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When an Impacted Fishbone Is Just a Red Herring

Itay Chen[1], Aleeza Rubin[1], Gustavo Rajz[2], Sichel Jean-Yves[1], Eliel Ben-David[3]

[1]Department of Otolaryngology, Hebrew University of Jerusalem Faculty of Medicine, Shaare Zedek Medical Center, Jerusalem, Israel
[2]Department of Neurosurgery, Hebrew University of Jerusalem Faculty of Medicine, Shaare Zedek Medical Center, Jerusalem, Israel
[3]Department of Radiology, Hebrew University of Jerusalem Faculty of Medicine, Shaare Zedek Medical Center, Jerusalem, Israel

Abstract

Background: Fishbone ingestion is a common complaint in the otolaryngology clinic. Fishbone mimickers are important to recognize to obtain the correct diagnosis. We present rare cases of stylohyoid complex calcification as a fishbone mimicker.

Methods: Three cases presented with unilateral pain after swallowing a fishbone. After a negative fiberoptic endoscopic exam, a computed tomography scan was performed and demonstrated positive findings.

Results: The first case underwent evaluation under anesthesia with no fishbone detected. After further investigation, we concluded that this was an incidental finding of calcifications of the stylohyoid complex, most probably stylopharyngeus muscle and not a foreign body. Thus, the following 2 patients were managed conservatively.

Conclusions: Differential diagnosis of stylohyoid complex calcification should be considered when examining a computed tomography scan with positive findings in a patient after fishbone swallowing. Awareness of this entity may help to avoid unnecessary procedures under general anesthesia.

Keywords: CT scan, Eagle syndrome, fishbone, foreign body, pharynx

Introduction

Swallowed fishbones with impaction are common in the otolaryngology emergency room (ER); it causes pain and discomfort for the patient. Fishbones are commonly lodged in the oropharyngeal space, such as the tonsils (most common), tongue base, and valleculae. Less commonly, fishbones can lodge in the pyriform sinuses, post-cricoid area, and esophagus.[1] Impacted bones that lodge in the esophagus may cause local infection and ultimately may lead to life-threatening mediastinitis.[1] In case a fishbone is not visualized on an otolaryngology examination, including fiberoptic pharyngoscopy and laryngoscopy, and suspicion is high, computed tomography (CT) may be performed to demonstrate the digestive tract down to the stomach, as it is known to have a remarkably high positive predictive value for diagnosing an esophageal fishbone.[2-4]

In this paper, we would like to present several cases of patients who arrived at the ER with a clear history of swallowing a fishbone, complained of unilateral pain and foreign body (FB) sensation that was exacerbated by swallowing, and had CT findings suggestive of a fishbone; however, no fishbone was found.

Patients and Methods

This is a case series of 3 patients admitted to the otolaryngology ER at Shaare Zedek Medical Center. Patients' files have been revised to analyze imaging and clinical information as well as interventions and follow-up status. The study was approved by the Shaare Zedek Medical Center Institutional Helsinki Committee. This paper was designed according to The CARE guidelines (for CAse REports).

Case 1

A 75-year-old male was admitted to the otolaryngology ER with a medical history of hypertension, type 2 diabetes mellitus, and hypercholesterolemia. On anamnesis, the patient reported swallowing a fishbone a few hours prior to arrival at the ER. He complained of subsequent sharp unilateral right throat pain exacerbated with swallowing. On physical examination, no FB

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Corresponding author: Itay Chen, e-mail: chenitay2@gmail.com

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was seen or palpated in the oropharynx; fiberoptic pharyngoscopy and laryngoscopy revealed normal anatomy with no FB or signs of mucosal trauma.

A CT of the neck and chest without contrast was performed. The CT demonstrated a thin linear hyperdense structure measuring 2.7 cm in length suspected to be a FB in the right peritonsillar region. The inferior-medial end of the FB was a few millimeters from the right tonsil mucosa at the level of the lower pole, pointing diagonally superiorly and laterally, toward the parapharyngeal space, with no sign of inflammation or abscess (Figure 1).

