Incidental, Bilateral Elongated Styloid Process in Head Injury – A Case Report and Review of Literature

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Abstract: Enlarged styloid process producing various symptoms has been described in literature. We report a case of asymptomatic, bilateral elongated styloid process found incidentally during computed tomography scans in a patient with head injury.

Keywords: Styloid process, Eagle’s syndrome, Elongated, Stylohyoid ligament, Head injury

1. Introduction

Styloid means a pen. Styloid process arises from the inferior surface of the temporal bone and lies anterior to the stylomastoid foramen. It’s length ranges from 25 to 30 mm¹; anything longer than this is considered an elongated styloid process².³ Between 2-30% of people may be having an elongated styloid process. It’s attachment to various ligaments and muscles and the presence of several neurovascular structures (including the facial nerve) make it clinically important. Compression of these neurovascular structures can sometimes produce symptoms. We present a case of asymptomatic, bilateral, elongated styloid process along with review of literature.

2. Case Report

A 62 years old Canadian gentleman sustained multiple intracranial contusions following a road traffic accident. He has had pulmonary embolism in the past and was on anticoagulant. He was conscious and alert with stable vitals and had mild left hemiparesis and facial paresis (supranuclear). He was managed conservatively and showed excellent improvement. The CT scan of head and neck had revealed, apart from the intracranial contusions, an elongated styloid process. The right-sided styloid process measured 42.8 mm and the left one 40 mm. On retrospective questioning he denied any symptom related to the elongated styloid process.

The idea of reporting this case is that elongated bilateral styloid process are so common and often detected while screening for other causes. They often remain asymptomatic and require intervention only when symptomatic.

3. Discussion

Elongated styloid process was noticed way back in 17th century, but Watt W. Eagle, an Otorhionologist in 1937 described this as stygalgia which was later called Eagle syndrome³.¹⁴. The abnormal length of styloid process is secondary to mineralisation of ligaments and/or calcification of digastric muscles⁴⁻³⁻⁵.⁶.

Most of the patients with elongated styloid process are asymptomatic; symptoms are seen in only 4-10 % of such cases. Women, older than 40 years are more likely to be symptomatic⁵. The symptoms could vary from neck pain, facial pain, difficulty in swallowing, earache or foreign body sensation in throat⁶.⁹. Constellation of these symptoms is known as Eagle's syndrome. Length of the styloid process has no relation to the presence or severity of symptoms⁷. The symptoms are secondary to compression of surrounding neurovascular structures. Watt Eagle in his original report had suggested the clinical symptoms could either be secondary to tonsillectomy and consequent scar formation or a manifestation of carotid artery syndrome due to mechanical irritation of sympathetic nerves⁷,¹⁰,¹¹,¹².

They are diagnosed during radiologic studies (x-ray or CT scan of neck/skull) for cervical/base-of-skull pathology or at post- mortem⁷.⁸. A 3D CT shows the styloid process in its entirety. Management would depend upon the nature and severity of symptoms. Needless to say, the asymptomatic cases need, at the most, regular follow-up as these may increase in size. Patients with pain as the only symptom can be managed conservatively with either analgesics or by injection of steroid locally. Surgery is reserved for patients who fail to improve following conservative approach⁷,¹³,¹⁴. Surgery involves excision of the styloid process. Surgical risk includes injury to the adjacent neurovascular structures¹⁵,¹⁶. Excision is carried out either through intra- or extra-oral approach; each of these approaches have their own advantages and disadvantages⁶,⁷,¹⁶,¹⁷. The intra-oral approach is quicker and avoids an external scar. Inadvertent opening of the retropharyngeal space increases risk of infection. An extra-oral approach has good anatomical exposure; however, it entails more manipulation of the neurovascular structures with attendant higher risk of injury¹⁸,¹⁹.

What constitutes an elongated styloid process? There is no unanimity in literature. The length varies in different reports.
Moffat et al\textsuperscript{20} in their cadaver study have concluded that the normal length ranges between 15.2 mm and 47.7 mm. Kolagi et al\textsuperscript{24} have reported an elongated styloid process with a length of up to 80 mm in an adult human dry skull. Kaufman et al\textsuperscript{25} in their study reported 30 mm as the upper limit for normal styloid process. Most of the case reports labeled styloid process between 3.0 cms to 4.0 cm; there however is no clear definition for the same. According to Monsour and Young\textsuperscript{21}, styloid process longer than 40 mm is considered elongated. In contrast to these case reports, Montalbetti et al\textsuperscript{23} in their radiological study have suggested 25 mm as the normal length of styloid process. Okabe et al\textsuperscript{22} have reported the length of the bilateral styloid processes ranging from 0.0 to 153.0 mm. In a recent study by Krishnasamy et al\textsuperscript{23} in 2012, they reported styloid process of 65 mm in a symptomatic patient. They also mentioned increase in its size with age. In the present case, the length of the styloid process was 40.6 mm on the left and 42.8 mm on the right side. It however was asymptomatic and was picked up incidentally. Patients found to be having such large styloid process on imaging studies should be asked about relevant symptoms. It is possible they have had the symptoms which were either not investigated or they were ascribed to be of idiopathic nature. A correct diagnosis in such cases may offer these patients freedom from such symptoms.

4. Conclusion

Elongated styloid process is not uncommon and is often overlooked. It is essential that clinicians should be aware of the anatomical variations of the styloid process and should have a thorough knowledge of the associated symptoms so as to differentiate it from atypical facial pain or pain of dental origin. Complete clinical and radiological examination help to reach at a proper diagnosis. Some of these patients can be offered help.

Abbreviations:
CT – computed tomography
3D – three dimensional

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References

Legends:
Figure 1: CT coronal view showing elongated styloid process measuring 40.6 mm on the left and 42.8 mm on the right.