Unexpected bony structure in tonsillar fossa during tonsillectomy

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Abstract

Introduction. The elongated styloid process is a very rare clinical entity. In most cases it is asymptomatic, but also could cause Eagle’s syndrome. We presented a rare case of the anatomic variation of styloid process and its clinical implication. Case report. In the left tonsillar fossa an unexpected bony structure was found during the routine tonsillectomy on a 16-year-old female patient. Computed tomography showed the elongated styloid process. No further treatment was necessary because it was asymptomatic in the follow-up period. Conclusion. The elongated styloid process is a very rare condition, but physicians should be aware of it and keep it in mind in order to make the diagnosis in patients with suggestive symptoms.

Key words: temporomandibular joint disorders; ossification, heterotopic; diagnostic techniques and procedures; tonsillectomy.

Discussion

The stylohyoid components are derived embryologically from the first and second branchial arches. The styloid process. After removal of the left tonsil, a straight hard mass about 2 cm (intraoperatively) was seen in lateromedial direction (Figure 1). Normally, the styloid process of normal length are not palpable in the tonsillar fossa, and if it is possible, it is elongated styloid. After the operation, computed tomography (CT) scan was done showing one-sided elongated styloid process (Figure 2). It was an unexpected finding during tonsillectomy because the patient was symptom-free, so no further treatment was necessary. Unusual, asymptomatic, hard mass in tonsillar fossa only need further imaging and precise information for patient.

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develops from the tympanohyal and stylohyal segments and is usually connected in adolescents\textsuperscript{5}.

The stylohyoid ligament starts from the tip of the styloid process to the hyoid bone. The stylomandibular ligament extends from the styloid process to the angle of the mandible. There are three muscles: the stylopharyngeus, stylohyoid and styloglossus and innervation comes from IX, VII, XII cranial nerves, respectively. The internal jugular vein and XI, XII, X, IX cranial nerves are located medial to the styloid process. The glossopharyngeal nerve has close relation with the styloid process. It passes from the jugular foramen, medial to the styloid process, where it curves around the posterior border of the stylohyoid muscle. This anatomic relationship is important due to explanation of glossopharyngeal neuralgia in cases with the elongated or fractured styloid process.

The usual length of the styloid process in an adult is approximately 2.5 cm and could not be detected in tonsillar fossa after tonsillectomy. An elongated styloid is defined as greater than 3 cm\textsuperscript{3}. The longest symptomatic elongated styloid process was around 6.3 cm and underwent surgery\textsuperscript{6}. Nevertheless, the length as a single parameter is not a risk factor but its combination with direction and curvature is important for severity of symptoms\textsuperscript{7}.

The males had greater styloid process lengths than the females\textsuperscript{8}.

The elongated styloid process rarely occurs in childhood or adolescence\textsuperscript{9}. Nevertheless, in this study the presented patient was 16 years old.

Although the elongated styloid process is usually bilateral\textsuperscript{10}, in the presented patient was unilateral. Nevertheless, bilateral cases do not always involve bilateral symptoms.

Etiology of the elongation is a poorly understood process and there are three theories for explaining the development of elongated styloid process. The first theory is the hyperplasic reaction of the styloid ligament stimulated by pharyngeal trauma that caused ossification of the ligament. According the second theory there is a metaplastic reaction of styloid ligament, also due to traumatic stimulus, which results in ossification. The third theory is that the styloid process and the styloid ligament are anatomic variations\textsuperscript{11}.

Eagle’s syndrome is characterized most frequently by neck, throat or ear pain, pharyngeal foreign body sensation or dysphagia. The pathophysiological mechanism of symptoms could be several. It could be a traumatic fracture of the styloid process with causing proliferation of granulation tissue pressure on the surrounding structures, or compression of adjacent nerves, the glossopharyngeal, trigeminal or chorda tympani\textsuperscript{12}. Degenerative and inflammatory changes could be in the tendinous portion of the stylohyoid insertion. Also, there are the irritation of the pharyngeal mucosa by direct compression or post-tonsillectomy scarring or striking of the carotid vessels, producing irritation of the sympathetic nerves in the arterial sheath\textsuperscript{13}.

CT with coronal and sagittal views is necessary for the accurate diagnosis of the elongated styloid process and for defining its angulation and anatomic relationship\textsuperscript{14}. Three-dimensional CT (3D-CT) has several advantages over conventional coronal and axial CT images, because of its ability to accurately image the anatomy and for defining angulation and direction of the styloid process and its anatomic relationship\textsuperscript{15,16}. CT finding could show several possible variations: elongated, pseudoarticulated or segmented styloid process, and according to the calcification: peripheral, partial, complete or nodular type of calcification\textsuperscript{6}.

Eagle’s syndrome can be treated medically and surgically. Conservative treatment includes transpharyngeal infiltration of steroids or anesthetics into the tonsillar fossa. The surgical approaches for styloidectomy are intraoral or extraoral approach\textsuperscript{17}. Asymptomatic cases need only follow-up, good patient information and subsequent health monitoring.

**Conclusion**

The elongated styloid process is a very rare condition, but physicians should be aware of it and keep it in mind in order to make the diagnosis in patients with suggestive symptoms.
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