

A Case of a Very Elongated Styloid Process

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ABSTRACT: Eagle syndrome is characterized by recurrent pain in the oropharynx and face due to an elongated styloid process or calcified stylohyoid ligament. In this article, we experienced a case of an elongated styloid process which is very rare in size and detailed treatment process. The patient was a 53-year-old Chinese woman with a chief complaint of frequent episodes of radiating pain in left preauricular region for 2 years. An intraoral approach was chosen to shorten part of her styloid process, and the chief complaint disappeared immediately after the operation.

KEYWORDS: Eagle syndrome, styloid process, syndrome, 3D-CT

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Background

Styloid process syndrome, also named Eagle syndrome (ES), is a condition caused by an abnormally long styloid process or calcification of the stylohyoid ligament, as well as the morphological abnormality and improper inclination of the styloid process. It causes dysphagia, facial pain recurrent throat pain, or foreign body sensation and also associated symptoms such as neck or throat pain with radiation to the ear, especially

when swallowing, moving the jaw, or turning the neck. Eagle was the first one to describe ES in 1937; he defined the length of a normal styloid process as 2.5 to 3.0 cm.¹ The normal length of the styloid process varies: styloid process is considered to be <3 cm according to Kaufman et al²; 1.52 to 4.77 cm according to Moffat et al³; <2.5 cm according to Correl et al⁴; 2 to 3 cm according to Lindeman,⁵ Langlais et al,⁶ and

