

CASE REPORT

Fish Bone Foreign Body Disease: A Case with Dramatic Complication

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ABSTRAK

Tulang ikan adalah bendasing yang kerap tertelan terutamanya di kalangan masyarakat Asia. Kadar komplikasi tembusan esofagus adalah sebanyak 1% hingga 4% daripada jumlah kes yang dilaporkan. Seorang wanita berusia 60 tahun mengidapi kesukaran dan kesakitan bila menelan selama lima hari setelah tercekik tulang ikan. Beliau telah mendapatkan rawatan di dua buah klinik dan hospital swasta sebelum dirujuk kepada pakar ENT. X-ray leher ulangan menunjukkan kebengkakan tisu lembut yang ketara di bahagian prevertebral dengan poket udara dikesan di peringkat C3 prevertebral dan emphysema di bawah kulit bahagian depan leher berkemungkinan disebabkan oleh hematoma retrofaring atau nanah. CT leher dan toraks menunjukkan struktur linear berukuran 2.1 cm di tahap C7/ T1 dan sebahagiannya menembusi esofagus di antara ruang trachea esophagus. Laringoskopi dan esofagoskopi ulangan menjumpai kesan tembusan di sebelah kanan esofagus distal kepada cricopharyngeus dengan nanah keluar dari dinding tepi esofagus. Tulang ikan berukuran 3.0 cm x 0.5 cm telah dikeluarkan dari dinding belakang esofagus 17 cm dari gigi hadapan. Kajian gastrografi pada hari ke-10 adalah normal dan pesakit dibenarkan pulang pada hari ke-11 dengan tiub pemakanan Ryle dan antibiotik. Penilaian susulan endoskopik fiber optik dua minggu kemudian adalah normal. Penelitian susulan di klinik menunjukkan pemulihan sepenuhnya tanpa komplikasi. Migrasi tulang ikan boleh menembusi dinding esofagus dan menyebabkan komplikasi yang serius. Risiko kematian dan kecacatan dari tercekik tulang ikan dapat dikurangkan dengan membuat diagnosis yang tepat, merujuk kepada pakar dan mengeluarkan bendasing dengan segera.

Katakunci: bendasing, kecemasan, trauma

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ABSTRACT

Fish bone is the commonest cause of foreign body disease in Asian population. Esophageal perforation following fish bone foreign body accounts for 1-4% of the total reported cases. A 60-year-old lady presented with progressively worsening dysphagia and odynophagia over five days period following a fish meal. She sought treatment at two general practitioner clinic and a private hospital before being referred to Ear, Nose and Throat specialist. Repeated neck X-ray revealed a significant increase in prevertebral soft tissue thickness with large air-pocket tracking, small opacity at the prevertebral C3 level and subcutaneous emphysema anterior to the neck suggestive of retropharyngeal hematoma or abscess. A CT neck and thorax showed a 2.1 cm linear dense structure at the level of C7/T1 that appeared to protrude outside the esophagus in between the tracheoesophageal space. Direct laryngoscopy and repeat emergency esophagoscopy revealed a perforation at the right side of esophagus distal to cricopharyngeus with pus discharge upon milking of posterior lateral wall and a fish bone measuring 3.0 x 0.5 cm was removed from posterior wall of esophagus 17 cm from incisor. Gastrograffin study on day 10 was normal and was discharged on day 11 with Ryle's tube feeding and to complete oral antibiotic. Fiber optic endoscopic evaluations of swallowing at two weeks follow up was normal. Subsequent review in the clinic showed full recovery without sequelae. Migrating fish bone can lead to esophagus penetration with serious complications. Mortality and morbidity from fish bone foreign body can be minimized with early diagnosis, referral and removal.

Keywords: emergency, foreign body, trauma

INTRODUCTION

Fish bone is the most common cause of foreign body disease (Herranz-Gonzalez et al. 1991) in Asian culture, especially in Chinese population (Nandi, & Ong 1978). Various symptoms can be presented with fish bone disease including foreign body sensation, sore throat, dysphagia, odynophagia, retching and vomiting (Herranz-Gonzalez et al. 1991). Esophageal perforations due to foreign body ingestion account for 1-4% of the total reported cases (Singh et al. 1997). Complications develops more

frequently with longer duration of impaction (>24 hours), bone type, and longer bone length (>3cm) (Sung et al. 2011).

This is a report of an esophageal perforation secondary to fish bone foreign (FFB) with complication due to delay of referral from a primary healthcare.

