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Orofacial Pain - A Complex Diagnostic Pathway: A Review with Case Reports

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Abstract: ***Orofacial pain is a term used for pain that originates mainly from the regions of head, neck and mouth. Due to the complexity of the orofacial region, there are numerous causes of pain. Therefore, in order to properly diagnose and treat patients using a multidisciplinary approach, the clinician must possess a comprehensive understanding of the kind and cause of pain. Thorough investigations are very crucial in diagnosing any case of orofacial pain in which radiographic examination plays a vital role along with the general examination. Eagle syndrome which occurs due to elongated styloid process is an uncommon cause of orofacial pain and is commonly being misdiagnosed as glossopharyngeal neuralgia, migraine, temporomandibular disorders. This article provides a review of orofacial pain diagnostic pathway and discusses a review of case series of eagle syndrome and explains the importance of radiological examination in evaluation of cases of chronic orofacial pain which are often being misdiagnosed.***

Keywords: orofacial pain, eagle's syndrome, stylohyoid syndrome, TMJ disorder, tinnitus

1. Introduction

Many chronic orofacial pain problems can be particularly challenging to detect and treat due to their intricacy and the unclear underlying processes of their etiology and pathogenesis. Orofacial pain can be effectively managed only when accurate diagnosis is made.[1] Pain can take many different forms. It issues a warning against bodily harm, which is crucial for preventing injuries and, thus, for survival. Acute injuries that do not produce pain may cause the patient to feel uncomfortable, or it may change a person's life, lower the standard of living, and also affect the family of the patient.[2] Okeson classified orofacial pain into two categories: physical (Axis 1) and psychological (Axis 2) disorders. Physical issues include temporomandibular disorders, which include musculoskeletal disorders such as those affecting the masticatory muscles and temporomandibular joint episodic neuropathic symptoms such as trigeminal neuralgia, persistent pains such as centralized or peripherally caused, and neurovascular conditions such as migraine. Among the psychological conditions are anxiety and mood disorders.3 Based on how long symptoms last, pain can be categorized into groups. Acute pain which occurs in less than three months, serves as a warning - defensive. Chronic pain that lasts longer than three months and doesn't serve with caution and defensiveness because the symptoms of the illness is regarded as independent and necessitates multi therapeutic measures. Sustained pain is usually brought on by inappropriate management of severe pain that endures even after the tissue has healed, the harm that caused excruciating suffering.[2]

Misdiagnosis of Orofacial Pain by Clinicians

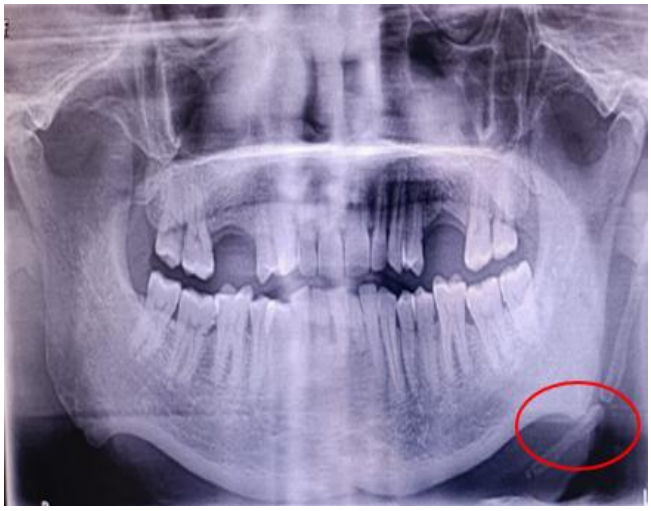
Only when the right diagnosis is made orofacial pain can be effectively managed. Although there are many different and intricate underlying reasons of orofacial discomfort, a deeper comprehension of a patient's symptoms can be attained by obtaining a detailed case history, a quality clinical assessment and pertinent examinations along with necessary investigations. Orofacial pain can be often misdiagnosed as maxillary sinusitis, temporomandibular disorders, trigeminal neuralgia, glossopharyngeal neuralgia, chronic idiopathic facial pain, atypical odontalgia, post herpetic neuralgia, migraine, tension type headaches, trigeminal autonomic cephalgias.[4] When addressing patients with neurological complaints or cervical pain, eagle syndrome needs to be considered. Eagle syndrome is an uncommon condition where a calcified stylohyoid ligament or an extended styloid process produces recurrent neck, throat, or facial pain dysphagia.5 Although the majority of patients may not have any symptoms, this uncommon condition can occur when these ossified structures put pressure on different parts of the brain and neck, a variety of symptoms may appear, such as discomfort in the throat, uncomfortable neck motions, and change in speech, discomfort during tongue movements, headache, otalgia, and increased secretion of saliva.6 There are two known forms of Eagle syndrome. The first kind comprises the feeling of a foreign body in the throat following tonsillectomy and cervicofacial pain that is made worse by swallowing. The "stylo - carotid artery syndrome" is the second kind which is ascribed to the Internal Carotid Artery's extracranial impingement by the process of styloids. Compression may result during rotating movements of the head, which could cause a brief ischemic event or stroke.[5] Individuals frequently report unilateral pain on the side of the long styloid process. A portion of this pain may radiate or

