

Eagle's Syndrome: Case Report and Review of Literature: An Eagle's Eye for Eagle Syndrome Diagnosis

Pallavi Saxena

Senior Resident, Department of Dentistry, Sardar Patel Medical College and Associated Hospitals Bikaner, India

ABSTRACT

Eagle's syndrome is an anomaly affecting the styloid process where it is elongated due to ossification process. The most common etiology behind this pathology is trauma, but there are many theories that have been postulated to explain its pathogenesis. The treatment of choice is always surgery but in cases where the discomfort is not much the management strategy should be non surgical with the use of anticonvulsants, analgesics and oral steroids. Therefore, we present a case report where the patient was treated with the above non-surgical protocol. A 20 year old female patient presented to the OPD of our department with a chief complaint of pain in mouth and throat and feeling of foreign body sensation in the pharynx while swallowing. During the radiological evaluation, it was found that she had an elongated styloid process on the right side. It measured about 4.5 cm. Since the discomfort was not much and the elongation of the styloid was not much the treatment of choice was non surgical. In conclusion, Eagle's syndrome has been studied very extensively by otolaryngologists, but since the presenting symptoms also involve the oral cavity therefore, a set of differential diagnosis may involve the oral cavity and hence, diagnosed and treated by the oral physician.

Keywords: Eagle's syndrome, Elongated styloid process, Neck pain

INTRODUCTION

The Styloid processes are bony needle like projections present on the temporal bone. These processes project from inferior part of petrous temporal bone. It offers site of attachment for three muscles (stylopharyngeus, stylohyoid and styloglossus) and two ligaments, (stylohyoid and stylomandibular).¹ It varies in length around 2-3cms. As a site of attachment, it directs movements of structures like tongue, pharynx, larynx, hyoid and mandible. Moreover, it provides an important location for major blood vessels and nerves like the internal jugular vein, internal carotid artery and the glossopharyngeal nerve present on its medial side while the occipital artery and hypoglossal nerve run on the lateral side.²

The length of styloid process varies in almost all individuals. Many studies have

been performed which show the length varies from 1.52 to 6cms.³ Also the length of the left and right styloid process can vary in same individual. Even though there is a huge variation in size, a styloid process is considered elongated if it has length more than 3 cms. The cases where the elongated styloid process produces symptoms of pain in the oral, pharyngeal and maxillofacial region, it is called *Eagle's syndrome*.⁴

This elongation was first described in 1652 by the Italian surgeon *Pietro Marchetti*.⁵ Later in 1937 an Otolaryngologist *Dr Watt W. Eagle*, where he described two cases, with elongated styloid processes, cervicofacial pain and history of pharyngeal trauma. The symptoms of Eagle's syndrome can be variable including pain while swallowing, earache on the ipsilateral side, pain in neck

during movement, toothache, visual disturbance, dizziness and syncope. The presence of many important structures gives suspicion of multiple pathologies as differential diagnosis. These may include pathologies concerning the temporomandibular joint, the pharynx, the otolaryngeal region, diseases of the neurological system etc. The definitive symptoms which give the idea of Eagle's syndrome is pain in the cervicofacial region, feeling of foreign body during swallowing, tinnitus, trismus, swelling in the sub mandibular region, vascular symptoms in brain due to pressure on the carotid artery.⁶ Many times these symptoms may overlap and requires precision to differentiate these symptoms from that of Eagle's syndrome. Therefore, with that idea we report a case of a 20 year old female who presented with a chief complaint of pain while swallowing and also during opening and closing of mouth.

CASE REPORT

A 20 year old female patient presented with a chief complaint of pain in the in mouth and throat while swallowing and opening and closing of mouth. On a thorough clinical history evaluation it was found that she experienced these symptoms past one year and these increased with the due course of time. Her past medical history was insignificant. She underwent clinical consultation at other institutions where she was diagnosed with temporomandibular dysfunction and was undergoing treatment for the same with no apparent improvement in her symptoms.

On clinical evaluation, the patient had tenderness near the right mastoid region, while closing of mouth there was presence of foreign body sensation in the pharynx. There was a sharp needle like pain in the pharynx when she opened her mouth. Her jaw also deviated towards the left side when she opened her mouth. Based on the symptoms, few differential diagnosis were discussed. The first differential thought was Eagle's syndrome because of the foreign

body sensation in the pharynx and the nature of pain. Another differentials thought were Temporomandibular dysfunction and also Idiopathic Orofacial Neuralgia. During an intra oral examination, no apparent lesion was found also there was no significant dental cause of the pain induction.