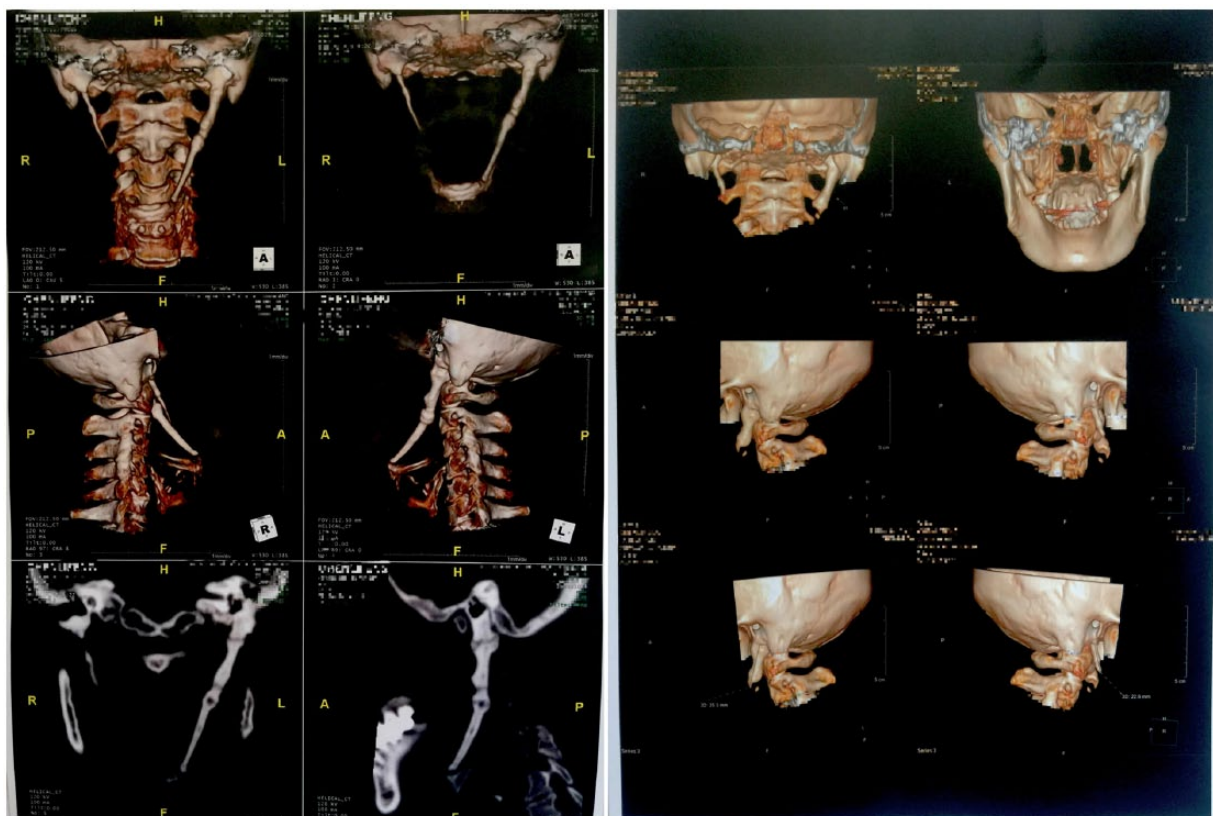


Figure 1. 3D-CT



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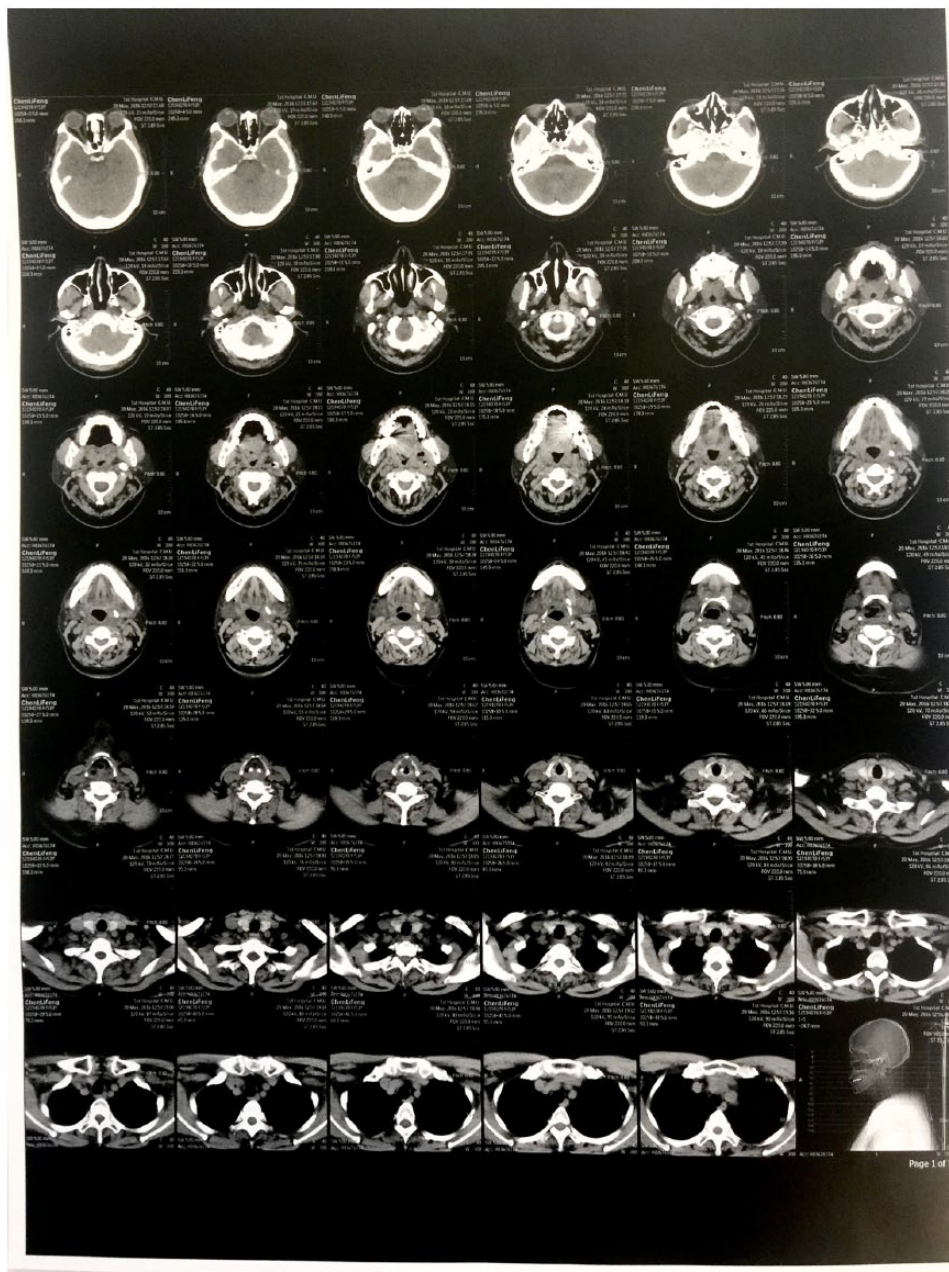


Figure 2. CT

Montalbetti et al⁷; and <4cm according to Monsour and Young.⁸ According to Balcioglu et al,⁹ the mean length of the styloid processes of the subjects reporting ES is reported to be 40 ± 4.72 mm.

