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Eagle's Syndrome: Is it a disease worth considering for dental pain??- A review of Literature

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Abstract- *Dental Pain is considered to be most horrifying experience by general population. Most people had a fear to face any dentist and dental related treatment for relieving of pain. But sometimes for both the dentist and patient, it becomes very annoying to recognise jaw and teeth pain if the cause of the pain in not visible inside mouth and no obvious signs and symptoms of dental and jaw pain is present. In such kind of distressful condition specialised training is required to diagnose the problem. One such condition which is not very common is Eagle's syndrome, Elongated styloid process or calcification of stylohyoid ligament. It causes recurrent throat pain, ipsilateral neck pain, dysphagia, tooth pain, foreign body sensation etc. This condition can be confused with many facial neuralgia. The definitive treatment is primarily surgical. Mainstay of diagnosis is clinical examination and radiology. In this paper presenting literature review.*

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I. Introduction:

The rarely diagnosed Eagle syndrome, described in 1937 by the otolaryngologist Watt Eagle(1). The styloid bone lies at the base of the temporal bone, posterior to the mastoid apex. The stylohyoid complex comprises the styloid process, the lesser horn of the hyoid bone, and the stylohyoid ligament. The normal length of the styloid process is about 2.5 cm, while an elongated styloid process is over 2.5 cm to 3 cm in length.In 4% of the population the styloid process is grossly enlarged,only a small percentage (between 4% and 10.3%) of this group is thought toactually be symptomatic (2). Elongation of styloid process may produce a variety of clinical presentations. Pain in the distribution of the glossopharyngeal and vagus nerves or pain radiating along the branches of carotid artery are the common symptoms. Clusters of symptoms give give rise to "Eagle's syndrome" (ES) or "Stylohyoid Syndrome" (Winkler et al, 1981; Catelani and Cudia, 1989; Babad, 1995; Chouvel et al, 1996; Feldmen, 2003).

Diagnosis is made both radiographically and byphysical examination. Palpation of the styloid processin the tonsillar fossa is indicative of elongatedstyloid in that processes of normal length are notnormally palpable. Palpation of the tip of the styloidshould exacerbate existing symptoms (2). Ifhighly suspicious for Eagle syndrome, confirmationcan be made by radiographic studies (2). Most frequently,a panoramic radiograph is used to determinewhether the styloid process is elongated. Inreviewing these radiographs, it should be noted thatthe normal length of the styloid in an adult is approximately2.5 cm (3) whereas an elongated styloid is generally .3 cm in length (4).

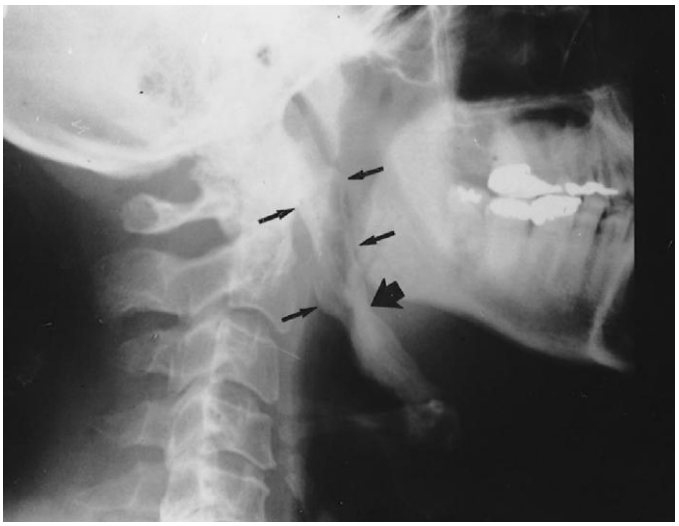

FIG 1. Lateral view plain radiograph of the cervical spine showsa large, heavily ossified structure extending from the base of theskull anterolaterally and caudally to the hyoid bone (small arrows).

II. Discussion:

Over a twenty year period, Eagle reported over 200 cases and explained that the normal styloid process is approximately 2.5–3.0 cm in length. He observed that slight medial deviation of the styloid process, could result in severe symptoms of atypical facial pain (5).

In a review of 1771 panoramic radiographs, the incidence of mineralization of the stylohyoid complex was found to be18.2% (6). The incidence of elongated styloidprocess was estimated at 3.3% out of which 55% bilateralcases in panoramic radiographs, and the male/female ratiowas 1/9 in the radiographs. Average age was43.35 ±14.88 years and no significant difference was foundin the ages of the participants, according to gender (7). Despite these figures, only 1–5% of patients aresymptomatic (8). Literaturesare not in agreement with sexual dimorphism of ES.Woolery stated that Eagle's syndrome occurs more frequentlyin women while others do not (9).

The characteristic dull and nagging pain of an elongated styloid process that becomes worse during deglutition andcan be reproduced by palpation of the tonsillar fossa is thehallmark (10).

