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# Trans-oral extratonsillar styloidectomy for treatment of Eagle's syndrome

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## Abstract:

Eagle's syndrome, also known as an elongated styloid process, is a condition that may be the source of craniofacial and cervical pain. It is infrequently reported but is probably more common than generally considered. The symptoms related to Eagle's syndrome can be confused with those attributed to a wide variety of facial neuralgias and/or oral, dental, and temporomandibular joint diseases. Surgical treatment is considered as the best option to remove the styloid process to its normal limit through extraoral or intraoral techniques. We are reporting a case and reviewed the recent literature of trans-oral extratonsillar approach without tonsillectomy and advantage such as simple, time-saving, and without any extra oral scar.

**Key words:** Chewing problem, elongated styloid, intraoral surgery, pain

Elongation of the styloid process has been implicated previously in pain syndromes of the craniofacial and cervical regions and is frequently misdiagnosed. In 1937, Eagle first described a case of pain associated to elongation of the styloid process.<sup>[1]</sup> He described that any styloid process longer than 25 mm is considered to be responsible for the syndrome.<sup>[1]</sup> A "long" styloid process is defined as more than 4 cm. The incidence of the elongated styloid process has been reported to be between 1.4–30% cases.<sup>[2]</sup> 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), etc.<sup>[2]</sup> The vagueness of symptoms and the infrequent clinical observations are often misleading, so the correct diagnosis is most important. Dentists and oral surgeon have an important role to play in the diagnosis of Eagle's syndrome, as the presenting symptoms in most cases lead patients to them. The purpose of this article was to discuss a trans-oral extratonsillar approach for removal of a styloid process for Eagle's syndrome.

extraorally, there was no any swelling and mouth opening of the patient was normal. Intraoral examination reveals no any carious and impacted tooth, no periodontitis, no tonsillitis, on intra-oral palpation deep in the neck a sharp pointed styloid process was palpated. Orthopantomogram (OPG) was advised which shows an enlarged styloid process in the right side as a comparison to the left side [Figure 1]. It was diagnosed as Eagle's syndrome and surgical removal of styloid process intra-orally through extratonsillar approach without tonsillectomy under general anesthesia was planned because of its palpability. Under general anesthesia, the tip of the process was palpated, and a small nick was given on the mucosa up to the bone, then soft tissue and ligament were retracted, and it was dissected up to maximum length [Figure 2]. With the help of bone roenger, it was cut and removed [Figure 3]. The wound was left open to prevent any hematoma formation. After 2 weeks patient reported the department with the improvement of his symptoms. There was no postoperative infection or weakness of any nerve and sensory disturbances. Postoperative OPG

## CASE REPORT

A 52-year-old patient was referred from Orthopedic Department to Oral and Maxillofacial Surgery with a chief complaint of pain on bending of his neck toward right side and radiated toward retromolar area and palpation of some foreign body in oropharyngeal region

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was taken which showed a reduction of the styloid process [Figure 4]. After 6 months of follow-up, there was complete remission of symptoms.

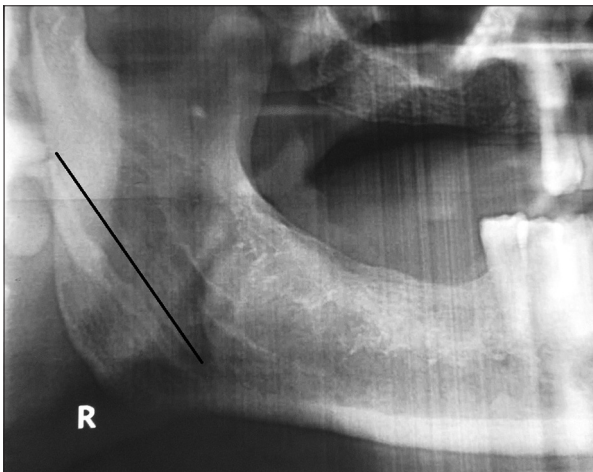
### DISCUSSION

Elongation or mineralization of the stylohyoid process causes Eagle's syndrome, which is characterized by facial and

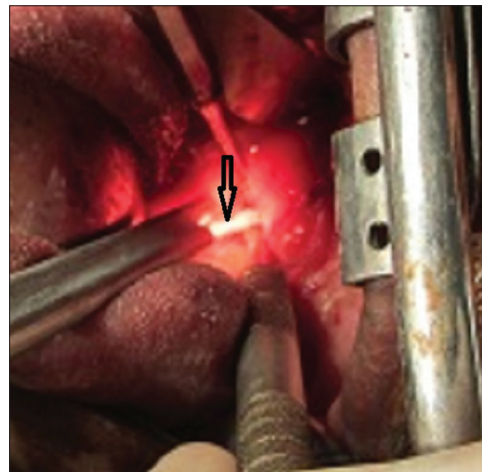
pharyngeal pain, odynophagia, and dysphagia. Eagle first described this syndrome in 1937 as two distinct syndromes [Table 1].<sup>[1]</sup> Classic syndrome, which generally follows tonsillectomy, includes symptoms resembling the sensation of a foreign body lodged in the pharynx especially located in the tonsillar fossa, with pain radiated to the ipsilateral ear, accompanied, occasionally by dysphagia and painful swallowing (odynophagia), as much as facial and/or cervical

