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IP Indian Journal of Anatomy and Surgery of Head, Neck and Brain

Journal homepage: https://www.ijashnb.org/

Case Report

Case report: Bilateral ossification of the stylohyoid ligaments

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Abstract

The stylohyoid ligament extends from the styloid process to the lesser cornu of the hyoid bone and develops from Reichert's cartilage of the second pharyngeal arch. While partial calcification of the ligament is relatively common, complete ossification is rare and may be associated with Eagle's syndrome. During routine cadaveric dissection, we observed bilateral ossification of the stylohyoid ligaments. On both sides, the ossified ligaments were firmly attached to the styloid processes and the hyoid bones, eliminating any degree of movement of the hyoid apparatus. Bilateral ossification of the stylohyoid ligaments is a rare anatomical variation. Awareness of this condition is important for clinicians, as it may present with symptoms of Eagle's syndrome or complicate surgical and anesthetic procedures, including tracheal intubation.

Keyword: Stylohyoid ligaments, Eagle's syndrome, Calcification of stylohyoid, Ossification of stylohyoid.

Received: 01-09-2025; **Accepted:** 09-10-2025; **Available Online**: 27-10-2025

1. Introduction

The stylohyoid complex consists of the styloid process, stylohyoid ligament, and the lesser cornu of the hyoid bone. These structures are derivatives of Reichert's cartilage, the cartilage of the second pharyngeal arch. The cranial end forms the styloid process, the caudal end develops into the lesser cornu of the hyoid bone, and the intervening perichondrium persists as the stylohyoid ligament.

Partial calcification of the stylohyoid ligament is relatively common, occurring in approximately 4% to 28% of the normal population,[1] due to its cartilaginous origin. However, complete ossification of the ligament is rare. In certain instances, ossification may be associated with elongation of the styloid process, resulting in Eagle's syndrome. Eagle's syndrome is the symptomatic entity characterized by throat discomfort, dysphagia, otalgia, or cranial nerve compression–related symptoms. In 1937, Eagle proposed that the normal length of the styloid process ranges between 2.5 and 3.0 cm. Subsequent radiographic and three-dimensional computed tomography (3D-CT) studies have reported varying definitions of its normal length, though a styloid process or mineralized stylohyoid ligament measuring 30 mm or more is generally regarded as elongated.[2]

Although elongation and ossification of the stylohyoid complex are often asymptomatic and detected incidentally during imaging, bilateral complete ossification is exceedingly uncommon. Such findings can mimic other orofacial or cervical pathologies, including temporomandibular joint disorders, glossopharyngeal neuralgia, and tonsillitis-related pain syndromes, often leading to diagnostic challenges. Advanced imaging modalities such as panoramic radiography and 3D-CT play a pivotal role in delineating the precise morphology, extent, and orientation of the ossified structures. Recognition of these variations is essential for accurate diagnosis, differential interpretation, and surgical planning in head and neck procedures. Awareness of this entity also aids in preventing inadvertent injury to adjacent neurovascular structures during maxillofacial or otolaryngologic surgeries. The present report describes a rare case of bilateral complete ossification of the stylohyoid ligaments and discusses its embryological basis, clinical implications, and radiological significance.

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https://doi:10.18231/j.ijashnb.13504.1760593843

2. Case Presentation

During routine cadaveric dissection in the Department of Anatomy, we observed bilateral ossification of the stylohyoid ligaments in an adult cadaver. On both sides, the ligaments were completely ossified and firmly attached to the styloid processes proximally and the hyoid bones distally. No mobility of the stylohyoid complex was possible.

3. Results

The finding confirmed complete ossification of the stylohyoid ligaments bilaterally. (**Figure 1**) This rare anatomical variation resulted in a fixed stylohyoid complex with loss of flexibility between the styloid process and hyoid bone.

4. Discussion

The stylohyoid complex, derived from Reichert's cartilage—the cartilage of the second pharyngeal arch—comprises the styloid process, the stylohyoid ligament, and the lesser cornu of the hyoid bone. The cranial end of Reichert's cartilage forms the styloid process, the caudal end develops into the lesser cornu of the hyoid bone, and the intervening perichondrium persists as the stylohyoid ligament.

Ossification of the stylohyoid ligament is an uncommon variation, with complete bilateral ossification being especially rare.[3,5] While often asymptomatic, it may mimic or cause Eagle's syndrome, depending on whether adjacent neurovascular structures are compressed. Symptoms may include foreign body sensation in the throat, dysphagia, otalgia, cervical pain, headache, vertigo, and syncope.[5-7] The pain may get intensify while opening the mouth.[8] It has been hypothesised that the pain is due to compression of the glossopharyngeal nerve as it passes over the superior constrictor muscle.[9] The diagnosis can be made on plain radiograph, but CT is the most accurate.[10]

Elongated styloid processes occur in about 4% of the population, and only 4–5% of these cases are symptomatic.[1] Ossified ligaments may compress the carotid sinus, leading to hypotension or syncope,[2] or complicate anesthetic procedures, particularly tracheal intubation. In the present case, ossification resulted in a rigid stylohyoid complex, suggesting that such patients, if alive, might have presented with restricted laryngeal movement or swallowing difficulties.