Fig 1: The patient was 20 year old female with no apparent extra oral lesion and had tenderness on the right mastoid region with foreign body sensation in the pharynx while swallowing.

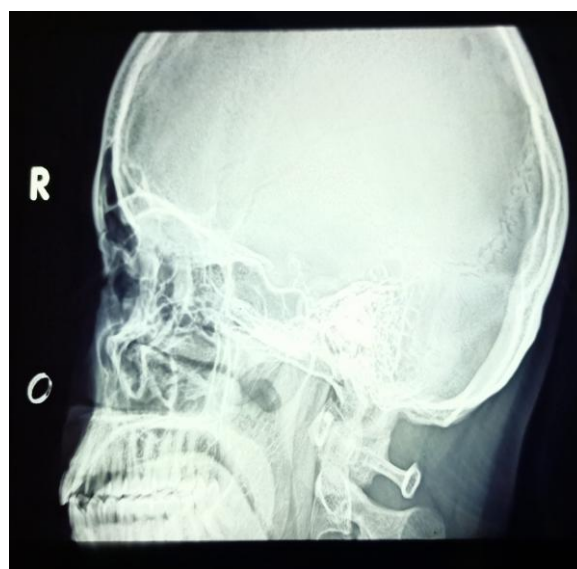


Fig 2: Radiological evaluation showed that the styloid process on the left side was in the normal range of 1.5-3.0 cm. But on the right side the styloid process measured around 4.5 cms.

For the radiological evaluation, a lateral skull view was ordered. On evaluation of both sides it was found that the styloid process on the left side was in the normal range of 1.5-3.0 cm. But on the

right side the styloid process measured around 4.5 cms. The patient was explained about the syndrome. The choice of treatment was kept as non surgical using administration of drugs. She was prescribed with Tab.Pregabalin 150mg/day, Tab Diclo+Para+Chloroxazone three times a day for 15 days and was recalled for review. During the review, it was observed the patient had ease down with the symptoms. Later she was prescribed with Tab Defcort 4mg once a day along with symptomatic relief.

The patient kept up with next subsequent follow ups where she reported with relief from the tenderness and dysphagia symptoms. Within a span of two months the pain and other symptoms were completely gone. So the treatment was first tapered to lower the dose of steroid and followed by only symptomatic relief if required. She was also explained that if she experiences recurrence of symptoms, she can take up styloidectomy as option.

DISCUSSION

Eagle's syndrome is described as the elongation of the styloid process due to mineralization or ossification. The most common etiology behind the mineralization process is thought to be trauma. From the first description given by Watt W. Eagle these patient are classified in to two separate categories. The first category is of those patients who have a "foreign body feeling" in the back of throat and pharynx. While the other category involves those who have pain in the neck following the carotid artery distribution also known as the Carotid artery syndrome. In our case, the patient presented with the classical symptom which was feeling of foreign body in the pharynx.⁷

The etiopathogenesis is based on many factors and multiple theories are proposed. Some of the theories were given by *Steinmann* in the year 1968-70. These include "Theory of Reactive Hyperplasia" which states that styloid process ossification is stimulated by pharyngeal trauma. The process of ossification begins from the tip of

stylohyoid process. This produces symptoms arising due to impingement on the carotid artery. The second theory stated is called as "Theory of Reactive Metaplasia" which states that a traumatic stimulus can cause partial ossification of the stylohyoid ligament, which ossifies completely due to presence of some ossifying centers. In this case the symptoms arise from the soft tissue of the neck producing a foreign body sensation in the pharynx.⁸ One theory given by *Camarda et al* in the year 1989 called as the Aging developmental anomaly states that due to aging, the cervical soft tissues lose their elasticity. This causes higher resistance during movement producing tendonitis. In these cases the ossification of the process has been completed at an early age, but due to less elasticity the symptom appear at later stage of life.⁹ Another theory suggested by *Lentini* in the year 1975, took genetic factor into consideration, which states that this anomaly is a type of anatomic variation and transmitted as a recessive autosomal trait.¹⁰ Furthermore, a possible etiopathogenesis stated by *Epifanio* in the year 1962 states that elongation of the stylohyoid process can take place due to the endocrinological dysfunction, which was case specific in post menopausal women.¹¹ Lastly, one theory took the process of degeneration into account, this degenerative process is followed by ossification and may occur in rheumatoid arthritis patients.¹² Therefore, when we took our case into account it can be hypothesized that most probable etiopathogenesis in our case was due to "reactive metaplasia"

Diagnosis of this syndrome is based on the presenting symptoms, palpation of the elongated styloid process and evaluation using radiological aids.¹³ In our case, the diagnosis was made on the basis of presenting symptoms and radiological evaluation.