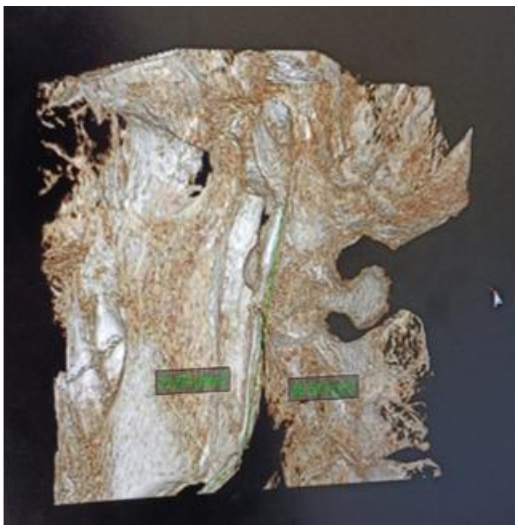
refer to the jaw, ear, and manifest as temporomandibular joint discomfort or otalgia, instances are also frequently associated with pharyngeal symptoms. Reports of chronic toothaches, mouth ulcers, and auditory symptoms like tinnitus, hearing loss, and "popping" ears are also found in the literature.[7] Patients typically seek treatment from a variety of specialties, including otolaryngology, maxillofacial surgery, neurology, neurosurgery, and ultimately psychiatry, due to the symptoms' variability and lack of specificity. Eagle's syndrome should be taken into account in the differential diagnosis by doctors and dentists since symptoms like headache, facial pain, and neck pain might be confused with other medical diseases which includes illnesses of the throat, nose, and ears as well as other conditions, ranging from psychosomatic disorders to cancers.8 Physical examination and radiographic diagnosis are two methods for diagnosing eagle syndrome. Palpating the tonsillar fossa can reveal the extended styloid process, which may exacerbate symptoms and cause cough reflex.[6] Confirmation of Eagle syndrome is always radiographic.

Using panoramic radiograph, clinicians can typically consider the styloid process to be elongated if its length is more than 1/3 of the length of the ramus of the mandible. An advantage of the orthopantomograph is that the entire length of the styloid process is visible and its deviation can be measured quite accurately. Cone Beam Computed Tomography, Computed tomography is an effective method for evaluating styloid process length, angulation and other morphological characteristics. Sagittal computed tomography angiography is beneficial in cases of vascular compression and can also be effective in assessing blood flow disturbance.[8]

