

Case Report of a 27-Year-Old Patient Suffering From Eagle's Syndrome

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Abstract

Eagle's syndrome is the term given to the symptomatic elongation of the styloid process or mineralisation of the stylohyoid or stylomandibular ligament or posterior belly of the digastric muscle. Symptoms of Eagle's syndrome are pharyngeal pain localised in the tonsillar fossa or hyoid bone, hypersalivation, foreign body sensation, rarely voice change. The pain is triggered by head rotation, lingual movements, swallowing or chewing. Diagnosis can usually be made on physical examination by digital palpation of the styloid process in the tonsillar fossa and radiographically (panoramic radiograph, computed tomography scan, magnetic resonance imaging). The vagueness of symptoms and the infrequent clinical observations are often misleading, so the correct diagnosis is most important. Because these patients are often seen by a dentist, it is important that dentists are aware of the syndrome and its treatment. This case report relates to a 27-year-old female with Eagle's syndrome. It reports her treatment from presenting complaint to complex rehabilitation.

Key Words: Eagle's Syndrome, Surgical Approach, Oral Pantomograph

Introduction

This clinical report describes the diagnosis of Eagle's syndrome from an orthopantomograph (OPG), a widely used aid to oral diagnosis. The elongated styloid process, which is pathonemonic of Eagle's syndrome, can be a source of craniofacial, cervical and back pain, but this cause and effect is rarely recognised. This case report deals with a 27-years-old female's Eagle's syndrome treatment from the presenting complaint to the complex rehabilitation.

Eagle's Syndrome

Pietro Marchetti observed an elongation of the styloid process in the 17th century but in 1937 it was Watt W. Eagle who first described stylalgia, later called the Eagle syndrome [1,2]. Stylalgia (elongated styloid process, long styloid process syndrome, Eagle's syndrome) is related to abnormal length of the styloid process, to mineralisation of the styloid ligament complex [1], or to calcification of digastric muscles [3].

The normal length of the styloid process may vary, but with the majority of population it is 20-30 mm long [4,5], although Moffat *et al.* (1977) [6]

measured a normal range of 15.2-47.7 mm and for Gossman *et al.* (1977) [7] a considerable variation occurs at e.g., 50-75 mm. However, a 30 mm or longer process is considered anomalous and responsible for the so-called Eagle syndrome. The epidemiological incidence has been reported to be between 1.4-30% [2,8,9].

Eagle's syndrome is characterised by the following symptoms: pharyngeal pain localised in the tonsillar fossa, radiating to the oesophagus, to the hyoid bone, painful head rotation and lingual movements. The pain is exacerbated by swallowing and chewing. Other symptoms include foreign body sensation (*globus hystericus*) [10] and voice change lasting for only a few minutes. A variety of additional symptoms have been reported such as clicking jaw [11], unilateral pain, pain radiating to the neck, to the tongue, chest or temporomandibular joint (TMJ) and facial paraesthesia, hypersalivation, sometimes visual problems, dysphagia and pharyngeal spasm.

Langlais *et al.* (1986) [12] classified elongated styloid process and mineralised styloid complexes based on the radiographic appearance and structures as follows:

- Type I: the elongated type pattern represents an uninterrupted process.
- Type II: characterised by a single pseudo-articulation that seems an articulated elongated styloid process.
- Type III: represents an interrupted process that gives the appearance of multiple pseudo-articulations within the ligament.

The type III pattern of classification can be nodular or completely calcified. Eagle's syndrome occurs mainly in 30-50-year-old patients, because regional ligaments and the soft tissues of the styloid process become less elastic with age and offer more resistance to surrounding hard tissue structures [4,13]. However, it has also been reported in children [10]. In the literature it has been referred to as a secondary pathology following traumatic fracture. It can be the consequence of a difficult endotracheal intubation leading to a mineralisation of the styloid process and calcification of the ligament complex. Some studies have shown a close correlation between long styloid syndrome and previous tonsillectomy [1], rheumatoid diseases and endocrinological disorders [1,3]. A differential diagnosis of Eagle's syndrome should include trigeminal neuralgia, migraine headache, TMJ disorders, temporal rachitis [14], unerupted or impacted molar teeth, and faulty dental prostheses [15]. Diagnosis can usually be made by a physical palpation of the styloid process in the tonsillar fossa. In addition, orthopantomography or a cranial radiograph using a lateral projection, and computed tomography (three-dimensional CT) are necessary to confirm the diagnosis.

Eagle's syndrome can be treated both surgically (via an intra-oral or extra-oral approach) and non-surgically. One surgical approach is styloidec-tomy, performed through a trans-oral or extra-oral approach. The trans-oral approach was introduced by W. W. Eagle. The main disadvantage of the trans-oral styleoidectomy is poor visibility leading to risks of iatrogenic injury to the neurovascular structures.

Clinical Report

A 27-year-old White female reported to the Department of Prosthodontics at the Faculty of Dentistry in Budapest. Her main complaint was a missing tooth and facial pain. Subsequently, she reported a two-year history of persistent right-sided TMJ pain radiating to the neck and her back, and

this pain increased when she turned her head. She had foreign body sensation, discomfort and migraine headaches, and also some nonspecific symptoms for TMJ dysfunction. She had undergone a tonsillectomy three years earlier. Further questioning revealed no history of trauma and previous dental interventions. A physical examination revealed that, bilaterally, the temporomandibular joint was normal. A skull base CT (*Figure 1*) showed bilaterally elongated (~ 40 mm) origins of the styloid processes and partial ossification of the stylohyoid ligament. An OPG of the oral cavity (*Figure 2*) revealed an elongated type of Eagle's syndrome on the right side and a segmented type on the left side [12].