CASE REPORT

A 60-year-old female with underlying hypertension and dyslipidaemia presented to Emergency Department (ED) with progressively worsening

of dysphagia and odynophagia over a period of five days. She had a fish meal five days prior, with her family and started to have foreign body sensation and pain in the throat. She felt pain over the throat but was able to tolerate normal diet. She sought treatment from a General Practitioner (GP) clinic on the day of event and was discharged with an antibiotic and glycerine thymol gargle without any improvement for the next two days. Then, she went to another GP clinic for further examination. Unfortunately, she was told to have throat inflammation and discharged with another type of oral and gargle medication. However, the condition worsened with extreme pain upon swallowing of saliva and she was only able to drink small amounts of water and porridge. Due to the worsening and persistent pain, she went to a private hospital and was immediately referred to a Ear, Nose and Throat (ENT) specialty of a teaching hospital.

In the ED, she was comfortable, able to speak in full sentences, no stridor, no drooling of saliva and not in distress. She denied having fever, shortness of breath or change of voice. On examination, she was comfortable with good hydration and good pulse volume. Her initial vital signs revealed blood pressure 140/88 mmHg, pulse rate 96, RR 20 bpm SPO2 98% under room air and low grade fever 37.5°C and pain score 7/10. There was no obvious anterior neck swelling and not tender on palpation. There was grade II tonsil enlargement but no visible foreign body. However, subcutaneous emphysema was palpable on right

side extending to the base of the neck. Respiratory examination revealed normal with equal air entry. Cardiovascular and abdomen examination were normal.

Initial full blood count revealed raised white cell count and neutrophil count of $14.8 \times 10^9/L$ and $12.2 \times 10^9/L$ (82.5%) respectively. Other blood investigation results were unremarkable. A lateral view radiograph of the neck and chest radiograph were normal. Flexible nasopharyngolaryngoscopy (FNPLS) examination performed by ENT team in ED did not reveal any abnormal finding. The patient was started on intravenous (IV) tramadol, IV fluid, nil by mouth (NBM) and admitted to the ENT ward for further management. blood culture was sent and IV co-amoxiclav and IV metronidazole were initiated.

Patient underwent emergency esophagoscopy for removal of foreign body. Intra-operative report revealed no fish bone or other foreign body at the vallecula, pyriform fossa, post cricoids and esophagus. Esophageal mucosa appeared healthy and normal. There was minimal bleeding from the esophageal mucosa post introduction of scope that stopped spontaneously. No mucosal tear and no perforation identified.

On second day of admission, the patient still complained of dysphagia with frequent spikes of temperature. A repeated neck X-ray (Figure 1) revealed a significant increase in prevertebral soft tissue thickness. Large air-pocket was seen at this region, tracking at the prevertebral region. Small opacity was seen at the prevertebral C3 level

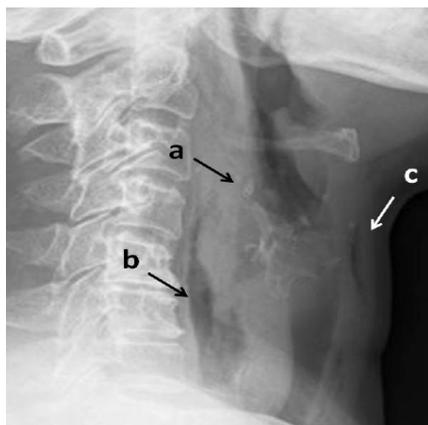


Figure 1: Lateral cervical x-ray showing a small opacity at the prevertebral C3 level indicating a foreign body (a) There is a significant increase in prevertebral soft tissue thickness with large air pocket (b) and subcutaneous emphysema in the anterior of the neck (c).

which was suspicious of foreign body. Subcutaneous emphysema was seen at the visualized anterior neck. The finding suggestive of retropharyngeal hematoma due to esophageal perforation or retropharyngeal abscess. A CT neck and thorax (Figure 2) was performed and showed a linear dense structure seen at the level of

C7/T1 measuring 2.1 cm in length. Part of the fish bone was located within the esophagus with small part which appeared to protrude outside the esophagus in between the tracheoesophageal space with the tip abutting the posterior wall of the trachea. The esophagus wall at this region was edematous and swollen. There was an extensive pneumomediastinum and subcutaneous emphysema extending from subcarina, tracking along the right side of neck and extending to the posterior aspect of right mastoid bone superiorly. A differential diagnosis of esophageal perforation secondary fish bone or iatrogenic was documented. Patient was kept NBM with IV antibiotic and IV fluids. Patient underwent emergency direct laryngoscopy (DL scope) and esophagoscopy revealed a perforation at the right side of esophagus below cricopharyngeus with pus discharge upon milking of posterior lateral wall. A fish bone measuring 3.0 x 0.5 cm was observed at posterior wall of esophagus 17 cm from incisor and removed. Ryle tube