2. Case Report

A 38- year- old male patient reported to the Department of Neuromuscular Dentistry in Sri Sai College of Dental Surgery, Vikarabad with a chief complaint of pain in left cheek region, radiating to temporal and neck region, and also gives history of chronic headaches and ringing sound in ears since 1 year. Pain aggravated on chewing food and relieved on taking medication. In the past dental history, patient has undergone extraction of right and left maxillary second premolars and first molars one year ago. Patient has also visited multiple clinics and doctors including ENT and neuroclinics for his problem but the pain did not subside. On palpation of the muscles of head and neck region temporalis, masseter, sternocleidomastoid, digastric, trapezius, and occipitalis were tender. On intra - oral examination, mouth opening was 33mm, partially edentulous in relation to 15, 16 and 25, 26 teeth. It was provisionally diagnosed as myofascial pain dysfunction syndrome secondary to occlusal discrepancies due to partially edentulous state over an year of span. As an investigatory procedure orthopantomogram was advised and taken which has revealed that there was an elongated styloid process on the left side which has shown skip calcification. As CBCT is considered as gold standard technique for radiological investigation, it was performed, which had confirmed the elongated styloid process measuring approximately 57mm. Apart from these, blood investigations were also advised such as complete blood picture, serum vitamin D, serum calcium and serum vitamin b12. The diagnosis was confirmed as eagle syndrome. Patient is advised for posture correction by using neck collar as he was a centering mason. He was advised for styloidectomy, moreover physiotherapy and medications for muscle pain. Patient was treated with TENS therapy and kept under observation. After one week patient was recalled and severity of symptoms of patient were decreased to some extent.



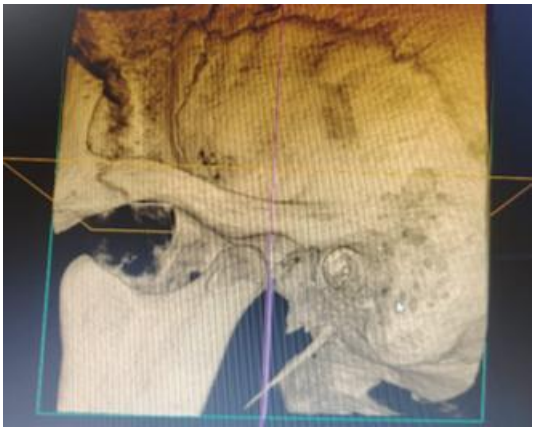


Few More Similar Cases were Reported

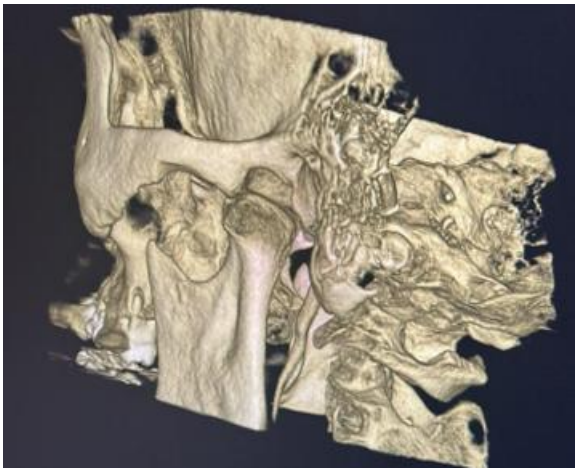
Patient named Ramulu had chronic orofacial on left side of face since 2 years. In the past dental history patient has visited multiple dental clinics and was advised for extraction of both upper and lower third molars even after which the pain was not subsided. On examination muscles of masseter,

temporalis and sternocleidomastoid, were tender on palpation. On radiographic examination using CBCT there was an elongated styloid process on left side noted.

Case no: 2
Name: Ramulu
Age / gender: 40 years / male
Patient complains of pain in the left side of face, with ringing sounds in ear, history of chronic headaches since 2 years.