With a clear history of swallowing a fishbone and positive findings on a CT scan, an examination under anesthesia (EUA) was decided. Under general anesthesia, the entire oropharynx and hypopharynx were examined with the help of a rigid endoscope 0°, video laryngoscope, and pharyngoscope. Thorough palpation of the oropharynx was performed, with emphasis on the tonsil and vallecular area on the right. However, no FB was seen or palpated.

A second CT scan was completed due to negative findings on EUA and the persistence of symptoms. This CT again demonstrated the same hyperdense structure in the same location, pointed in the direction of the parapharyngeal space toward the styloid process.

On post-operative day 5, with no symptom resolution and imaging impression that the FB is located deep to the tonsil, the patient was referred to right tonsillectomy and FB extraction under general anesthesia. After tonsillectomy, thorough palpation of the tonsillar bed was performed, but no FB was found. Endoscopy in the same area and visualization with microscopy did not display any relevant findings. It was decided to stop the surgery and not dissect deeper into the parapharyngeal space.

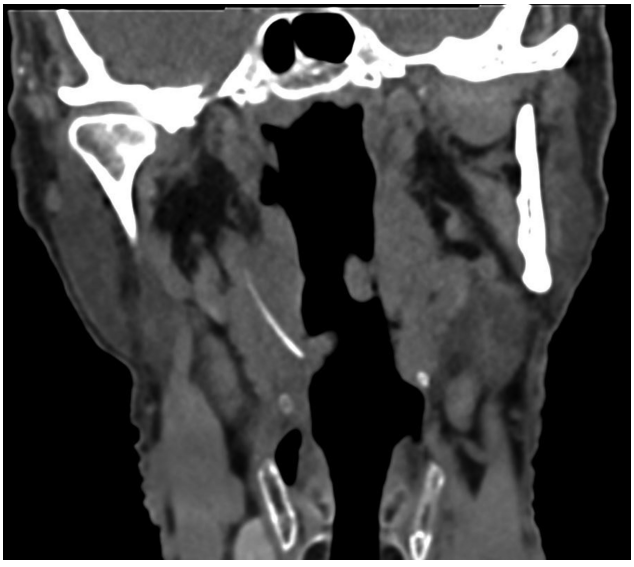

Figure 1. Coronal non-contrast computed tomography image. A thin linear calcification is seen adjacent to the right pharyngoepiglottic fold close to the mucosal surface, traversing the pharyngeal mucosal space and the parapharyngeal space with no significant surrounding swelling or edema.

Subsequently, after a department case consultation, the patient was discharged with the FB in place and antibiotic coverage. The patient continued follow-up in the otolaryngology outpatient clinic.

A multidisciplinary meeting with the otolaryngology and radiology representatives was held, and the conclusion was that calcification in the stylohyoid complex was the most probable diagnosis. Upon outpatient follow-up, the patient reported no pain or discomfort. On physical examination, the tonsillar fossa was completely healed.

Case 2

A 59-year-old female was admitted to the otolaryngology ER with a medical history of migraines, fibromyalgia, and depression. The patient described swallowing a fishbone 4 days prior to her admission; she complained of a subsequent sensation of a FB and a sharp pain upon swallowing on the right side of her throat.

On physical examination, including fiberoptic pharyngoscopy and laryngoscopy, no FB or signs of mucosal trauma were found. Due to the positive anamnesis with a normal physical examination, a neck and chest CT scan was performed. The CT demonstrated a thin hyperdense line suspected to be an FB in the right parapharyngeal space. The inferior-medial end was several millimeters deep to the pharyngeal mucosa. The deeper end of the FB pointed toward the right styloid process with no signs of inflammation (Figure 2).

With the experience gained from the previous case, a consultation between the otolaryngologists and radiologists was made. It was decided that although there was a clear history of fishbone swallowing with appropriate symptoms, the findings on the CT scan are more likely to be calcification of the stylohyoid complex structure. The patient was discharged from the ER with antibiotic coverage. Seven days later, upon follow-up examination, the patient denied any pain or symptoms.

