



Fish Bone Ingestion: An Unusual Cause of Traumatic Thyroid Gland Injury

W. Suriza War^{1*}, R. A. Rafli¹, N. A. Hakim¹, A. Daphne² and E. N. Aina¹

¹Breast and Endocrine Surgery, Hospital Kuala Lumpur, Jalan Pahang, 50586 Kuala Lumpur, Wilayah Persekutuan Kuala Lumpur, Malaysia.

²Breast and Endocrine Surgery, Subang Jaya Medical Centre, Jalan SS 12/1A, 47500 Subang Jaya, Selangor, Malaysia.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Introduction: Ingestion of foreign bodies, particularly fish bones, resulting in gastrointestinal tract perforations and migration to the adjacent organs are uncommon. We reported two cases of fish bone ingestion leading to oesophageal perforation and migration into a thyroid gland.

Case Report: *Case 1:* A 51-year-old lady presented with a 5-day history of left anterior neck pain following ingestion of a fish bone. Neck radiography showed a foreign body at the level of C6 - C7. The CT scan revealed a fish bone embedded in the superior pole of left thyroid lobe. Emergency neck exploration discovered a 2 cm long fish bone piercing the oesophagus into the left thyroid lobe. Left hemithyroidectomy with a simple repair of oesophageal perforation performed. *Case 2:* A 57-year-old lady complained of odynophagia following ingestion of a fish bone. CT scan showed a linear foreign body measuring 23.3 mm located within the right thyroid lobe piecing the strap and sternocleidomastoid muscles. Emergency neck exploration revealed a fish bone protruding from the right thyroid lobe which was subsequently extracted out.

Conclusion: Ingestion of fish bone leading to the oesophageal perforation and migration into a thyroid gland is a rare surgical emergency. Imaging such as plain radiography and computed

tomography scan is important for a prompt diagnosis. Computed tomography scan can delineate the precise location of the migrated fish bone to facilitate the surgical exploration. Early surgical intervention by performing neck exploration with either simple extraction of the fish bone or hemithyroidectomy is important for successful outcomes.

Keywords: *Fish bone ingestion; traumatic thyroid gland injury; simple extraction of a fish bone and hemithyroidectomy.*

1. INTRODUCTION

Ingestions of foreign bodies, particularly fish bones, resulting in gastrointestinal tract (GIT) perforations and subsequently, migration to the adjacent organs are uncommon accounting for less than 1% [1]. There have been cases of ingested fish bones migrate into the prevertebral muscles, trachea, carotid sheath, submandibular, or even, thyroid gland [2-12]. In a rare circumstance, the migrated fish bone in the neck can spontaneously extruded to the skin [6]. We reported two cases of fish bone ingestion leading to the oesophageal perforation and migration into a thyroid gland.

2. CASE REPORTS

Case 1: A 51-year-old lady presented with a 5-day history of left anterior neck pain following ingestion of a fish bone. Clinically, she was afebrile with mild tenderness at the left side of the neck. The flexible nasolaryngoscopy examination was unremarkable. Neck radiography showed a longitudinal foreign body at the level of C6 - C7 (Fig. 1A). The computed tomography (CT) scan revealed a linear opacity foreign body representing a fish bone at the level of C6 - C7 which penetrated the left lateral wall of oesophagus and embedded in the superior pole of left thyroid lobe (Fig. 1B). There was no evidence of retroesophageal abscess or pneumomediastinum.

Emergency neck exploration was performed. The left thyroid lobe was mobilised and dislocated medially. Upon mobilisation of the thyroid lobe, a 2 cm-long fish bone was exposed. The fish bone was piercing the oesophagus near the cricoid cartilage into the superior pole of thyroid gland (Fig. 1C). A small oesophageal perforation was also identified. Left hemithyroidectomy was performed with a simple repair of oesophageal perforation. Post-operatively, she was kept nil by mouth for 5 days with an adjunct of total parenteral nutrition and intravenous antibiotics. By day 6, she was able to take orally and subsequently, discharged home.

