Eagle’s syndrome – An alarming elongation
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ABSTRACT
The name styloid process (SP) was derived from the Greek word ‘stylos’ meaning a pillar. It is a bony, cylindrical, needle-shaped projection, which originates from the posterior-inferior side of the petrous bone, immediately in front of the stylomastoid foramen, and goes obliquely down and forward. When elongated leads to pain and discomfort called Eagle’s syndrome. Elongated styloid process accounts approximately to 4–7% of the population, 4% only are symptomatic. In this paper, we report two cases of patients with Eagle’s syndrome.

Key-words:Eagles syndrome, Styloid process, Ear pain

Key Messages: Pain occurring due to elongation of styloid process can be misleading as ear pain, pharyngeal pain or pain of dental origin. Appropriate clinical findings and investigations are essential to make a diagnosis.

INTRODUCTION
In 1937 Eagle first described vague orofacial, and head and neck pain associated with styloid elongation, and the condition became known as Eagle’s syndrome. Prevalence of Eagle’s syndrome in the population is reported to be 4% and is more frequent among women(Eagle WW, 1937). Eagle’s syndrome is a condition that causes a dull, nagging pain in the oropharynx, abnormal findings when palpating through the tonsillar area(Murthy PSN, Hazarika P, Mathai M, Kumar A, Kamath MP, 1990), intermittent glossitis and phantom foreign body discomfort of the pharynx(Woolery WA, 1990). There may be difficulty in swallowing and considerable pain may occur during the act (Zohar Y, Strauss M, Laurian N, 1986). Here we report two cases of patients with Eagle’s syndrome.

CASE HISTORY
Case report 1: A 26-year-old male patient reported to our dental OP with a chief complaint of pain on the pharynx region and difficulty in swallowing solid foods since a month. He also gave a history of ear pain on right and left side.

On examination, intra-orally, soft and hard tissues appeared normal. Tenderness elicited on palpation of the right and left tonsillar fossa. Plain film temporomandibular joint (TMJ) view X-rays revealed an elongated styloid process. Final 3D-Computed tomographic images showed that the length of right and left styloid process was 12.6cm and 10.7cm and respectively.

Case history 2: A 36-year-old female patient reported to our dental OP with a chief complaint of pain on the right and left ear region since two month. She also gave a history of pain on turning the neck and difficulty in swallowing solid foods. On examination, intra-orally, soft and hard tissues appeared normal. Tenderness elicited on palpation of the right and left tonsillar fossa. Final 3D-CT images showed that the length of Right and left styloid process was 3.3cm and 4 cm respectively. Differential diagnosis of both cases considered were tonsillitis, impacted third molar, myofacial pain dysfunction syndrome, cluster headache, carotidynia and glossopharyngeal neuralgia. Based on history, clinical findings and investigations the cases were finally diagnosed as Eagle’s syndrome.

DISCUSSION
The styloid process, stylohyoid ligament and the small horn of the hyoid bone form the stylohyoid apparatus, which originally derives from the Reichert cartilage of the second branchial arch during embryogenesis. The styloid process, the thin and long osseous part of the temporal bone(Fini G, Gasparini G, Filippini F, Becelli R, Marcotullio D, 2007). Eagle’s syndrome appears during or following the third decade of life. Bilateral involvement is quite common, but does not always involve bilateral symptoms. (Murthy PSN, Hazarika P, Mathai M, Kumar A, Kamath MP, 1990)(Woolery WA, 1990) Symptoms of Eagle’s syndrome depends on factors such as the length, width and angulation of the styloid process. It is characterized by pharyngeal pain radiating to the ear, neck, tongue and a vegetative syndrome consisting of pallor, sweating and hypotension; this is all due to excessively long SPs(Miller DB, 1997). In both the cases, the patient had bilateral symptoms.

There are several different theories, which try to explain the etiopathology of Eagle’s syndrome such as...
congenital elongation of the styloid process and calcification and ossification of the stylohyoid ligament. (Eagle WW, 1937) Fini et al. reported that past tonsillectomy is somehow related to Eagle’s syndrome. (Fini G, Gasparini G, Filippini F, Becelli R, Marcotullio D, 2007).

