

# Eagle Syndrome Unmasked by Acute Parotitis

Kara Anderson<sup>1</sup>, Dennis Cole<sup>2</sup>, Lynne Goebel<sup>3,\*</sup>

<sup>1</sup>Pediatric and Adolescent Medicine, Mayo Clinic Children's Center, Rochester, MN, USA

<sup>2</sup>Vascular Neurology, HCA Tristar Neurosciences, Nashville, TN, USA

<sup>3</sup>Internal Medicine, Marshall University, Huntington, WV, USA

\*Corresponding author: [goebel@marshall.edu](mailto:goebel@marshall.edu)

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**Abstract** Eagle Syndrome is elongation of the styloid process or calcification of the stylohyoid ligament that causes chronic neck and throat pain often precipitated by turning the head and frequently requires surgical treatment. However, Eagle Syndrome can also present acutely due to infections of the head and neck. In these cases, treatment of the infection with antibiotics and steroids can resolve symptoms. We highlight a case in which the patient developed acute parotitis and the cervicofacial soft tissue edema from infection caused the patient to have symptomatic Eagle Syndrome with throat pain and dysphagia due to a previously asymptomatic ossified stylohyoid ligament. Including Eagle Syndrome as part of the differential resulted in a non-surgical treatment plan with full remission of the patient's symptoms.

**Keywords:** Eagle Syndrome, parotitis, acute infection, ossified stylohyoid ligament

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## 1. Introduction

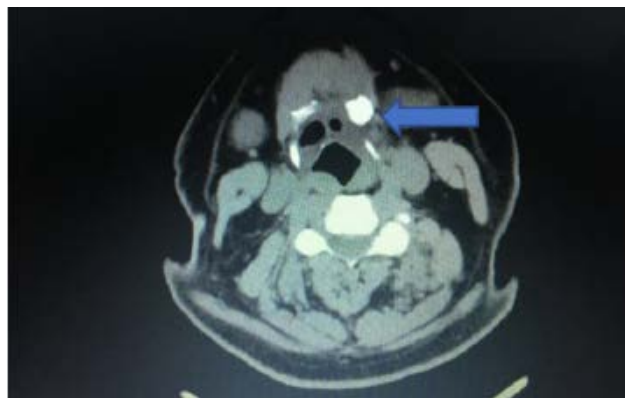
Eagle Syndrome describes two stylohyoid ligament and styloid process related conditions. In the classical stylohyoid syndrome, ossification of the stylohyoid ligament causes pain in the neck and throat, dysphagia, and foreign body sensation [1,2]. Stylocarotid syndrome involves an elongation of the styloid process resulting in compression of the carotid artery, peripheral pain and syncope [2]. Both conditions can result in Horner's syndrome, syncope with head turning, compression of the carotid with potential ischemia, and cranial nerve palsy [1,2].

The prevalence of Eagle Syndrome is not clearly known. Two prevalence studies claim 30% [3] or 44% [4] of patients have an elongated styloid process greater than 2.5 cm and/or ossification of the stylohyoid ligament making the anatomic variation fairly common. Although reports suggest that an elongated stylohyoid process or ossified stylohyoid ligament is an incidental finding, it leads to symptoms in 4% of people causing the Eagle Syndrome [2]. In our patient, Eagle Syndrome manifested only after the presence of a cervicofacial infection, an unusual presentation of an already rare syndrome.

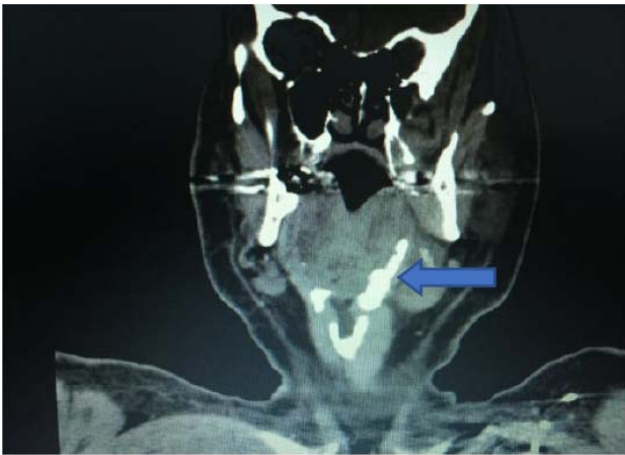
## 2. Case

A 63-year-old Caucasian male presented with a one-week history of sore throat without fever, left sided cervicofacial pain with swelling, a popping sound with turning his head and chewing, and dysphagia which

resulted in a choking sensation on swallowing his medications. Past medical history included diabetes, chronic kidney disease and ischemic cardiomyopathy. Examination showed Vital Signs: BP 130/90 P 75 T 97.5 F RR 18. He had tenderness in the left anterior cervical region with an enlarged and tender left parotid gland. He had an elevated WBC of 12.4 K/cm<sup>2</sup> (4.5-10 K/cm<sup>2</sup> normal) with 76% segmented neutrophils (44.4-80% normal), 14% lymphocytes (22.2-48% normal), 1% eosinophils (0-5% normal), and 9% monocytes (0-12% normal). The patient was diagnosed with acute parotitis and took 7 days of oral Clindamycin. At one week follow up, the patient continued to have neck pain and dysphagia despite a reduction in size of the parotid gland. A CT scan revealed prominent ossification of the left stylohyoid ligament, consistent with Eagle Syndrome (Figure 1 and Figure 2).