The treatment strategies for Eagle's syndrome are surgical and non surgical. The surgical formulation includes removal of either complete or partial stylohyoid process. This can be done by using either

transoral or extra oral approach.¹⁴ But the indication for surgery here is similar to any other surgical procedure which is if the patient does not respond to non surgical treatment. Another reason for surgery is if the styloid process impinges on the carotid artery producing blood pressure changes, these cases need a more radical approach surgically. But in cases, where the stylohyoid process is not too elongated but still is producing symptoms these cases call for a more conservative approach.¹⁵ The conservative method involves prescribing oral medications such as anticonvulsants like gabapentin, analgesics or muscle relaxants like diclofenac. Sometimes, these cases can be treated with steroid and lignocaine injections. Few studies have shown that physical therapy is also useful. In our case, the patient had elongated stylohyoid process on the right side and the approximate size of the process was 4.5 cm. She was prescribed with gabapentin, analgesics and oral steroids. In majority of cases, surgery is treatment of choice, but in our case, since the patient had symptom of foreign body sensation. So, it was decided to take up conservative management strategy.

Till date Eagle's syndrome has been extensively studied by Otolaryngologists and ENT surgeons. But since the symptoms of this anomaly are also felt in the oral cavity, it becomes important for an oral physician to be able to diagnose and treat it. Moreover, Eagle's syndrome needs to be studied in further more depth, so to reach a particular etiopathogenetic mechanism and to propose a definitive treatment protocol.

REFERENCES

1. Balcioglu, H.A., Kilic, C., Akyol, M., Ozan, H., Kokten, G., 2009. Length of the styloid process and anatomical implications for Eagle's syndrome. *Folia Morphol.* 68 (4), 265–270.
2. Moffat DA, Ramsden RT, Shaw HJ. The styloid process syndrome: Etiological factors and surgical management. *J Laryngol Otol* 1977; 279-94.
3. Balasubramanian S. The ossification of the stylohyoid ligament and its relation to facial pain. *Br Dent J* 1964;116:108–111.
4. Balbuena L Jr, Hayes D, Ramirez SG, Johnson R. Eagle's syndrome (elongated styloid process). *South Med J* 1997; 90:331–334.
5. Das, S., Suhaimi, F.H., Othman, F., Latiff, A.A. Anomalous styloid process and its clinical implications. *Bratisl. Lek. Listy.* 2008; 109 (1), 31–33.
6. Eagle, W.W. Elongated styloid process: report of two cases. *Arch. Otolaryngol.* 1937; 25, 584–586.
7. Eagle, W.W. Symptomatic elongated styloid process: report of two cases of styloid process-carotid artery syndrome with operation. *Arch. Otolaryngol.* 1949; 49, 490–503.
8. Steinman EP. Styloid syndrome in the absence of an elongated process. *Acta Otolaryngol* 1968; 66:347 -56.
9. Carrada AJ, Deschamps C, Forest D. I. Stylohyoid chain ossification: A discussion of etiology. *Oral Surg Oral Med Oral Pathol.* 1989; 67:508- 14.
10. Lentini A. Gli aspetti clinici e radiologici delle anomalie dell'apparato stilo-ioideo. *Radiol Med* 1975; 61:337–364.
11. Epifanio G. Processi di stiloidei lunghi e ossificazione della catena stiloidea. *Rd Prot.* 1962;12:127–132.
12. Nelson LA. Hyoid Bursitis. *Tex Med.* 1940; 36:435–438.
13. Stafne EC, Hollinshead WHO. Roentgenographic observations on the stylohyoid chain. *Oral Surg Oral Med Oral Path* 1962; 15:1195-1200.
14. Strauss M, Zohar Y, Laurian N. Elongated styloid process syndrome: Intraoral versus external approach for styloid surgery. *Laryngoscope* 1985; 95:976–979.
15. Hampf G, Aalberg V, Tasanen A, Nyman C. A holistic approach to stylalgia. *Int J Oral Maxillofac Surg* 1986; 15: 549-52.

How to cite this article: Saxena P. Eagle's syndrome: case report and review of literature: an eagle's eye for eagle syndrome diagnosis. *Int J Health Sci Res.* 2020; 10(8):124-127.