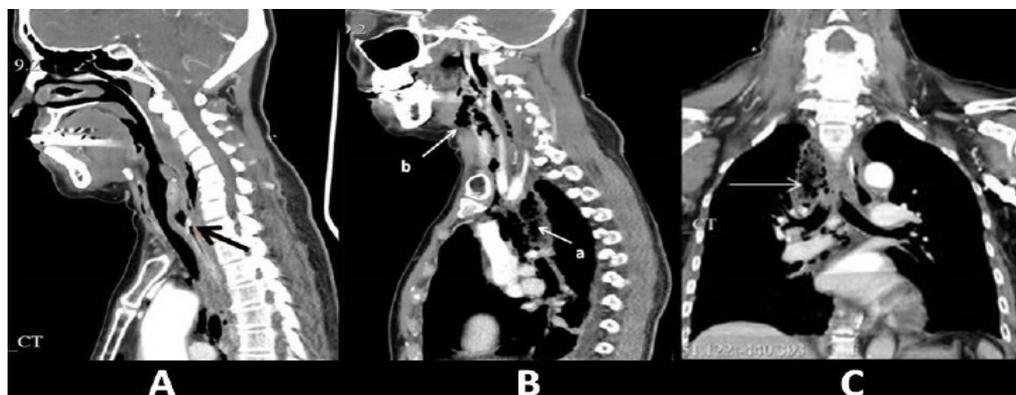


Figure 2: CT neck and thorax. A) Linear dense structure (red arrow) at the level of C7/T1 measuring 2.1 cm in length, indenting anteriorly and abutting posterior tracheal wall B) Extensive pneumomediastinum (a) and subcutaneous emphysema (b) C) Extensive pneumomediastinum.

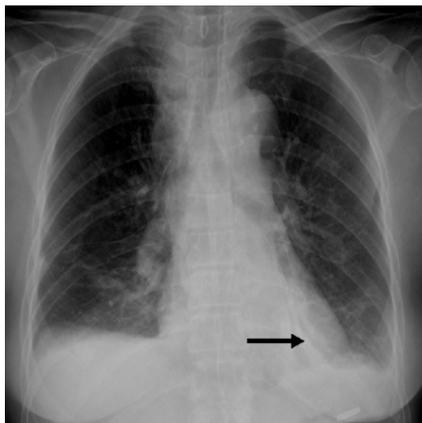


Figure 3: Chest x-ray showing pneumomediastinum (a) and bilateral pleural effusion more on the right side.

was inserted for feeding. Post op diagnosis of esophageal perforation secondary to fish bone was confirmed.

Post 2nd operation, patient's condition improved and the fever resolved. A chest X-ray (Figure 3) repeated on 3rd day of admission showed pneumomediastinum, bilateral pleural effusion more on the right and consolidation at bilateral lower zones. Patient was managed conservatively with IV antibiotic. Swab culture showed pus in the absence of bacteria, yeast or epithelial cell with normal full blood count result.

Gastrograffin study was performed on 10th day of admission to reassess esophageal perforation. The study revealed no pre-vertebral soft tissue swelling. However, the amount of contrast ingested was too small with significant aspiration and was suboptimal to assess for esophagus leak. The subcutaneous emphysema resolved. The patient remained well and tolerated Ryle's tube feeding. She was subsequently discharged on 11th day of admission with Ryle's tube

feeding, oral antibiotic for another 10 days. Fiberoptic endoscopic evaluation of swallowing (FEES) was planned in 2 weeks time.

FEES and swallowing test were normal. The Ryle's tube was removed and patient was allowed food orally. Subsequent follow-up at an ENT clinic 2 weeks later, showed full recovery and patient was discharged from ENT clinic.

DISCUSSION

In this patient, the diagnosis of foreign body ingestion with complication was delayed. The initial lateral view X-ray of the neck was reported as normal and no foreign body was visualized. No foreign body was identified during the first esophagoscope. However, worsening symptoms of fever and sore throat lead to further investigations and the presence of FFB was confirmed. The diagnosis of FFB was based on the symptoms and the diet history. Physical examination should assess for the general condition and look for complication. Various symptoms which presented with FFB included foreign body sensation, sore throat, dysphagia, odynophagia, retching and vomiting (Herranz-Gonzalez et al. 1991).