Case Presentation

A 53-year-old Chinese woman complained of repeated pain in left preauricular region with radiation to the ear for 2 years and hard swallowing pain since 1 week before. She went to the dental clinic for treatment and was finally transferred to our department. Before final diagnosis was made, she was misdiagnosed as trigeminal neuralgia and pharyngitis. As early antibiotic therapy turned out to be useless, we considered ES.

Intraoral examination revealed bony hard protuberance on palpation near tonsillar region. Then, 3-dimensional computed tomography (3D-CT) showed elongated styloid processes, the lengths of left and right styloid processes were 8 and 4cm, respectively. The left styloid process was much longer and thicker than the right side. Based on clinical examination and history, the case was provisionally diagnosed with ES.

Although often using an external approach according to the size of the elongated styloid processes, we finally choose the intraoral approach to shorten the bilateral elongated styloid processes as per patient's wish. First, we made an incision in the right soft palate and shortened the elongated styloid processes about 2 cm. On the left, we removed the moderately enlarged tonsils to enable wider visualization in the operative field, took

out the middle part of elongated styloid processes exposed and left the rest in her body, and then closed the incisions with sutures. Her chief complaint disappeared immediately after the operation. A CT scan was ordered, then the rest of elongated styloid processes can be clearly seen, and the postoperative pathologic results revealed that her bilateral styloid processes were ossified.

Discussion and Conclusions

The styloid process arises embryonically from the Reichert cartilage of the second branchial arch and it forms the stylohyoid apparatus with the stylohyoid ligament and the small horn of the hyoid bone. Eagle syndrome will occur if with styloid processes dysplasia. The symptoms related to Eagle's syndrome can be confused with those attributed to a wide variety of facial neuralgia and or oral, dental, and temporomandibular joint diseases.¹⁰ The cause remains unclear, but theories mainly focus on congenital elongation due to persistence of cartilaginous precursors, posttraumatic scarring, and hyperplasia related to previous tonsillectomy.¹¹ Eagle syndrome occurs in around 4% of the general population; it is usually asymptomatic, with only 4% of patients presenting with symptoms.¹⁰ Eagle syndrome is more commonly observed in women in the third to fifth decades of life.

As it is relatively rare in ENT (ear, nose, and throat) department diseases, misdiagnoses are often made. The differential diagnosis of ES includes temporomandibular joint disease, migraine headaches, trigeminal, glossopharyngeal and sphenopalatine neuralgias, and chronic laryngopharyngeal reflux.^{12,13} The wide range of nonspecific symptoms may lead physicians to an inaccurate clinical diagnosis and make the true diagnosis even more challenging. Careful evaluation of the history of present illness and review of systems should be combined with palpation of the anterior pillar region when ES is suspected.¹⁴

Beder¹⁵ recommended that 3D-CT was the radiologic investigation of choice for elongated styloid process because of the most advanced technique available for definitively measuring the length of the styloid process. Computed tomographic scans not only provide relevant information for diagnosis but are also useful when planning removal.

Once diagnosis is confirmed, the management of this disease process has been known to be nonsurgical or surgical treatment.^{16,17} Nonsteroidal anti-inflammatory drugs, neck exercises, steroids, or local anesthetic injections have been previously described for nonsurgical management. However, the long-term effectiveness of these approaches still remains controversial. Ghosh¹⁸ insisted that surgical treatment was the only way to relieve symptoms which is often performed using

an intraoral or external approach. The external approach to the styloid process involves a transcervical approach to the parapharyngeal space and wider visualization in the operative field than an intraoral approach, however, requiring longer surgical time and more surgical trauma (Figures 1 and 2).^{19–22}

Author Contributions

HY contributed to the conception of the study, YL performed the data analyses and wrote the manuscript, XC helped perform the analysis with constructive discussions.

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