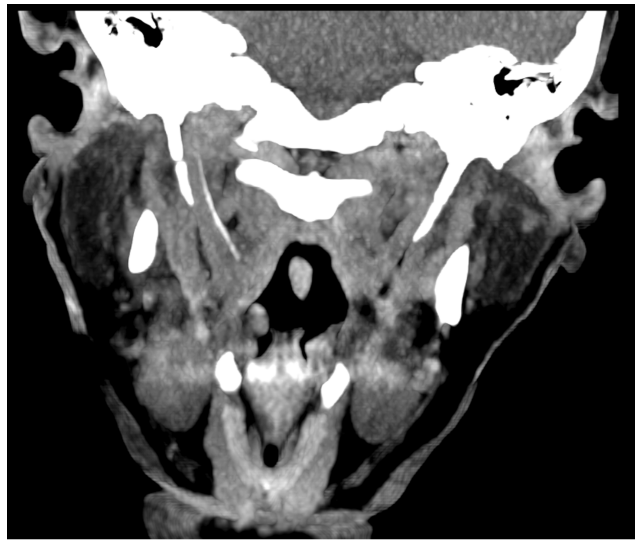

Figure 2. Coronal maximum intensity projection computed tomography image. A thin linear calcification is seen medially to the right styloid process, distant from the mucosal surface, with no significant surrounding swelling or edema.

Case 3

A 17-year-old female admitted to the otolaryngology ER described swallowing a fishbone a few hours before admission. Since then, she complained of an FB sensation and sharp pain in her throat localized centrally and not exacerbated by swallowing. There was no other relevant medical history.

After a negative physical examination, a joint decision between the patient, her parents, and the physician was made for a follow-up.

Two days later, the patient returned to the ER, complaining of an exacerbation of her pain and the FB sensation. In the ER, she was well and stable, with no fever. A non-contrast neck and chest CT scan were performed. The CT demonstrated symmetric bilateral hyperdense structures in the parapharyngeal space positioned diagonally from the level of the epiglottis up to the upper poles of the tonsils bilaterally. The superficial end was 2 mm on the left and 4 mm on the right from the mucosal surface of the posterior aspect of the lower pole of the tonsils. The deeper end pointed superiorly toward the styloid process, with no signs of inflammation (Figure 3).

The CT findings were not suspicious for an FB since the calcified objects were bilateral and symmetric. These findings were thought to represent bilateral calcifications of the stylohyoid complex.

The patient was discharged from the ER with no treatment, and upon follow-up, her complaints were resolved 4 days later.

Discussion

We presented 3 cases of linear calcifications in the area of the stylohyoid complex, 2 unilateral and 1 bilateral. In all of the cases, CT imaging showed a linear calcified structure mimicking an FB.

Stylohyoid complex syndrome (SHCS) classically includes all conditions characterized by lateral oro-cervico-facial pain resulting from an elongated styloid process, ossified stylohyoid ligament, or elongated hyoid bone.[5] Under SHCS, 2 clinical entities are included, Eagle syndrome and stylocarotid syndrome as described by Watt W. Eagle 7 decades ago.[6,7]

It was suggested that SHCS should include all soft tissue attachments to the styloid, including those inserted on the pyriform sinus, oropharynx, tongue base, mandible, and tonsils. From an anatomical perspective, these include 2 bony structures (the lesser cornu of the hyoid and the styloid process of temporal bone), 3 muscles (stylopharyngeus, styloglossus, and stylohyoid), and 2 ligaments (stylohyoid and stylomandibular).[8,9]

Since the calcifications encountered in our cases seemed to be related to a structure arising from the stylohyoid complex, specifically the styloid process, we are called upon to ask if these cases are a variant of Eagle syndrome. Nonetheless, the direction of the calcifications was oriented more medially and steeply toward the pharyngeal soft tissues rather than the hyoid bone; a multidisciplinary discussion concluded a likely diagnosis of SHCS, specifically, stylopharyngeus muscle calcification was assumed based on image analysis.[9]

Kamil et al[8] presented a unique case report very similar to our cases in which an adult presented with bone ingestion with symptoms and CT findings suggesting an impacted bone in the parapharyngeal space. With suspicion of a FB lodged deep to the mucosa in the parapharyngeal space, they operated on their patient using transoral robotic surgery, and dissection in the parapharyngeal space discovered stylopharyngeus muscle–tendon calcification. The unique imaging findings in our cases, together with the case report mentioned above,[8] supported our assumption that the stylopharyngeus muscle tendon was most probably the origin of the calcification in our 3 cases.

