Current Diagnosis and Transoral Surgical Treatment of Eagle's Syndrome

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Purpose: The purpose of this study was to discuss the current diagnosis of Eagle's syndrome and to present our experience in transoral surgical treatment of the syndrome.

Materials and Methods: Nineteen patients with Eagle's syndrome due to elongated styloid process were included in this clinical trial. Diagnostic work-up also consists of 3-dimensional computed tomography scanning in recent cases. Elongated styloid processes were resected via transoral approach under general anesthesia.

Results: Three-dimensional computed tomography scanning depicted how the preoperative estimation of the styloid length correlated with the true styloid length measure intraoperatively. No postoperative complications were encountered, while the chief symptoms of all patients regressed after surgery.

Conclusions: Three-dimensional computed tomography scanning is an advanced technique that can measure the definitive length of styloid process and takes the physician straightforward to the exact diagnosis. The transoral approach is a safe surgical alternative that achieves adequate treatment of Eagle's syndrome.

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Eagle's syndrome is characterized by the symptoms of recurrent throat pain, pharyngeal foreign body sensation, dysphagia, referred otalgia, and neck pain. Elongated styloid process or ossified stylohyoid or stylomandibular ligaments might clinically cause the so-called Eagle's syndrome or stylalgia.[1,2] Eagle has considered that any styloid process longer than 25 mm is elongated and usually responsible for Eagle's syndrome.[3-5] The incidence of elongated styloid process has been reported to be between 1.4% and 30%.[5-8]

The differential diagnosis of the Eagle's syndrome should include all the conditions causing cervicofacial pain. Medical history is the main guide for the diagnosis of Eagle's syndrome; however, palpation of the lateral tonsillar fossa, infiltration of local anesthetics to the tonsillar fossa, and radiologic examination are combined to confirm the diagnosis. Although several types of radiographs have been used for a long time, 3-dimensional computed tomography (TDCT) is the current and advanced technique that measures the definitive length of styloid process and takes the physician straightforward to the exact diagnosis of elongated styloid process.[9,10]

Eagle's syndrome can be treated pharmacologically or surgically, or both. The surgical management of elongated styloid process consists of 2 major procedures: the transoral approach and the extraoral-cervical approach.[11] The choice of treatment usually depends on the experience of the surgeon.

The aims of this study were to present our management and treatment modality for Eagle's syndrome and to discuss the importance of exact diagnosis of Eagle's syndrome and cost-effectiveness of transoral surgical treatment.

Materials and Methods

PATIENTS

Nineteen patients with Eagle's syndrome due to elongated styloid process were included in this retrospective clinical trial. Patient population consisted of 14 women and 5 men with the age range of 24 to 48 years (mean age, 33.8 years) who had been treated with surgical resection of the styloid process via transoral approach. The common complaints of the patients were pharyngeal foreign body sensation, recurrent throat pain, dysphagia, referred otalgia, and neck

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Table 1. DISTRIBUTION OF GENDER, AGE, CHIEF SYMPTOMS, AND REMISSION STATUS OF THE PATIENTS

Patient	Gender	Age (yr)	Chief Symptoms	Results
1	F	24	Dysphagia, pharyngeal foreign body sensation	Complete remission
2	M	35	Persistent throat pain	Partial remission
3	F	30	Throat pain by head rotation, otalgia	Complete remission
4	F	31	Pharyngeal foreign body sensation	Partial remission
5	M	39	Foreign body sensation and pain in throat	Partial remission
6	F	29	Pharyngeal foreign body sensation	Lost to follow-up
7	F	40	Pharyngeal foreign body sensation	Complete remission
8	M	38	Persistent throat pain	Complete remission
9	F	36	Throat pain by head rotation, otalgia	Partial remission
10	F	33	Persistent throat pain	Complete remission
11	F	48	Pharyngeal foreign body sensation	Complete remission
12	F	35	Pharyngeal foreign body sensation	Lost to follow-up
13	M	28	Dysphagia, throat pain	Complete remission
14	F	35	Persistent throat pain	Partial remission
15	F	32	Pharyngeal foreign body sensation	Complete remission
16	F	30	Pharyngeal foreign body sensation	Partial remission
17	F	29	Persistent throat pain	Complete remission
18	M	33	Pharyngeal foreign body sensation	Complete remission
19	F	37	Odynophagia, throat pain	Complete remission

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and throat pain exacerbated by head rotations (Table 1). The onset of the symptoms was extremely variable, with a mean of 3.4 years prior to diagnosis. Four of the patients were bilaterally symptomatic. Ten of the patients had history of tonsillectomy and none of the patients had systemic disorders related with their symptoms.

DIAGNOSTIC WORK-UP

Medical history was the main guide for the diagnosis of Eagle's syndrome. Complete diagnostic work-up included palpation of the lateral tonsillar fossa, infiltration of lidocaine to the tonsillar fossa, and radiologic examinations. The radiographs for the routine evaluation of the styloid process were a panoramic radiograph and a lateral cephalogram. Lidocaine (1%) was infiltrated to anterior pillar and deeply into the lateral tonsillar fossa of patients whose throat pain was exacerbated by head rotations. Relief of pain after infiltration partially supported the diagnosis and confirmed the need for surgical procedure. The last 5 patients were also examined by TDCT scanning to measure the exact length of styloid process and to observe their position (Figs 1, 2).

SURGICAL TECHNIQUE

Elongated styloid processes of all patients were resected via transoral approach under general anesthesia. The operations started with tonsillectomy in patients who had no history of previous tonsillectomy. The protuberance of the elongated styloid process was routinely found at the superolateral corner of tonsillar fossa by deep digital palpation. Then, overlying mucosa of styloid process was incised and the styloid process was carefully dissected and skeletonized through its origin. The ligaments that were attached to styloid tip were separated from the process (Fig 3). Finally, the naked and free styloid process was removed from the temporal bone at its origin (Fig 4). The muscles and mucosa of the surgical bed were closed in layers to get a smooth surface and to avoid bleeding at tonsillar fossa. The same procedure was applied to contralateral side in bilaterally symptomatic four patients. The whole procedure took less than 1 hour.

POSTOPERATIVE CARE AND FOLLOW-UP

All of the patients were discharged 6 hours after surgery and instructed to have a soft diet. Because patients underwent intravenous antibiotic prophy-

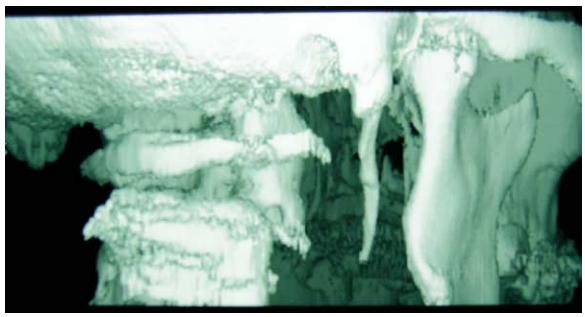

FIGURE 1. Three-dimensional computed tomography scanning of the styloid process.

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