Case 2: A 57-year-old lady complained of odynophagia following ingestion of a fish bone a week ago. Clinical and flexible nasolaryngoscopy examinations were normal. Neck radiography showed a longitudinal foreign body in the right neck at the level of C5 – C6. CT scan of the neck showed a linear, radio-dense foreign body measuring 23.3 mm in length located within the right thyroid lobe piecing the strap and sternocleidomastoid muscles (Fig. 2A and 2B). She underwent an emergency neck exploration. During the surgery, the strap muscles were separated along the midline raphe exposing the underlying thyroid gland. While exposing the lateral part of the right lobe, a fish bone was revealed protruding from the thyroid gland and subsequently extracted out (Fig. 2C). She did not require any hemithyroidectomy. She recovered and was discharged the following day.

3. DISCUSSION

Ingestion of fish bones leading to the oesophageal perforation and migration into a thyroid gland is a rare surgical emergency. EH Wu et al identified 18 reported cases of migratory fish bone into a thyroid gland in the English literature between 1910 to 2017 [7]. Since then, there are two additional reported cases [8-9]. These cases were commonly encountered in Asian population because of the dietary habits of Asian people which preferred to consume a whole fish instead of a fish fillet.

The typical clinical manifestations are foreign body sensation, odynophagia, neck pain and swelling. The time of presentation varies from a few hours to 12 months. However, majority of patients present 4 - 7 days after the ingestion of fish bone. It is rarely associated with thyroid abscess and neck abscess [4,5,10]. There has been one report of thyroid abscess with a cutaneous fistula developed a year following a fish bone ingestion [12]. The diagnosis is solely based on the plain radiography, ultrasound, or computed tomography. A plain radiography is usually revealed a linear, radio-dense fish bone

within the neck at the level of C5 to C7 as seen in our patients. Laryngoscopy or oesophagogastroduodenoscopy (OGDS) examination is not useful in majority of the cases as these examinations are frequently failed to identify any abnormality as the fish bone has already migrated outside the oesophagus. The precise location of the fish bone within a thyroid gland and presence of any thyroid abscess can be well delineated by either an ultrasound or CT scan. In both of our patients, the CT scan showed the precise location of the fish bone within the thyroid gland. Thus, this facilitated us in making the diagnosis and eventually, performing early surgical intervention. In cases with delayed surgical intervention, a repeated CT scan should be performed to reassess the location of the fish bone. Cheng HH et al reported migration of a fish bone from the oesophageal wall into a right thyroid lobe following 10 days of the initial CT scan as the patient was initially refused for surgical intervention [12].

Most of these cases requires surgical intervention; neck exploration with hemithyroidectomy [7]. However, there are two reported cases complicated with thyroid abscess were successfully treated with drainage of abscess and simple extraction of the fish bone [8,12]. A significant oesophageal perforation following extraction of a fish bone was never reported. Hence, primary surgical repair of oesophageal perforation is not necessary in most cases. In our first patient, the fish bone was completely embedded within the thyroid gland which was identified following the mobilisation and dislocation of the thyroid lobe. Since the thyroid vessels had been ligated during the mobilisation, hemithyroidectomy was inevitable. Furthermore, by mobilising the thyroid lobe, a small oesophageal perforation was identified and repaired. We believed the oesophageal repair was necessary to avoid any post-operative complications, in particularly, oesophageal leak or abscess.

Unlike our first case, the second case was successfully treated with a simple extraction as the fish bone was easily identified following separation of the strap muscles from the right thyroid lobe. Hemithyroidectomy was not performed as the thyroid lobe appeared normal. Both of our patients had uneventful recovery without any complications. Despite of the variation in the surgical interventions, majority of reported cases recovered without any serious sequelae [7].

