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EGM clinical case

Outcome of vocal fold palsy caused by an impacted fish bone in hypopharynx: Case report and literature review

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1. Introduction

Foreign bodies in the upper digestive tract, especially fish bone, are a common clinical problem in emergency room and otorhinolaryngology outpatient departments [1]. It may cause significant morbidities and complications such as deep neck infection, mediastinitis, retroesophageal hematoma, pyopneumothorax, perforation of esophagus and even death [2]. Among the possible complications resulting from a fish bone lodged in the hypopharynx, the incidence of vocal fold palsy is extremely rare. There are only four cases to be reported in the previous literature [3–6]. We described another case of vocal fold palsy caused by the impaction of a fish bone in the hypopharynx. We also review the literature to discuss the clinical manifestations, mechanisms and outcomes of this rare entity.

2. Case report

A 72-year-old male presented to our hospital with the symptoms of sore throat, odynophagia, easy choking and hoarseness for five days. Five days prior to the visit, the patient had experienced sudden onset of lump sensation of throat, husky voice and slight dysphagia after eating a baked fish. He had ever seen a specific physician of local clinic initially, but no obvious foreign body had been observed. Because the symptoms got worse gradually, the patient visited our emergency department. On physical examination, the patient was agitated with difficulties to speak or even swallow. No dyspnea or stridor was noted. The laryngoscopy showed the left vocal fold fixation and swelling of the left aryepiglottic fold with saliva pooling in the hypopharynx (Fig. 1). According to his history, the impaction of an occult fish bone over pharynx or larynx was highly suspected. An immediate X-ray of the neck soft tissues showed a thin radiopaque density foreign body projecting over the anterior vertebral space of C-spine (Fig. 2A). For clear visualization of the fish bone, a computed tomography (CT) scan of the neck was arranged. CT scan disclosed a linearly calcified material located in the left hypopharynx to retropharyngeal region (Fig. 2B and Fig. 3). An emergency operation was arranged for the patient under general anesthesia.

Under the rigid laryngoscopy, the fish bone was found to be penetrated into the posterior wall of the left hypopharynx, but not totally embedded in the mucosa. The fish bone was extracted smoothly by grasping forceps without laceration of the mucosa. Granulation tissues coating with whitish debris were found over the penetration site and the left posterior cricoid region. The extracted fish bone was measured about 30 mm in length (Fig. 4) and was confirmed as a fish bone of Taiwan tilapia from the patient's history. The mobility of the cricoarytenoid joint was movable without fixation palpated by the instrument. The symptoms of dysphagia and foreign body sensation subsided immediately after the operation except vocal fold fixation. The postoperative course was uneventful. On the following laryngoscopy two weeks later, the swelling of the left aryepiglottic fold were completely resolved and the function of vocal fold movement was recovered.

3. Discussion

Foreign body impaction over oral cavity and pharynx is a common clinical problem. The most commonly foreign bodies impacted in the laryngopharynx in adults are the fish bones [3]. The common sites of fish bone lodged in are the palatine tonsil,

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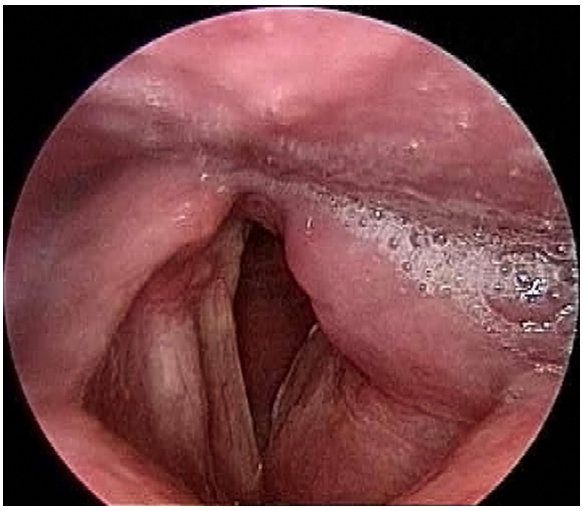

Fig. 1. Laryngoscopy showed left vocal fold immobility and diffuse swelling of left aryepiglottic fold with much saliva pooling in left hypopharynx.

tongue base, and vallecula. The fish bone can be directly visualized by eyes or with assistance of indirect laryngoscopy or flexible pharyngolaryngoscope and removed by grasping forceps with or without the guidance of endoscope.