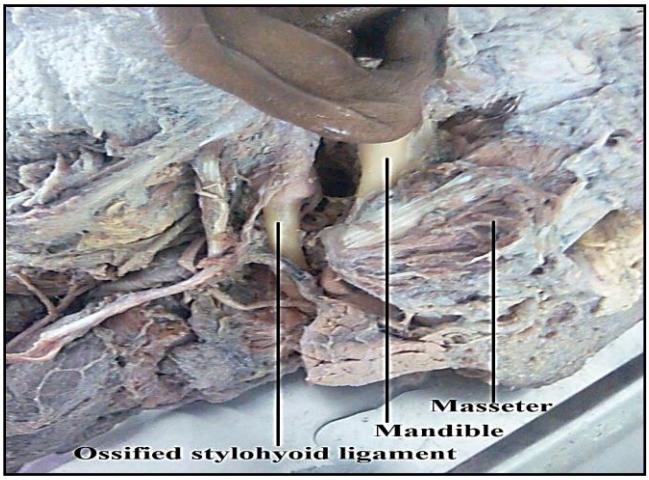

Figure 1: Ossification of stylohyoid ligament.

5. Conclusion

We report a rare case of bilateral ossification of the stylohyoid ligaments identified during cadaveric dissection. This anatomical variation may have important clinical implications, particularly in the diagnosis of Eagle's syndrome and in surgical or anesthetic procedures involving the neck. Awareness of such variations is essential for clinicians.

6. Source of Funding

None.

7. Conflict of Interest

None.

Reference

1. Taheri A, Firouzi-Marani S, Khoshbin M. Nonsurgical treatment of stylohyoid (Eagle) syndrome: a case report. *J Korean Assoc Oral Maxillofac Surg*. 2014;40(5):246-9. https://doi:10.5125/jkaoms.2014.40.5.246
2. Kaushik A, Tanwar R, Garg P, Kaushik M, Panwar R, Garg S. Calcified stylohyoid ligaments: a diagnostic dilemma. *SRM J Res Dent Sci.* 2012;3(4):275-8. https://doi:10.4103/0976-433X.114976
3. Asutay F, Erdem NF, Atalay Y, Acar AH, Asutay H. Prevalence of elongated styloid process and Eagle syndrome in East Aegean population. *Bezmialem Sci.* 2019;7(1):28-32. https://doi:10.14235/bas.galenos.2018.991
4. Antic M, Antic VM, Kundalic B, Krtinic D, Pavlovic M, Cukuranovic-Kokoris J. Bilateral ossification of the stylohyoid ligament. *Acta Med*. 2016;55(2):46-9.
5. Feldman VB. Eagle's syndrome: a case of symptomatic calcification of the stylohyoid ligaments. *J Can Chiropr Assoc*. 2013;47(1):21-7.
6. Khairallah A. CBCT findings of complete calcification of the stylohyoid ligament: case reports. *J Dent Health Oral Disord Ther*. 2015;2(2):41-4. https://doi: 10.15406/jdhodt.2015.02.00040
7. Moon CS, Lee BS, Kwon YD, Choi BJ, Lee JW, Lee HW. et al. Eagle's syndrome: a case report. *J Korean Assoc Oral Maxillofac Surg.* 2014;40(1):43-7. https://doi:10.5125/jkaoms.2014.40.1.43
8. Kabak S, Savrasova N, Melnichenko Y, Vysotski A, Mashchanka I. Stylohyoid complex syndrome: a report of two cases and review of the literature. *Heliyon.* 2020;6(5):e03937. https://doi:10.1016/j.heliyon.2020.e03937.
9. Saccomanno S, Greco F, De Corso E, Lucidi D, Deli R, D'Addona A, et al. Eagle's syndrome, from clinical presentation to diagnosis

and surgical treatment: a case report. *Acta Otorhinolaryngol Ital*. 2018;38(2):166-71. https://doi:10.14639/0392-100X-1479

10. Cohn JE, Othman S, Sajadi-Ernazarova K. Eagle syndrome masquerading as a chicken bone. *Int J Emerg Med*. 2020;13(1):262-7. https://doi:10.1186/s12245-020-0262-7.

Cite this article: Sherin RS, Sherly SR. Case report: Bilateral ossification of the stylohyoid ligaments. *IP Indian J Anat Surg Head, Neck Brain* 2025;11(1):71-73.