4. CONCLUSION

Ingestion of fish bone leading to the oesophageal perforation and migration into a thyroid gland is a rare surgical emergency. Imaging such as plain radiography and computed tomography scan is important for a prompt diagnosis. Computed tomography scan can delineate the precise location of the migrated fish bone and, thus, facilitate the surgical exploration. Early surgical intervention by performing neck exploration with either simple extraction of the fish bone or hemithyroidectomy is important for successful outcomes.

CONSENT AND ETHICAL APPROVAL

As per university standard guideline, participant consent and ethical approval have been collected and preserved by the authors

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDIX

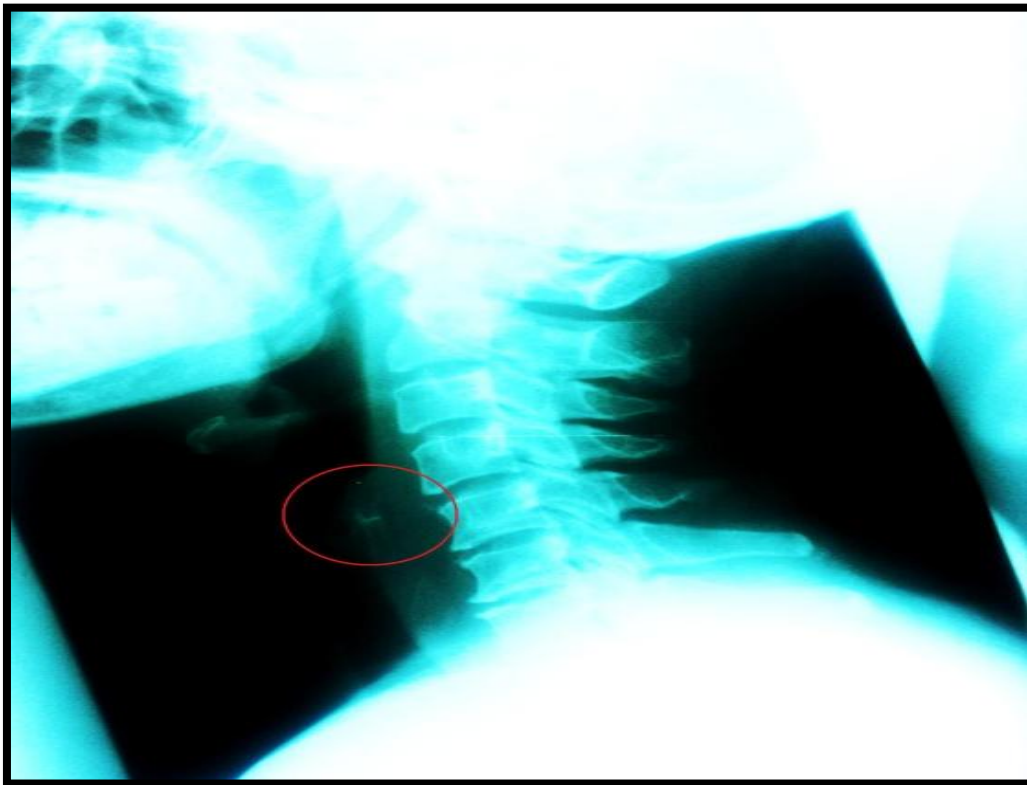


Fig. 1A. Neck radiography showed a longitudinal foreign body at the level of C6 - C7