**Table 1: Recent published literature of trans-oral approach for Styloidectomy**

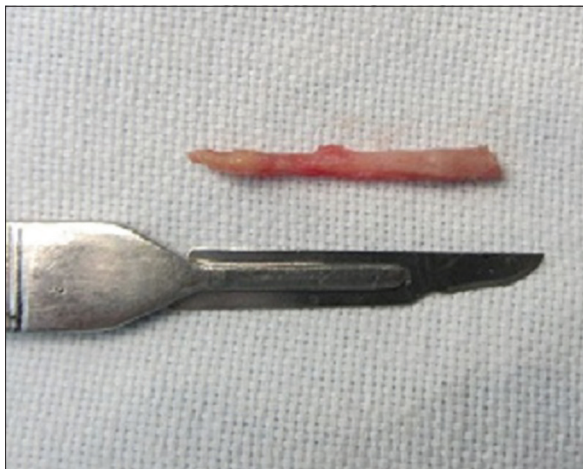
Author	Cases	Possible cause	Surgical procedure was done	Results	Follow-up time
Fini <i>et al.</i> (2000)	11	Previous tonsillectomy Styloid process fracture Ossification Idiopathic	Trans-oral after tonsillectomy	Complete remission of symptoms-6 cases Partial remission-4 cases Lost to follow-up-1 case	5 months to 4 years
Beder <i>et al.</i> (2005)	19	Data not available	Trans-oral after tonsillectomy	Complete remission of symptoms-11 cases Partial remission-6 cases Lost to follow-up-2 cases	17 up to 1 year
Carvalho <i>et al.</i> (2009)	1	Idiopathic	Trans-oral without tonsillectomy	Complete remission of symptoms	1 year
Roychowdhury (2010)	1	Data not available	Trans-oral extratonsillar	Data not available	Data not available
Present case (2013)	1	Idiopathic	Trans-oral extratonsillar	Complete remission of symptoms	6 months



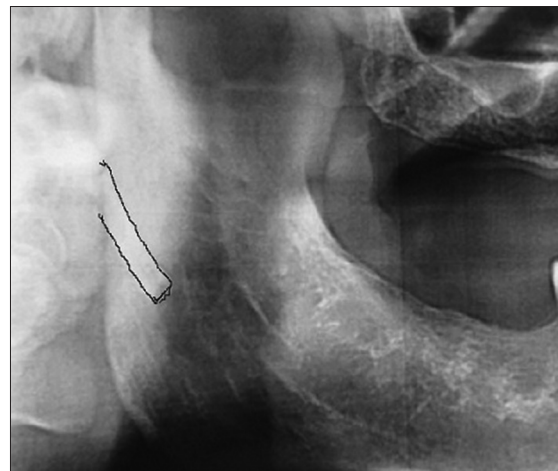
**Figure 1:** Preoperative orthopantomogram showing elongated styloid process



**Figure 2:** Intraoperative styloid process after exposure



**Figure 3:** Removed styloid process



**Figure 4:** Postoperative orthopantomogram after reduction of styloid process

pain like in our case. Rarely, the pain is very intense. Stylocarotid syndrome which did not correlated with a tonsillectomy. It arises whenever the stylohyoid apparatus compresses the internal and/or external carotid arteries, and especially the perivascular sympathetic. It is characterized by cervical pain arising when the internal carotid artery is compressed, provoked and aggravated by rotation, and compression of the neck and radiates to the areas vascularized by the ophthalmic artery with involvement of the supraorbital and parietal regions.<sup>[1]</sup> In contrast, if the external carotid artery is irritated, the pain radiates to the infraorbital region.<sup>[2]</sup> Conservative treatment options have included transpharyngeal injection of steroids and lignocaine, nonsteroidal anti-inflammatory drugs, diazepam, the application of heat, and transpharyngeal manipulation with manual fracturing of the styloid process.<sup>[3]</sup>

The most satisfactory and effective treatment is surgical shortening or removal of the styloid process through either an intraoral or external approach (Boedts, 1978; Zhang *et al.*, 1987, Chase *et al.*, 1986, Beder *et al.*, 2005, Chrcanovic *et al.*, 2009).<sup>[3]</sup> The extraoral approach has the advantages of providing better visualization of the operative field, so if there is any vascular lesion, it is possible to resolve it without major problems.<sup>[3,4]</sup> However, there are some disadvantages, such as the complexity of the technique that demands longer operating time, and an external scar that is not cosmetically pleasing.<sup>[4,5]</sup> Intraoral approach has advantage that they can be done quickly and easy without extensive dissection and scar, but the disadvantage is that, there are poor visibility and chances to the injury to neurovascular bundles near the

process and deep neck infections.<sup>[5]</sup> Roychowdhury recently described an intraoral extratonsillar approach without any complication<sup>[6]</sup>. In our case extratonsillar, trans-oral approach was used without tonsillectomy to removed styloid process under general anesthesia without any complication. It is considered to be an easy, simple, and time-saving method that can be done under local and general anesthesia as a routine procedure as in our case too.

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#### Conflicts of interest

There are no conflicts of interest.

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