndrome.⁹ Diagnosis is made both radiologically as well as by physical examination by palpating the styloid process in the tonsillar fossa. Palpation of the tip of the styloid process in the tonsillar

fossa is indicative of elongated styloid process as normal length is not palpable.¹⁰ Most frequently, a panoramic radiograph is used to determine whether the styloid process is elongated. In reviewing these radiographs, it should be noted that the normal length of the styloid in an adult is approximately 2.5 cm.¹¹ Lateral view radiographs of the skull can be substituted for panoramic radiographs and an anteroposterior view radiograph should be obtained to determine whether there is any lateral deviation of the styloid. CT is useful in that it provides complementary information to that provided by plain radiographic studies.¹²

The treatment for Eagle's syndrome may be medical or surgical. Medical treatment consists of infiltration of steroids or local anesthetics, or oral administration of carbamazepine. However, the long-term results of medical treatment are not satisfactory.¹³ The styloid process may be partially removed by intra- or extra-oral approaches. The extra-oral approach has the advantage of providing better visualization of the operative field, and it is possible to resolve any vascular injury without major complications. However, there are some disadvantages, such as the complexity of the technique that demands longer operating time, and an external scar that is not cosmetically pleasing. The intra-oral approach has advantages over the extra-oral technique in that it is quicker and easier to perform, eliminates the need for extensive dissection considering the risks in the cervical region, and does not leave an external scar.¹⁴

Conclusion

Any case of pain or irritation in the upper part of the neck or throat can be due to elongated styloid process. With the use of modern sophisticated tools i.e. 3D CT scan, now it is very easy to diagnosed elongated styloid process as it gives the actual length of the styloid process.

References

1. Standring S. Head and neck. In: Grey's Anatomy, the anatomical basis of clinical practice. 40th ed. Elsevier Churchill Livingstone, 2008; p 412.
2. Solker K, Sandev S. New classification of styloid process length- clinical application on the biological base. Coll Antropol 2001; 25:627-632.
3. Kim E, Hansen K, Frizzi J. Eagle syndrome: case report and review of literature. Ear Nose Throat J. 2008;87: 631-633.
4. Balbuena L, Hayes D, Ramirez SG, Johnson R. Eagle's syndrome (elongated styloid process). South Med J 1997;90:331-334
5. Cawish SO, Gardner M, Shetty R, Harding HE. A post mortem study of the elongated styloid process in a Jamaican population. The Internet journal of Biological Anthropology. 2009; vol.3: no.1.
6. S Subramaniam, Abd Majid. Eagle syndrome. Med J Malaysia, March 2003; 58; P 139-141.
7. Rodriguez- Vazquez JF, Merida-Velasco JR, Verdugo-Lopez S, Sanchez-Montesinos I, Merida-Strauss M, Zohar Y and Laurin N. Elongated styloid process syndrome: Intraoral versus external approach for styloid surgery. Laryngoscope 1979; P 976-979.
8. David T, Kent MD, Tanya J, Rath MD, Carl Synderman. Conventional and 3 – Dimensional Computerized Tomography in Eagle's Syndrome, Glossopharyngeal Neuralgia, and Asymptomatic controls. Otolaryngology-Head and neck Surgery 2015, Vol. 153(1)-41-47.
9. Okur A, Ozkiris M, serin HI, et al. Is there is relationship between symptoms of patients and tomographic characteristics of styloid process? Surg Radiol Anat. 2014; 36: 627-632.
10. Shobha G, afil M Alex, Uma Gopal. A case of elongated styloid process of

- skull(Eagle syndrome). Journal of Ayurveda and Holistic Medicine; 2013; (7): 30-33.
11. Eagle WW. Elongated styloid process: symptoms and treatment. Arch Otolaryngol, 1958; 64: 172-176.
 12. Ryan D. Murtagha, Jamie T. Caracciolo, Gasper Fernandez. CT findings associated with eagle syndrome. AJNR 2001; 22; 1401-1402.
 13. Ceylan A, Koybasioglu A, Celenk F, Yilmaz O, Uslu S. Surgical treatment of elongated styloid process: Experience of 61 cases. Skull Base. 2008;18:289–95.
 14. Blythe JN, Matthews NS, Connor S. Eagle's syndrome after fracture of the elongated styloid process. Br J Oral Maxillofac Surg. 2009;47:233–5.