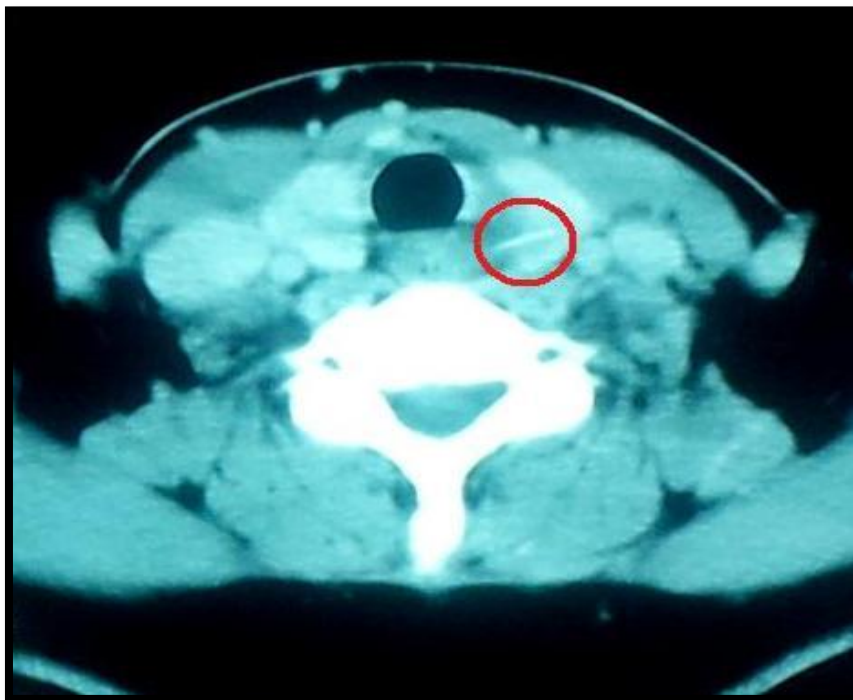


Fig. 1B. CT imaging revealed a linear opacity foreign body representing a fish bone at the level of C6 - C7 which had penetrated the left lateral wall of oesophagus and embedded in the superior pole of left thyroid lobe

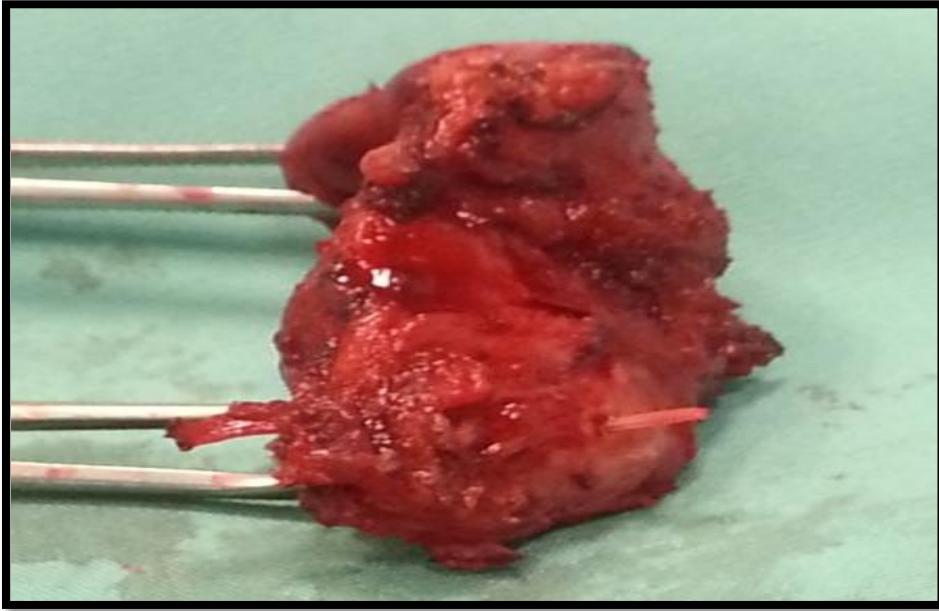


Fig. 1C. A 2 cm long fish bone embedded in the superior pole of left thyroid lobe





Fig. 2A and 2B. Computer tomography scan of the neck showed a linear, radio-dense foreign body measuring 23.1 mm in length located within the right thyroid lobe piecing the strap and sternocleidomastoid muscles



Fig. 2C. A 2.5 cm fish bone extracted out

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