Diagnosis of an Eagle’s syndrome may be confused with diverse conditions which occur with orofacial pain or dysphagia, such as neuralgias of the glossopharyngeal nerve, trigeminal nerve, dental problems, chronic tonsillitis, cervical arthropathies or pharyngeal tumors. In the present cases, the pain in the ear and pharynx of the mandible was masquerading the pain due to elongated styloid.

The length of the styloid process is variable. Kaufman et al. reported that 30 mm is the upper limit for normal styloid processes (Kaufman SM, Elzay RP, Irish EF Moffat et al., 1970). performed a cadaver study on the styloid process and reported that the normal length is between 1.52 cm and 4.77 cm. (Moffat DA, Ramsden RT, Shaw HJ, 1977) In radiological studies, the length of the styloid process is reported to be no longer than 25 mm (Montalbetti L, Ferrandi D, Pergami P, Savoldi F, 1995). In our first case the length of styloid process was alarming and we could not come across any literature of such length. Several imaging modalities have been used for the diagnosis of Eagle’s syndrome thus far, including lateral head and neck radiograph, towne radiograph, panoramic radiograph, lateral- oblique mandible plain film, anteroposterior head radiograph and computed tomography. Also, barium swallow studies can show the indentation of the elongated styloid process as a filling defect (Dayal V, Morrison MD, Dickson TJM, 1971). Langlais and associates proposed a radiographic classification of the elongated and mineralized stylohyoid ligament complex as follows. Type I: Elongated, Type II: Pseudoarticulated and Type III: Segmented. Based on pattern of calcification the types are calcified outline, partially calcified, nodular complex and completely calcified (Langlais RP, Miles DA, Van Dis ML, 1986).

The “LAM” (length, angulation and morphology) classification as shown in table 1 (C. ÇınarBasekim et al., 2005). In our first case report, patient had pseudoarticulated type on right side and simple elongated type on left side. In our second case report, patient had on simple elongated type right side and segmented type on left side.

Camarda and associates stated that, in Eagle’s syndrome, surgery is the initial treatment of choice because of the severity of the rapidly occurring ossification and symptoms. If the styloid process is excessive or radical amounts must be removed, the extraoral approach is a direct, anatomically concise approach to the styloid process (Camarda AJ, Deschamps C, Forest D, 1989). Conservative treatment involves injecting steroids or anesthetics into the lesser cornu of the hyoid or the inferior aspect of the tonsillar area to tone down symptoms. The surgical excision can be done by the extraoral or transcervical and the intraoral or transpharyngeal approach (Fini G, Gasparini G, Filippini F, Becelli R, Marcotullio D, 2007).
Figure 3: 3D CT image of elongated Right and Left Styloid process (Case report 1)

Figure 4: OPG revealed elongated right and left styloid process (Case report 2)

Figure 5: 3D CT image of elongated Right and Left Styloid process (Case report 2)

Table 1: Abbreviations

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<td>L: Length of the SP</td>
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<td>1.</td>
<td>Short (&lt;2.00 cm)</td>
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<td>2.</td>
<td>Long (2.00–4.00 cm)</td>
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<td>3.</td>
<td>Elongated (&gt;4.00 cm)</td>
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<td>A: Angulation of the SP</td>
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<td>1.</td>
<td>Narrow (&lt;65.0°)</td>
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<tr>
<td>2.</td>
<td>Normal (65.0–75.0°)</td>
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<tr>
<td>3.</td>
<td>Wide (&gt;75.0°)</td>
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<td>M: Morphology of the SP</td>
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<tr>
<td>1.</td>
<td>Absence of SP</td>
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<tr>
<td>2.</td>
<td>Normal appearance of SP</td>
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<td>3.</td>
<td>Other morphological findings (absence of the proximal part of the SP, duplication of the proximal part of the SP, bent SP, segmented SP, pseudoarticulated SP, etc.)</td>
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CONCLUSION

To conclude, elongated styloid processes should be considered when a patient complains of oropharyngeal or maxillary pain originating from dental caries or impacted third molars. Careful clinical examination and a radiograph are required to confirm the diagnosis.

REFERENCES

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