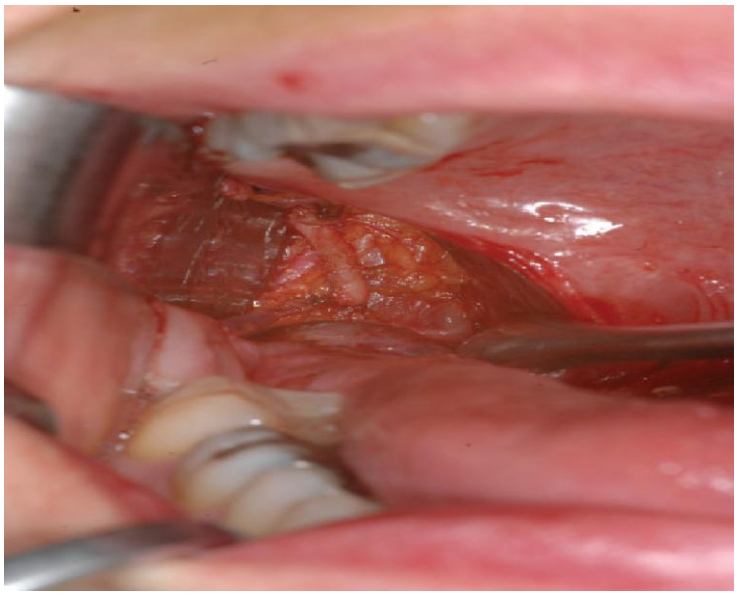

Fig 2: Intraoperative view of the surgical field. The distal third of the styloid process is completely exposed.

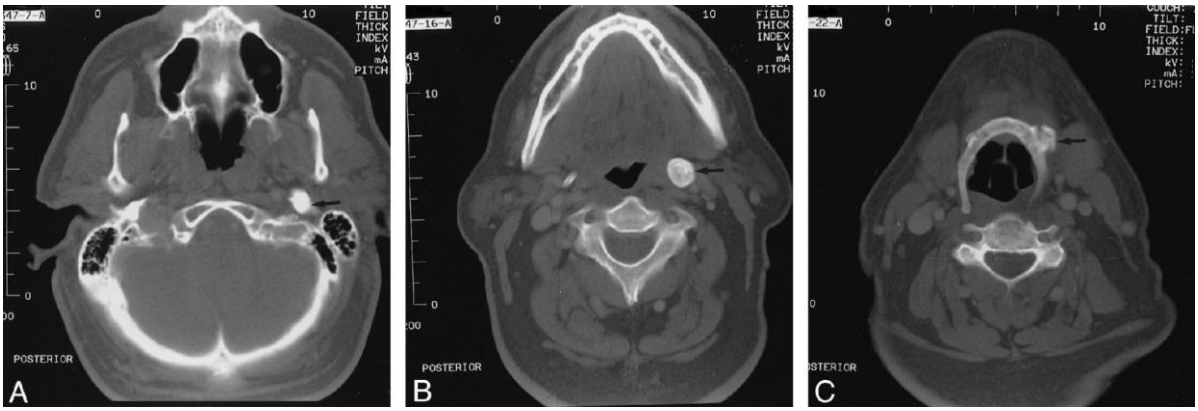

Figure 3: Unenhanced high resolution bone window CT scans of the neck show the heavily ossified styloid process in the axial plane.

A: Origin is seen just in front of the stylomastoid foramen (arrow).
B: Midportion of calcified styloid process, at the widest aspect (arrow), can be seen.
C: Distal insertion of the calcified styloid into the anterolateral hyoid bone (arrow) can be seen.

The pathophysiological mechanisms for the pain of ES include:
(1) Compression of the neural elements, the glossopharyngeal nerve, lower branch of the trigeminal nerve, and/ or the chorda tympani by the elongated styloid process;
(2) Fracture of the ossified stylohyoid ligament, followed by proliferation of granulation tissue that causes pressure on surrounding structures and results in pain;
(3) Impingement on the carotid vessels by the styloid process, producing irritation of the sympathetic nerves in the arterial sheath;
(4) Degenerative and inflammatory changes in the tendonous portion of the stylohyoid insertion, a condition called insertion tendinosis;
(5) Irritation of the pharyngeal mucosa by direct compression by the styloid process;
(6) Stretching and fibrosis involving the fifth, seventh, ninth, and tenth cranial nerves in the post-tonsillectomy period (11).
Patients with vague head and neck pain symptoms can lead to an extensive differential diagnosis(12). Medical history is the main guide for the diagnosis of Eagle's syndrome.

The patient's description of the symptoms is very important. Then, it is necessary to make a local examination palpating the tonsillar fossa, which should reveal a bony formation and should exacerbate pain aggravating symptoms with local tenderness. Usually patients have temporary relief of symptoms from the local infiltration of lidocaine. Radiological examination confirms the diagnosis: an orthopantomography and CT scans are required (13,14,15,16).