With a clear history of fishbone ingestion and characteristic imaging on CT, the decision to operate on the first patient

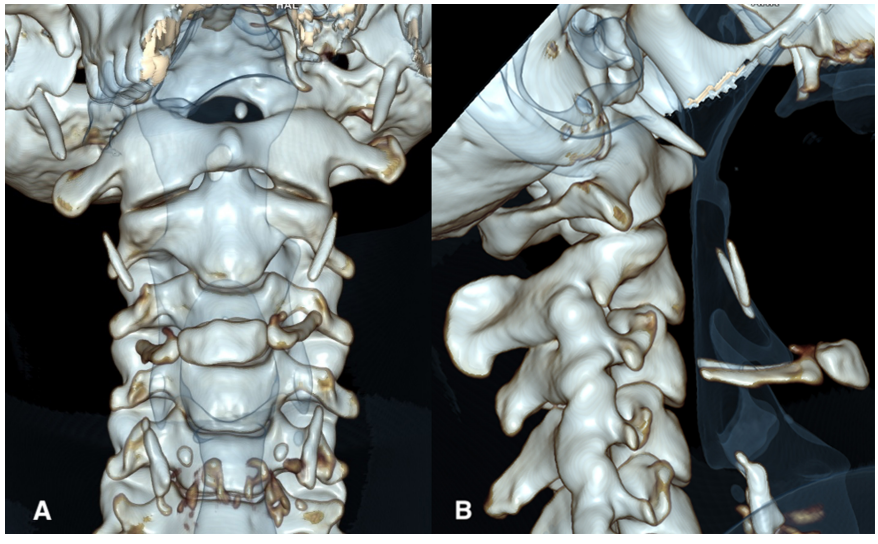

Figure 3. Frontal (A) and lateral (B) views of a 3-dimensional volume rendering of computed tomography images of the neck show bilateral symmetric linear calcifications between the styloid process and the hyoid bone. Note the angle of the calcifications on the lateral view, which is different from the angle of the styloid process.

seemed appropriate at the time. When no FB was seen or palpated on the second surgery, an intraoperative consultation led to the decision to terminate the operation. A multidisciplinary discussion concluded a likely diagnosis of SHCS, specifically, stylopharyngeus muscle calcification was assumed based on image analysis.[9]

The second and third cases were treated conservatively despite the history of swallowing a fishbone and the CT findings. Since these patients' pain and discomfort subsequently resolved with no intervention, the imaging characteristics were discovered to be a red herring.

An interesting difference between our cases and SHCS is the trigger of swallowing a fishbone that brought up the pain and FB sensation and improved with time. Since this was the trigger in all our cases and was probably the cause of the patients' complaints, this may be a distinct feature of this entity. However, since the number of patients is limited, the possibility that the stylohyoid complex calcification was an incidental finding is possible.

The 3 cases described above demonstrate that knowledge of possible variant imaging findings of the parapharyngeal space is essential to avoid unnecessary interventions and provide appropriate case management for patients presenting with a history of pain after swallowing a fishbone.

A recent case report similar to the cases presented in our study described a patient with persistent throat pain after fish bone ingestion, supporting imaging led to neck exploration where removal of the "FB" was performed, the histopathology report described benign lamellar bony tissue with adjacent fibrous and cartilage tissues, suggestive of ligament tissue. The patient's symptoms resolved post-surgery. The authors summarized that a calcified stylohyoid ligament was removed.[10]

In line with the abovementioned case report[11] together with the experience we gained, we conclude that when assessing patients who present with a history of FB ingestion, we should bear in mind the possibility of imaging findings that may be mistaken for an FB and can lead to unnecessary interventions.

In conclusion, awareness of calcification of the stylohyoid complex, specifically stylopharyngeus muscle calcification as a possible mimicker of a fishbone in patients complaining of throat pain and FB sensation after ingestion of a fishbone, will lead to more proper patient management, sparing unnecessary surgery.

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

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Declaration of Interests: The authors have no conflict of interest to declare.

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