Based on the clinical examination and radiographic findings, surgical treatment under general anaesthesia, with an extra-oral approach, described by Loeser and Caldwell (1942) [16], was recommended.

The rationale for this recommendation was that extra-oral exploration is preferable because of better visibility of the operative field and its easy extension to locate the hyoid bone (*Figure 3*). If necessary, the whole stylohyoid ligament can be removed. The possibility of rapid preparation or the closure of the external carotid artery can provide a good solution to stopping any bleeding during the operation. A further advantage is that the oral flora does not contaminate the wound and thus the possible formation of a parapharyngeal abscess can be prevented. Under general anaesthesia, the head was extended, a skin incision was made parallel to the sternocleidomastoid muscle and the muscles and fascia overlaying the surface of the styloid process were retracted. The length of the ossified ligament was removed (approximately 17 mm). The patient was prescribed oral 250 mg metronidazole (Klion) for five days and 4.5 g parenteral cefuroxime (Zinacef injection) was administered for a period of 72 hours, followed by 500 mg cefuroxime axetil (Zinnat) oral therapy for two days to prevent the infection of the deep neck space. No peri-operative complications were encountered. Three months later, dental rehabilitation commenced. The CT assessment of the posterior mandibular region indicated that there was insufficient bone available for the placement of an implant and the patient refused to undergo a surgical bone grafting procedure. Alternative treatment options were discussed and the agreed treatment plan was two fixed bridges. (*Figure 5 and 6*)

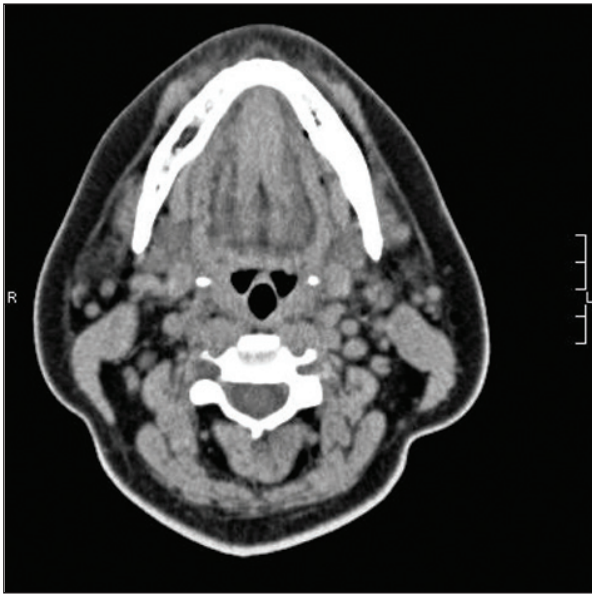


Figure 1. CT of the base of lower jaw.

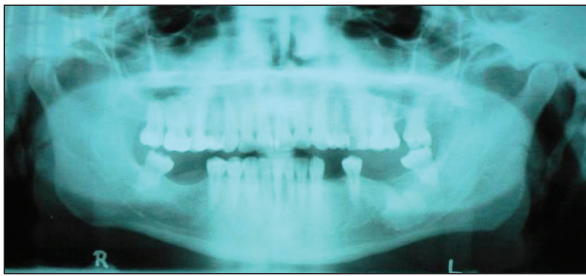


Figure 2. Panoramic radiograph showing calcified stylohyoid ligament.

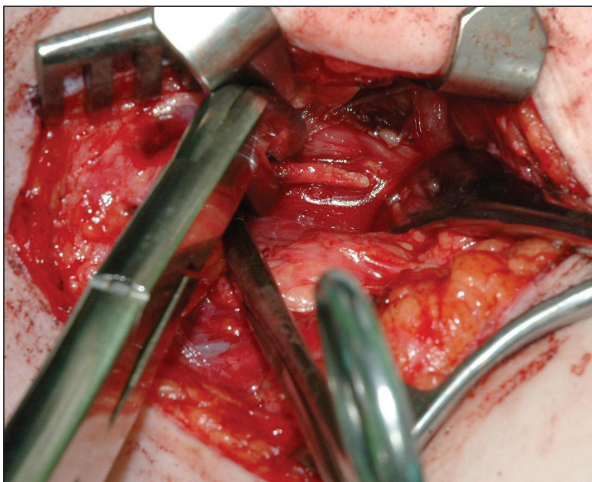


Figure 3. Intra-operative view. Skeletonised stylohyoid ligament.



Figure 4. Surgically excised segment of styloid ligament.



Figure 5. Panoramic radiograph after dental rehabilitation.



Figure 6. Fixed partial dentures in the mouth.

Discussion

A full differential diagnosis of Eagle's syndrome should include trigeminal neuralgia, migraine headache, temporomandibular joint disorders, temporal rachitis [14], unerupted or impacted molar teeth and faulty dental prostheses [15].

Diagnosis can be usually made by a physical palpation of the styloid process in the tonsillar fossa but in most cases assessment is not performed. In addition, an OPG or a cranial radiograph using a lateral projection plus computed tomography (three-dimensional CT) will be required to confirm the diagnosis.

As previously described, Eagle's syndrome can be treated both surgically and non-surgically.

Conclusion

Dentists have an important role to play in the diagnosis of Eagle's syndrome, as the presenting symptoms in most cases lead patients to a dental practice

(office). More and more dentists use OPGs for everyday diagnosis and documentation, from which a number of different pharyngo-cranio-facial disorders can easily be diagnosed. General dentists therefore need to be vigilant when viewing OPGs to ensure that they assess all the structures that can be seen and not just the teeth, alveolar bone, and temporomandibular joints.

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