

Unusually elongated styloid process: A report of two cases with literature review

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ABSTRACT

Eagle's syndrome is most often associated with an elongated styloid process or ossified stylohyoid ligament, which may result in cervicofacial pain. Since the symptoms are vague and nonspecific, patients with the Eagle's syndrome are difficult to diagnose. We here report two cases of Eagle's syndrome, one case with unusually elongated styloid process of size 6.97 cm, in whom imaging with computed tomography established the diagnosis and managed by local infiltration of lidocaine and steroid; in another case the length of styloid processes were 3.47 cm and 3 cm respectively and was managed surgically.

Keywords: Anatomical variation, Eagle's syndrome, stylohyoid syndrome

INTRODUCTION

The styloid process is derived from the Greek word "stylos" meaning a pillar. This elongation was first described in 1652 by the Italian surgeon Pietro Marchetti. In 1937, Watt W Eagle coined the term "stylalgia" to describe the pain associated with elongation of styloid process.^[1]

The styloid process is thin, cylindrical, sharp osseous process, derived from the posterior lower surface of the petrosal bone (just anterior to the stylum process). The normal length of the styloid process ranges from 25 to 30 mm. Some rare cases exist with length of 73 mm.^[2] The average lengths for the left and right styloids were 1.52 and 1.59 cm, respectively, in Indian patients.^[3] There was a greater tendency for the abnormality to be present in patients between 60 and 79 years of age.^[4] The styloid process could be long enough to cause symptoms due to compression of surrounding anatomical structures.^[5] The apex of styloid process is clinically important because it is located between internal and external carotid arteries, just lateral to the tonsillar fossa within the lateral pharyngeal wall. The tip of this process is continuous with the ligament that extends to the lesser cornua of the hyoid bone.^[4] In 4% of the general population, styloid process is grossly enlarged, and only 4–10% of this group is symptomatic.^[1] The treatment for elongated styloid process can be surgical or nonsurgical.^[6]

Here, we present two cases of elongated styloid process; in one case, the styloid process was unusually elongated.

CASE REPORTS

Case 1

A 35-year-old male patient presented to the department with a 4-month history of pain in the neck and throat region, especially during the neck movements. The medical and family history was noncontributory. There was no history of tonsillectomy or other neck surgery. On clinical examination, there was tenderness present in the left posterior auricular region and left tonsillar fossa. Orthopantomogram (OPG) revealed an elongated left styloid process [Figure 1a]. Computed tomography (CT) showed elongated left styloid process of length 69.7 mm and right styloid

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process of length 28.9 mm [Figure 1b and c]. The patient was referred to oral surgery department for surgical management. As the patient was not willing for surgery, he was given symptomatic treatment of local infiltration of lidocaine and steroid injection.

Case 2

A 35-year-old female patient presented at the department of oral diagnosis with complaints of pain and foreign body sensation in the throat for 3–4 months. The pain was dull and pricking and aggravated on swallowing. She had a history of tonsillectomy 14–15 years back. On clinical examination, tenderness on palpation of the right peritonsillar fossa region was present and pain aggravated on neck movement toward the right side. OPG showed elongated right styloid process. On CT, the length of right and left styloid processes was found to be 34.7 and 30.0 mm, respectively [Figure 2a]. The patient was referred to oral surgery department for surgical management. The right elongated styloid process was surgically removed through intraoral approach [Figure 2b and c]. After 6 months of follow-up, she had no complication.

DISCUSSION

Eagle syndrome is a condition in which there is painful sensation in the head and neck region due to elongation of the styloid process or calcification of the stylohyoid ligaments.^[7] The persistent angulation of the cranial or styloid segment or Reichert's cartilage and its important neurovascular relationships may help explain the symptomatology of Eagle's syndrome.^[8] In Eagle's syndrome, the symptoms range from mild discomfort to acute neurologic and referred pain. These symptoms may include sensation of a foreign body in the pharynx, continuous pain in the throat even after tonsillectomy, otalgia, pain on cervical rotation, facial pain, headache, dysphagia, vertigo, and syncope.^[9] That

et al. stressed that length in isolation is not a risk factor, but that its contribution with increased acuity in deviation from the norm, both anteriorly and medially, makes the elongated styloid process the sole cause of Eagle's syndrome.^[3]

The diagnosis can usually be made on physical examination by digital palpation of the styloid process in the tonsillar fossa, which exacerbates the pain and with radiographic workup.^[10] Both of our cases were younger than the cases reported in literature. One case had unusually elongated styloid process of length 6.97 cm. An 8 cm elongated styloid process is reported in the Indian skull.^[11] The average length of styloid process in Indian population reported in literature is less than that of cases we reported here.^[3] Incidence seems to range from 1.4% to 84.4% of population, which is due to great variations in radiological methodology and technique, surgical or anatomic (cadaveric or dry) specimens, ethnic variability, and predominance of unilateral to bilateral occurrence.^[4] However, the length of the styloid process has not been found to be correlated with the severity of pain.^[1]