Using CT scans is indicated for diagnosis, although also an accurate case history, local examination, and orthopantomography are required [13, 14, 15, 16]. Treatment of Eagle syndrome is both surgical and nonsurgical. Nonsurgical treatments include reassurance, nonsteroidal anti-inflammatory medications, and steroid injections (18).Surgical treatment is by one of two methods. Otolaryngologist W. Eagle preferentially used a transpharyngeal approach through which the elongated portion of the styloid process was removed (19).
Although this technique does avoid external scarring, it has been heavily criticized because of the increased risk of deep space neck infection and poor visualization of the surgical field (must be performed through the mouth) (19,20). Alternatively, the elongated portioncan be removed by an extraoral approach. Although both procedures are effective in removing an elongated styloid process, the extraoral approach is thought to be superior because of the decreased risk of deep space neck infection and better visualization of the surgical field (19, 20).
When dealing with cases of cervical pain, the possibility of an Eagle syndrome should be considered.

References:

[1]. Eagle WW. Elongated styloid process. Report of two cases. Arch Otolaryngol 1937; 25: 584–587.
[2]. Rechtweg JS, Wax MK. Eagle's syndrome: a review. Am J Otolaryngol 1998;19:316–321
[3]. Eagle WW. Elongated styloid process: symptoms and treatment. Arch Otolaryngol 1958;64:172–176
[4]. Keur JJ, Campbell JP, McCarthy JF, Ralph WJ. The clinical significanceof the elongated styloid process. Oral Surg Oral Med Oral Pathol 1986;61:399–404
[5]. Eagle WW. Symptomatic elongated styloid process: report of two cases of styloid process-carotid artery syndrome with operation. Arch. Otolaryngol. 1949;49:490–503.
[6]. Correll, RW, Jensen JL , Taylor J B , Rhyne R R. Mineralization of the stylohyoid-stylomandibular ligament complex. A radiographic incidence study. Oral. Surg. Oral. Med. Oral. path.1979; 48: 286–291.

[7]. Balcioglu, HA, Kilic C , Akyol M , Ozan H , Kokten G. Length of the styloid process and anatomical implications for Eagle's syndrome. Folia Morphol. 2009;68 (4), 265–270.
[8]. Langlais, R P, Miles DA, Van Dis ML. Elongated and mineralized stylohyoid ligament complex: a proposed classification and report of a case of Eagle's syndrome. Oral. Surg. Oral. Med. Oral. Pathol.1986; 61: 527–532.
[9]. Woolery WA. The diagnostic challenge of styloid elongation (Eagle's syndrome). J. Am. Osteopath. Assoc.1990;90: 88–89.
[10]. Pierrakou E.D. Eagle's syndrome. Review of the literature and a case report. Ann. Dent. 1990;49: 30–33.
[11]. Ceylan A, Ko¨ ybasiog˘ lu A, Celenk F, Yilmaz O, Uslu S. Surgical treatment of elongated styloid process: experience of 61 cases. Skull Base 2008;18 (5), 289–295.
[12]. A. H. Mendelsohn, G. S. Berke, and D. K. Chhetri, "Heterogeneity in the clinical presentation of Eagle's syndrome," Otolaryngology-Head and Neck Surgery, vol. 134, no. 3, pp. 389–393, 2006.
[13]. G. Fini, G. Gasparini, F. Filippini, R. Becelli, and D. Marcotullio, "The long styloid process syndrome or Eagle's syndrome," Journal of Cranio-Maxillofacial Surgery, vol. 28, no. 2, pp. 123–127, 2000.
[14]. C. Mortellaro, P. Biancucci, G. Picciolo, and V. Vercellino, "Eagle's syndrome: importance of a corrected diagnosis and adequate surgical treatment," Journal of Craniofacial Surgery, vol. 13, no. 6, pp. 755–758, 2002.
[15]. K. C. Prasad, M. P. Kamath, K. J. M. Reddy, K. Raju, and S. Agarwal, "Elongated styloid process (Eagle's syndrome): a clinical study," Journal of Oral and Maxillofacial Surgery, vol. 60, no. 2, pp. 171–175, 2002.
[16]. J. T. Evans and A. A. Clairmont, "The nonsurgical treatment of Eagle's syndrome," Eye, Ear, Nose & Throat Monthly, vol. 55, no. 3, pp. 94–95, 1976.
[17]. U. Buono, G. M. Mangone, A. Michelotti, F. Longo, and L. Califano, "Surgical approach to the stylohyoid process in Eagle's syndrome," Journal of Oral and Maxillofacial Surgery,vol. 63, no. 5, pp. 714–716, 2005.
[18]. Baugh RF, Stocks RM. Eagle's syndrome: a reappraisal. Ear Nose Throat J 1993;72:341-344
[19]. Chase DC, Zarmen A, Bigelow WC, McCoy JM. Eagle's syndrome: a comparison of intraoral versus extraoral surgical approaches. Oral Surg Oral Med Oral Path 1986; 62:625–629
[20]. Strauss M, Zohar Y, Laurian N. Elongated styloid process syndrome: intraoral versus external approach for styloid surgery. Laryngoscope 1979;95:976–979