**Figure 1.** CT Neck axial image showing thickening just superior to insertion of the left stylohyoid ligament on hyoid bone



**Figure 2.** CT Neck coronal image showing calcification of left stylohyoid ligament at its origin superiorly

Since the patient had persistent pain and difficulty swallowing, he was given prednisone for 5 days. We consulted ENT as the patient continued to have a popping sensation when chewing and turning his neck. Flexible nasolaryngoscopy ruled out a mass and surgery was discussed, but due to gradually improving symptoms, the patient declined surgery. The patient had no symptoms at his 3 month follow up appointment.

### 3. Discussion

Our patient presented with parotitis that was initially treated with antibiotics, but symptoms persisted leading to further investigation and a diagnosis of parotitis-induced Eagle Syndrome. To our knowledge, there is only one other publication relating parotitis to Eagle Syndrome. A 65-year-old woman presented with right facial pain and was diagnosed with acute parotitis [5]. The infection resolved with antibiotics, but the patient had persistent mandibular pain. CT scan revealed an elongated styloid process. She required surgical removal of the styloid process to relieve her symptoms. Although her presentation was similar to our patient, they also had important differences. Our patient had a foreign body sensation and dysphagia. This difference may be due to our patient having calcification of the stylohyoid ligament, and the other patient having an elongated styloid process causing the Eagle Syndrome. We hypothesize that the cervicofacial edema caused by the inflamed parotid gland caused an impingement of the esophagus, stylopharyngeus muscle, glossopharyngeal or vagus nerves against the calcified stylohyoid ligament in our patient resulting in symptoms of pain and dysphagia. Furthermore, the other case required surgery for relief of symptoms, whereas our patient's symptoms resolved with antibiotics and steroids [5].

It is possible that the calcified stylohyoid ligament in our patient is an incidental finding, but we do not believe this to be the case. Although acute parotitis alone can cause dysphagia, it does not cause the popping sound with

head turning that our patient had. Also, we feel the swelling induced by the acute infection caused the symptoms because they abated after treatment with antibiotics and steroids. We do not believe the acute infection caused the calcification of the stylohyoid ligament. We feel the patient had the abnormality already and it only made itself known when the acute infection occurred. The authors in the other case associated with acute parotitis felt their patient had a congenitally elongated stylohyoid process and it took having both the acute parotitis plus the anatomic abnormality for the symptoms to occur [5].

Most often Eagle Syndrome presents with chronic, persistent, and unexplained pain. In one case, a 56-year-old female presented with right sided throat pain and foreign body sensation for two years [2]. Antibiotics and anti-inflammatory medications did not relieve her symptoms. A CT confirmed the diagnosis of Eagle Syndrome presenting as an elongated styloid process that was surgically removed [2]. In a series of eleven patients with Eagle Syndrome, patients had 1 to 11 years of cervical pain, dysphagia, and foreign body sensation [6]. Seven of the patients had a history of tonsillectomy and the authors suggest that scar tissue formation around the styloid process may have led to the excessive ossification of the styloid. None of these cases were associated with acute infection or inflammation as in our patient and they all required surgery to ameliorate symptoms.

### 4. Conclusion

Although Eagle Syndrome most often presents as chronic pain in the cervicofacial region, it should be considered in patients with persistent or atypical acute neck pain and dysphagia, especially in the presence of cervicofacial infection. A heightened awareness of the possibility of Eagle Syndrome and prompt treatment can prevent morbidity from this frequently missed cause of pain.

### References

- [1] Zeckler S.R., Betancur A.G., Yaniv G. "The eagle is landing: Eagle syndrome—an important differential diagnosis." *Br J Gen Pract.* 62(602): 501-2. Sept 2012.
- [2] Badhey A., Jategaonkar A., Anglin Kovacs A.J., Kadakia S., De Deyn P.P., Ducic Y., Schantz S., Shin E. "Eagle syndrome: A comprehensive review." *Clin Neurol and Neurosurg.* 1(159): 34-38. Aug 2017.
- [3] Keur J.J., Campbell J.P., McCarthy J.F., Ralph W.J. "The clinical significance of the elongated styloid process." *Oral Surg Oral Med Oral Pathol.* 61(4):399-404. Apr 1986.
- [4] Vieira E.M., Guedes O.A., Morais S., Musis C.R., Albuquerque P.A., Borges Á.H. "Prevalence of elongated styloid process in a central Brazilian population." *J Clin Diagn Res.* 9(9): ZC90-2. Sept 2015.
- [5] Permpalung N., Suksaranjit P., Chongnarungsin D., Hyman C.L. "Unveiling the hidden eagle: acute parotitis-induced eagle syndrome." *N Am J Med Sci.* 6(2):102-4. Feb 2014.