Steinmann proposed various theories to explain ossification.^[1] These were as follows: (1) Theory of reactive hyperplasia – trauma can cause ossification at the end of styloid process down the length of the styloid ligament; since the styloid ligament contains remnant of its connective tissue and fibrocartilaginous origins, the potential for ossification remains. (2) Theory of reactive metaplasia – an abnormal posttraumatic healing response initiates the calcification of stylohyoid ligament. (3) Theory of anatomic variance – the early elongation of the styloid process and ossification of the stylohyoid ligament are anatomical variations that occur without recognizable trauma. The etiology in our Case 1 seems to be the case of anatomic variance, and in Case 2, reactive metaplasia could have occurred after tonsillectomy.

The clinical symptoms of an elongated styloid process can be misdiagnosed as salivary gland disease, otitis media,

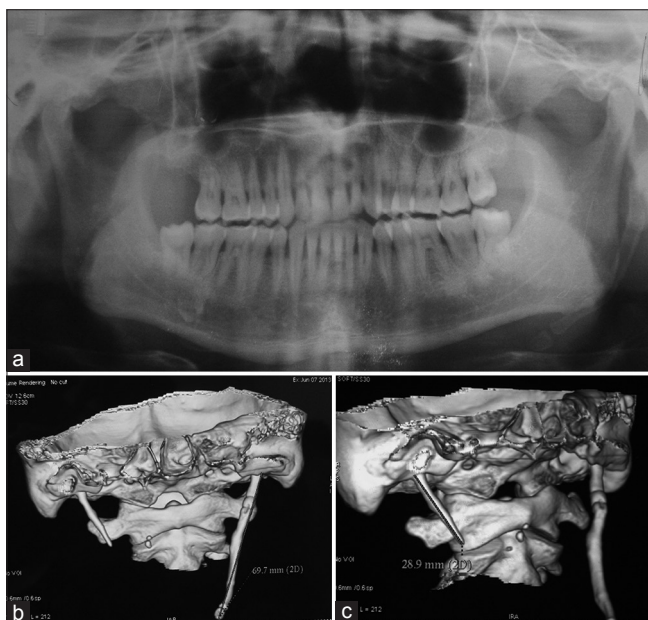


Figure 1: (a) Orthopantomogram shows elongated left styloid process. (b) Computed tomography shows left elongated styloid process of size 69.7 mm. (c) Computed tomography shows right elongated styloid process of size 28.9 mm

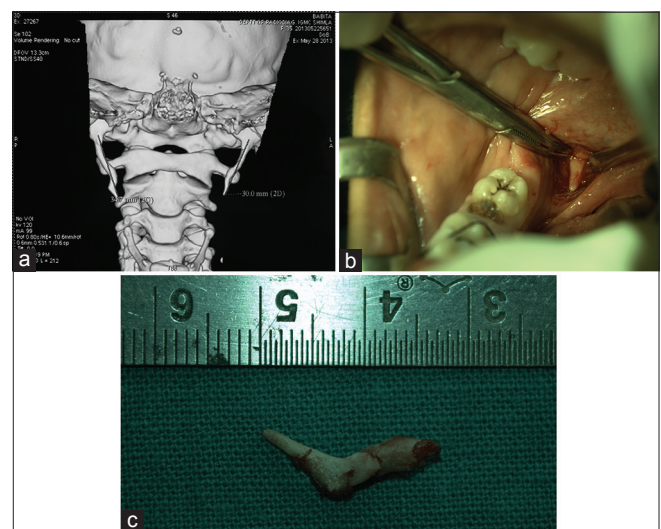


Figure 2: (a) Computed tomography shows right and left elongated styloid process of size 34.7 mm and 30 mm, respectively. (b) Intraoperative photograph showing surgical excision of the right styloid process through transoral approach. (c) Excised right elongated styloid process

temporomandibular myofascial dysfunction syndrome, or glossopharyngeal neuralgia.^[10] The treatment options for stylohyoid syndrome include surgical removal of the elongated styloid process or ossified stylohyoid ligament, injection of a steroid solution or long-acting anesthetic at the lesser horn of the hyoid or the inferior aspect of the tonsillar fossa.^[1,10] Extraoral lateral neck approach is only indicated when the intraoral approach is not possible as in limited jaw opening. Postsurgery thrombosis of the internal carotid artery is a dreaded complication.^[10] Transoral approach-assisted endoscopy is recommended for the treatment of patients with Eagle's syndrome.^[12]

CONCLUSION

Care should be taken by dentists and otorhinolaryngologists to explore styloid process in the patients with pain in the head and neck region as elongated styloid process can be one of the causes of pain in the orofacial region. A pharmacological approach with transpharyngeal infiltration of steroid or anesthetic into the tonsillar fossa can relieve symptoms, but styloidectomy is the treatment of choice.

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Conflicts of interest

There are no conflicts of interest.

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