Fish bone is the most common cause of FFB in Asian culture, especially in Chinese population (Herranz-Gonzalez et al., 1991; Sung et al., 2011; Nandi & Ong, 1978). The majority of ingested FFB pass spontaneously without complications (Nandi, & Ong 1978). However, FFB can be very serious and early intervention can

reduce mortality (Nandi, & Ong 1978). Cervical esophagus is the most common location followed by middle third esophagus, piriform sinus and lower third esophagus (Herranz-Gonzalez et al., 1991). There are three important anatomical constrictions within the esophagus that maybe involved with FFB. These are: (1) at cricopharyngeus muscle, (2) at the level of aortic arch or left main stem bronchus, and (3) at the gastroesophageal junction. An empty and collapsed esophagus has no apparent constriction. The narrow areas of esophagus are only apparent with esophageal filling.

The types of fishes that may cause FFB in the esophagus varies (Kim et al. 2015). The way a fish is prepared or cooked may influence the risk of FFB. For example, fish stew has higher risk of esophageal FFB (Kim et al. 2015). In study by Kim and Song showed that Damselfish and Armorchlad rockfish are top two causative FFB in Korea due to its unique bone shape and popular fish for Korean dishes (Kim, & Song 2012).

The radiological findings in this case were consistent with esophageal tear due to FFB resulting in an extensive pneumomediastinum and right subcutaneous emphysema. Majority of fish bone are not easily detected on plain X-ray and the visibility of fish bone depends on location, orientation and fish species (Nandi & Ong, 1978; Evans et al., 1992; Lue et al., 2000). Plain radiography is not an ideal imaging method for impacted fish bone due to low sensitivity (25.3%) with moderate specificity (86.3%) and positive predictive value (72.7%) (Evans

et al. 1992). CT scan is better imaging method for localizing and identifying foreign body (Goh et al. 2006; Liew et al., 2013; Marco de Lucas et al. 2004; Young et al 2008). It is highly reliable for localizing FB in the esophagus with 100% sensitivity, 91% specificity, 100% negative predictive value (NPV), and 87.5% positive predictive value (PPV) to detect impacted foreign body (Marco de Lucas et al. 2004).

The second esophagoscopy successfully removed the fish bone and proved that endoscopy is a successful procedure to remove almost all foreign body (Mosca et al., 2001). Patient's condition improved following the removal of the fish bone, pus drainage and antibiotics, and she was discharged with follow-up. Previous study showed that treatment delay increases the possibility of unsuccessful removal of foreign body and increases the risk of complications (Nandi, & Ong, 1978). Complications of FFB are common in adult compared to pediatric group (Nandi, & Ong, 1978). Among all complications, esophagus perforation is most common (Nandi, & Ong, 1978). In FFB, more than half will develop esophageal penetration or perforation (Kim, & Song, 2012). Complications develop more frequently with longer duration of impaction (>24 hours), bone type, and longer bone length (>3 cm) (Marco de Lucas et al., 2004).

Esophageal laceration (Wu et al 2008) and intramural hematoma (Aslan et al. 2014) are rare complications in FFB. Other complications of FFB include recurrent pneumonia (Saibo et al., 2013) pneumomediastinum, mediastinitis (Kim, & Song 2012) and

rupture ascending aorta (Macchi et al. 2008). If the FFB advances to the heart, pericarditis, cardiac tamponade, infectious endocarditis and systemic air embolism may develop (Blanco Ramos et al. 2009; Liang et al. 2014). The major concern of FFB is penetration of a major vascular structure, especially the aorta and aortic arch. A pseudoaneurysm or aorto-esophageal fistula (AEF) can develop if FFB penetrates the aortic arch eminence (Kunishige et al. 2008; Macchi et al. 2008). Aorto-esophageal fistula is the most serious complication of FFB disease in the esophagus.

CONCLUSION

Fish bone foreign body in the esophagus is a common presentation in the Emergency Department. Early referral to the ENT team is important. Early esophagoscopy to remove FFB can prevent complications. Plain radiograph has low sensitivity with high false negative rate in detecting FFB. Anteroposterior and lateral views X-ray increase the detection rates of foreign body and free mediastinal or peritoneal air. CT scan is better for localizing and identifying foreign body compare to plain radiograph. Migrating of fish bone following esophagus penetration can lead to serious complications. Injury to the major vascular structure, for example aorta and aortic arch, can be fatal. Mortality and morbidity from FFB can be reduced with early diagnosis and removal.

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Received: 19 Dec 2017

Accepted: 8 May 2018