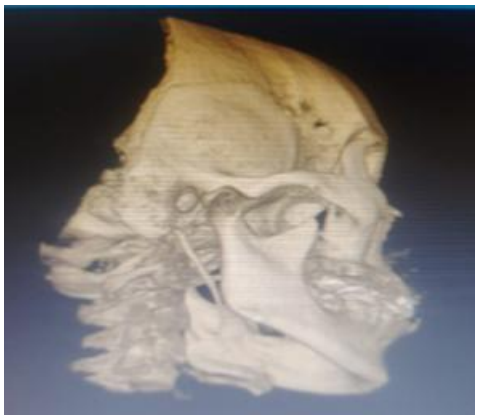
Case no: 3
Name: Arjuna Appikalla
Age / gender: 51 years / male
Patient complains of feeling of something struck in the throat and also gives history of frequent headaches since 8 years.



Case no: 4
Name: Sri Kala
Age / gender: 64 years / female
Patient complains of pain on right side of throat, cheek region since 4 years and also gives history of frequent headaches

Case no: 5
Name: Ayesha Begum
Age / gender: 46 years / female
Patient complains of pain in the left tmj region, cheek region along with ringing sound in ears associated with frequent headaches since 3 years.

Case no: 6
Name: Aruna
Age / sex: 59 years
Patient complains of severe ringing sounds in the ears since 15 years and has consulted neurosurgeons and orthopedicians and was about to get surgery done in relation to atlas and axis vertebrae.



3. Discussion

The exact etiology for Eagle's syndrome is unknown. Although extended styloid processes are present in about 4%

of the population, only 4% of these individuals will exhibit clinical signs of Eagle's syndrome.9 Better imaging and easier access to medical care have significantly broadened the definition of Eagle Syndrome and improved the definition of the presenting symptoms brought on by an aberrant styloid process.1[0] Because Eagle syndrome (ES) is uncommon and has vague symptoms, diagnosing it can be challenging. Patients typically consult a variety of medical specialists, including general practitioners, otolaryngologists, oral surgeons, and dentists, for diagnosis and therapy. There have been reports of misdiagnoses and delays in diagnosis of up to 10 and 27 years. In order to diagnose people with eagle syndrome, it is crucial to gain a deeper understanding of the condition and its symptoms.1[1] Eagle syndrome is typically treated either with conservative medical approaches and definitive surgical treatment. Medical therapy includes analgesics such as NSAIDs and combination of anticonvulsants, antidepressants, local injections.7 It is crucial to remember that an extended styloid process does not always indicate Eagle's syndrome because most people with this physical abnormality do not have any symptoms. Even though an elongated styloid process is discovered bilaterally, majority of the time, patients only have unilateral symptoms. The prevalence of the syndrome is also correlated with the styloid process's length, width, and angulation.1[2] An important consideration in the diagnosis of Eagle syndrome is the patient's medical history. The physician subsequently observes more diffuse symptoms, such as discomfort in the cervical, temporomandibular, and post - auricular regions, as well as dysphagia and pharyngeal globus feeling.1[3] It is yet unknown what pathologic mechanism causes the elongated styloid process. It has been proposed that residual embryonic cartilaginous tissue of Reichert cartilage is connected to the elongated styloid process in Eagle syndrome. The ossification of the stylohyoid ligament was one of the other suggested mechanisms, endocrine abnormalities in postmenopausal women with concomitant ossification of other ligaments, formation of osteitis tissue in prolapse of the styloid ligament, trauma, or mechanical stress against intrauterine development.1[4] When there are significant vascular and neurological problems, surgery is recommended.

It is possible to perform a styloidectomy, either through transoral or transcervical approach. Usually, the surgeon's preference or experience dictates the decision. There are no precise recommendations for the optimal course of treatment because the correlation between CAD and elongated styloid process is rare.1[5]

4. Conclusion

Though the prevalence of eagle syndrome in routine dental practice is uncommon, in cases of orofacial pain, evaluation for eagle syndrome should also be one of the consideration for definitive diagnosis after thorough clinical examination along with necessary radiolographic investigations. Thus, thorough examination for elongated styloid process should be one of the criteria while examining any case of myalgias involving head and neck.

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