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ELONGATED STYLOID PROCESS - A CASE REPORT

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ABSTRACT

The styloid process is normally 2 to 2.5 cm in size in adults. During routine study of bones in the department of Anatomy at K.S. Hegde medical Academy, Mangalore, Karnataka an unusual unilateral elongated left styloid process was observed. This type of elongated styloid process of 4.5 cm is very rare, which prompted us to report the case. The knowledge about this rare variation is important for dental surgeons while investigating a case with pain in the neck and oral cavity. It is also important for accurate diagnosis of symptoms dysphagia, headache and pain on rotation of the neck, pain on extension of the tongue, change in voice, and a sensation of hypersalivation. Its embryological cause and clinical significance will be discussed.

Key Words: Eagle's Syndrome, Elongated Styloid Process, Stylohyoid Ligament

INTRODUCTION

The styloid process is a slender, cylindrical bone that arises from the temporal bone in front of the stylomastoid foramen which normally varies from 2 to 2.5 cm in size in adults Eagle (1948). When the styloid process exceeds this, it is assigned the term elongation Pinto *et al.*, (2008). The tip of styloid process is located between the external and internal carotid arteries, just lateral to the tonsillar fossa Hollinshead (1982). The accessory and vagus nerve also run medial to styloid process. Thus the tip of styloid process is clinically important. The elongation of styloid process is considered an anomaly which can be accompanied by calcification of the stylohyoid and stylomandibular ligaments, which can trigger a series of symptoms such as dysphagia, odynophagia, facial pain, ear pain, headache, tinnitus and trismus. This set of symptoms associated with the elongated styloid process is called Eagle's syndrome Lages *et al.*, (2006).

The first mention of elongated styloid process in literature was by Luke in 1870 Eagle (1948). It occurs in around 4% of the general population. It is usually asymptomatic, with only 4% of patients presenting with symptoms Prasad *et al.*, (2002). It shows a slight gender predilection for females than males Keur *et al.*, (1986), O'Carroll (1984). Bilateral elongation occurred in 50 % of the patients but only half of them had bilateral symptoms Harma (1967). Symptomatic patients are usually over 40 years of age, and this is thought to be because regional ligaments and soft tissues become less elastic with age and offer more resistance to surrounding hard tissue structures Camarda (1989).

CASES

During routine study of bones in the department of Anatomy at K. S. Hegde Medical Academy, Mangalore, Karnataka, we observed an unusual unilateral elongated styloid process of left side of a male adult skull [Figure 1].

DISCUSSION

The stylohyoid chain components are derived embryologically from the first and second branchial arches in four distinct segments: tympanohyal, stylohyal, ceratohyal and hypohyal segments.

The length of the styloid process was 4.5 cm. No other unusual feature of the skull was found.

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Figure 1: Photograph showing elongated styloid process

These segments are derived from Reichert's cartilages that ossify in two parts. The styloid process develops from the tympanohyal and stylohyal segments that usually fuse at puberty. The lesser horn of the hyoid bone arises from the hypohyal segment. Connecting these two structures, the stylohyoid ligament originates from the ceratohyal segment Rodriguez-Vazquez *et al.*, (1979). The styloid process, stylohyoid ligament and lesser horn of the hyoid bone are derived from Reichert's cartilage, which arises from the second branchial arch. The cause of elongation of the styloid process is not fully known. Several theories have been proposed such as persistence of a cartilaginous anlage in the stylohyale, calcification of the stylohyoid ligament or growth of osseous tissue at the insertion of the stylohyoid ligament Balasubramanian (1964).

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 Rodriguez-Vazquez *et al.*, (1979). Additional symptoms such as neck or throat pain with radiation to the ipsilateral ear can also be present. In adults the styloid process is approximately 2 to 3 cms in length and its tip is located between external and internal carotid arteries just lateral to the tonsillar fossa. It may develop inflammatory changes or impinge on the adjacent arteries, on sensory nerve endings leading to the symptoms.

Diagnosis is made both radiographically and by physical examination. Exacerbation of pain on palpation of the styloid process in the tonsillar fossa, is indicative of elongated styloid process. In addition relief of symptoms with injection of an anesthetic solution in to the tonsillar fossa is highly suggestive of this diagnosis. Confirmation of Eagle's syndrome can be made by radiographic studies Rechtweg, Wax

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(1998). The treatment of Eagle's syndrome is by surgically shortening of styloid process Strauss *et al.*, (1985).

CONCLUSION

The unilateral elongated styloid process is a rare deformity. A comprehensive awareness and understanding of the lesion and its signs and symptoms will help the dental surgeons dealing with the case of oral or neck pain. CT and MRI scan are the most reliable test for evaluating and demonstrating its morphology. These reports of increase in the styloid process aimed to alert dentists in the knowledge of this disease in order to include it in the differential diagnosis associated with atypical pain in the face or oral cavity in order to facilitate best treatment for these cases.

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