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Unexpected bony structure in tonsillar fossa during tonsillectomy

Neočekivana koštana struktura u tonzilarnoj jami tokom tonzilektomije

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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.

Apstrakt

Uvod. Produžen stiloidni nastavak je veoma redak klinički entitet. U većini slučajeva je asimptomatski, ali može uzrokovati Eagle-ov sindrom. Prikazali smo anatomske varijacije i kliničku prezentaciju stiloidnog nastavka, kao i indikacije za lečenje bolesnika sa tim sindromom. **Prikaz bolesnika**. Tokom rutinske tonzilektomije kod 16-godišnje bolesnice nađena je neočekivana koštana struktura u levoj tonzilarnoj jami. Načinjena je kompjuterizovana tomografija i nađen je produženi stiloidni nastavak. U periodu praćenja bolesnica nije imala simptome produženog stiloidnog nastavka, pa dalje lečenje nije bilo potrebno. **Zaključak**. Produženi stiloidni nastavak veoma je redak entitet. Radi pravilne dijagnoze i mogućeg daljeg lečenja bolesnika sa tim sindromom, lekari moraju biti upoznati sa njegovom kliničkom prezentacijom i simptomatologijom koju daje.

Ključne reči:

temporomandibularni zglob, poremećaji; osifikacija, heterotopična; dijagnostičke tehnike i procedure; tonzilektomija.

Introduction

An elongated styloid process is an extremely rare clinical entity. It could cause Eagle's syndrome with vague symptomatology¹, facial pain or be silent and incidentally find during tonsillectomy², but also could cause a sudden death³.

Data from literature show that 0.04–0.08% of population suffer from this disease and only 0.16% patients are actually symptomatic 4 .

We presented a rare case with unexpected bony structure in the left tonsillar fossa without characteristic symptoms for elongated styloid process, found during the routine tonsillectomy.

Case report

A 16-year-old female patient underwent tonsillectomy under general anesthesia due to chronical tonsillitis. The patient did not suffer any characteristic symptoms for elongated 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.

The Ethic Committee of the Clinical Hospital Center "Zemun", Faculty of Medicine, University of Belgrade approved this case report.

Disscusion

The stylohyoid components are derived embryologically from the first and second branchial arches. The styloid process

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Fig. 1 – After removal of the left tonsil, a hard mass about 2 cm long was pointed into tonsillar fossa intraoperatively. SP – soft palate; U – uvula; PPW – posterior pharyngeal wall; PPA – palatopharyngeal arch; PGA – palatoglossal arch; TF – tonsillar fossa; ESP – elongated styloid process.



Fig. 2 – Computed tomography (CT) scan (coronal view) shows the left-sided elongated styloid process.

develops from the tympanohyal and stylohyal segments and is usually connected in adolescents 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, 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 cm³. The longest symptomatic elongated styloid process was around 6.3 cm and underwent surgery 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 symptoms⁷.

The males had greater styloid process lengths than the females 8 .

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

Although the elongated styloid process is usually bilateral 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 variations¹¹.

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 tympani¹². Degenerative and inflammatory changes could be in the tendonous portion of the stylohyoid insertion. Also, there are the irritation of the pharyngeal mucosa by direct compression or posttonsillectomy scarring or striking of the carotid vessels, producing irritation of the sympathetic nerves in the arterial sheath¹³.

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 ¹⁴. Threedimensional 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 ^{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 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 approach¹⁷. 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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