In some cases, the fish bone is difficult to be found when impacted in the hypopharynx or upper esophagus, the X-ray neck lateral view is applied to identify the fish bone [7]. The majority of the fish bones have been reported to be radiopaque on plain X-ray, however, physicians sometimes need CT scan to provide precise location, shape and the size of the fish bone and the relationship between the fish bone and the surrounding tissues [3]. Depending on the CT images, physicians can carefully remove the fish bone without damage of the surrounding structure, especially polygonal or huge fish bones [7].

The common symptoms of fish bone impaction over laryngopharynx are sore throat, dysphagia, odynophagia, neck tenderness and drooling. The symptom of hoarseness due to vocal fold palsy caused by impacted fish bone is extremely rare because most common etiologies of vocal fold palsy are attributed to surgical procedure, neoplasm or undefined etiologies [8]. In the literature review, the mechanisms of vocal fold palsy due to fish bone can be divided into mechanical articular fixation, direct neuropathy of the recurrent laryngeal nerve or indirect neuropathy of the recurrent laryngeal nerve secondary to inflammation [3–6].

Tsunoda et al. reported a case of vocal paralysis caused by a fish bone lodged between the thyroid and arytenoid cartilage [4]. Vocal fold function regained completely immediately after the removal of the fish bone, which can be classified into a mechanism of mechanical articular fixation. Honda et al. also presented a case of vocal fold fixation that appeared suddenly while eating baked fish [3]. The vocal fold function was recovered after two months because of the direct injury of recurrent laryngeal nerve by the fish bone. Hung et al. demonstrated a case of vocal fold immobility caused by indirect neuropathy of recurrent laryngeal nerve secondary to chronic inflammation after long-standing impaction of a fish bone in the hypopharnx for at least nine months [5].

Recently, Kwon et al. described a case of vocal fold paralysis caused by an impacted bone of a stingray tail in the arytenoid [6]. The mechanism was attributed to poisonous components in the

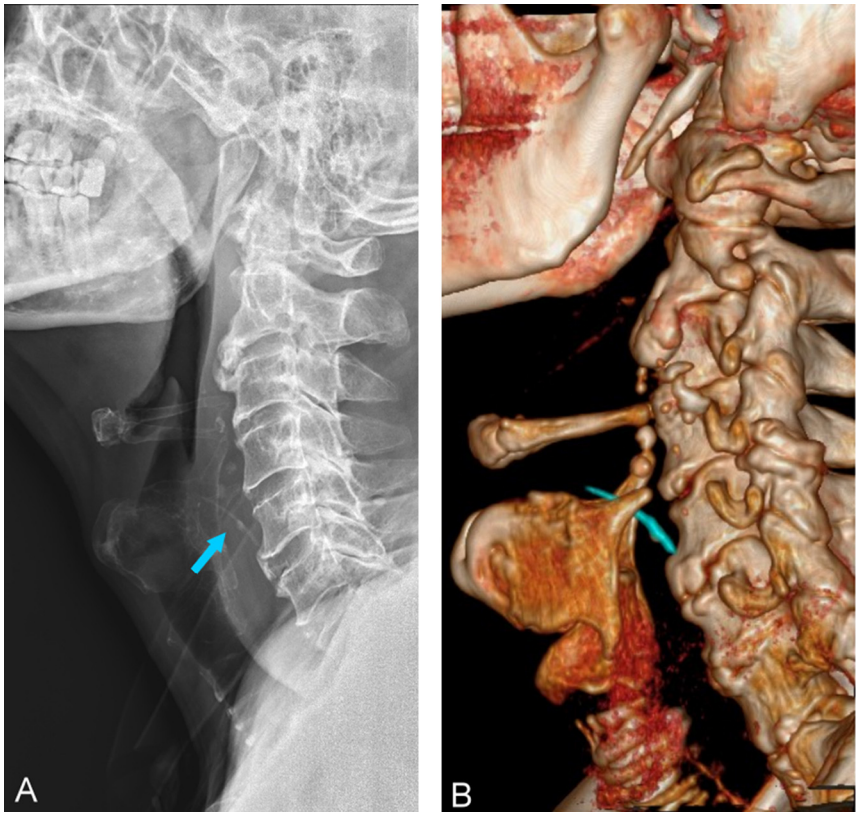

Fig. 2. A. Lateral view of X-ray of the neck showed a thin radiopaque density foreign body (blue arrow) projecting over the anterior vertebral space of C-spine at the level of the hypopharynx. B. Three-dimensional computed tomography (CT) demonstrated an intact fish bone (blue color) between the thyroid cartilage and vertebral body of C-spine.