

Case Report

Migrating Oesophageal Foreign Body - An Unusual Case

P K S Lu, R H Brett, C Y Aw, R Singh

Department of Otolaryngology, Changi General Hospital, 2 Simei Street 3, Singapore 529889

P K S Lu, FRCS, Consultant

R H Brett, FRCS, Consultant

C Y Aw, FRCS, Senior Registrar

R Singh, Registrar

Correspondence to: Dr P K S Lu

ABSTRACT

Ingested foreign bodies which migrate extraluminally are rare occurrences. If untreated, they may result in life threatening complications. Exploration of the neck via an external approach to remove the foreign body is the recommended treatment. The CT Scan utilising fine cuts is invaluable in localising the foreign body for exploration. The case of a patient with a metallic foreign body in the oesophagus which migrated extraluminally is presented. Hemithyroidectomy was required to gain access for removal of the foreign body. A discussion on the management of such a case follows.

Keywords: oesophagus, foreign body, migration, CT Scan

INTRODUCTION

Accidentally ingested foreign bodies which become lodged in the upper aerodigestive tract comprise the commonest emergency seen in ENT practice in Singapore. Fish bones make up the majority (85%) of the foreign bodies⁽¹⁾, and the frequency of accidental ingestion is related to the local preference of cooking and serving fish complete with the bones⁽²⁾. This contrasts with the much lower incidence of such cases in countries where the bones are removed from the fish before cooking.

The vast majority of foreign bodies become impacted in the tonsils, base of tongue or vallecula. These are easily removed in the clinic with forceps. In about 5% of the cases, the foreign body becomes lodged at the cricopharynx or at one of the other constrictions along the oesophagus, requiring a rigid oesophagoscopy under general anaesthesia for removal. An even smaller fraction of cases occur in which the foreign body penetrates the oesophageal mucosa and "migrates" through the deeper submucosal and muscular layers. In some instances, the foreign body can migrate completely through the oesophageal wall and become lodged in the soft tissues of the neck^(3,4). There have been cases reported in which the foreign body actually exits through a puncture wound in the skin of the neck⁽⁵⁾. The term "migrating foreign bodies" has been coined for such cases.

A migrated foreign body may remain quiescent or cause life-threatening suppurative or vascular complications⁽⁶⁾. Therefore when such a case presents, our management involves exploration of the neck by an external approach to identify the foreign body and remove it. In practice, as any surgeon who has removed foreign objects embedded in soft tissue would know, this is often a difficult and frustrating task. The main difficulty lies in the localisation of the foreign body in the soft tissue, after which removal is usually straight forward.

We present a case in which the surgical approach to a "migrated" foreign body is complicated by a large multi-nodular goitre extending retrosternally, and share our experience in the management of this case.

CASE REPORT

HYW, a 74-year-old Chinese lady, was admitted with a history of swallowing a fish bone at dinner. She complained of persistent pain at the sternal notch, made worse on swallowing. On physical examination, no foreign body was detected in the tonsils or hypopharynx. A lateral view X-ray of the soft tissues of the neck revealed a densely radio-opaque linear shadow in the retropharyngeal soft tissue at the level of seventh cervical vertebra (Fig 1). The appearance was suggestive of a wire-like metallic object. On further questioning, the patient denied that she had any surgical procedure or trauma to the neck or chest. She was started on intravenous antibiotics and listed for rigid oesophagoscopy and removal of the foreign body under general anaesthesia by the Registrar on duty.

At operation, a 30 cm Richard Wolfe oesophagoscope was passed into the oesophagus. A careful search was made for the foreign body and the oesophageal mucosa was examined for a puncture wound or other signs of local trauma. The search proved unsuccessful. Post-operatively, a repeat X-ray of the neck was done, which showed the foreign body to be still present at the same site.

At this point, the possibility of a migrated foreign body was considered. The Consultant on-call decided to repeat the oesophagoscopy in case the foreign body was missed the first time. During the repeat procedure, a small mucosal abrasion was noticed at the right lateral wall of the oesophagus 24 cm from the incisors. Careful probing of the area with forceps and suction failed to reveal any embedded foreign body. There was no evidence of pus or abscess formation seen.

An urgent computerised tomogram (CT scan) of the neck was ordered. This showed a metallic object in the soft tissue of the neck at the level of seventh cervical vertebra (Fig 2). It also revealed a large thyroid goitre which extended retrosternally causing tracheal deviation. The tip of the foreign body was adjacent to a large right sided thyroid nodule. The findings were discussed with the patient and her family, who agreed to surgical removal of the foreign body.

An open exploration of the neck was performed the following day. At operation, a large multi-nodular right thyroid lobe with retrosternal extension measuring 10 cm x 5 cm x 3.5 cm was found. A right hemithyroidectomy was carried out. The sternomastoid muscle and the great vessels on the right side were mobilised and retracted laterally away from the oesophagus. The oesophagus was mobilised from the prevertebral fascia and an attempt was made to palpate the foreign body through the oesophageal wall. This proved to be unsuccessful.

Using the CT scan to pinpoint the location of the foreign body in relation to adjacent anatomical landmarks, an incision was made into the outer muscular layer of the right oesophageal wall. Using a fine artery forceps to separate the muscle fibres, a linear metallic foreign body, which appeared to be a wire or opened staple, was found and removed. The object had presumably been embedded in the fish. The oesophageal incision was then carefully repaired and a vacuum drain inserted into the wound. A size 16 nasogastric tube was passed after the neck wound was closed. Her post operative recovery was uneventful except for a spike of fever on the second post operative day due to an infected intravenous drip site. She was discharged on the 5th post operative day. The histopathology of the hemithyroidectomy specimen was reported as being a nodular goitre with degenerative change.

DISCUSSION

The number of ingested foreign bodies that perforate the esophagus is small, and an even smaller number of foreign bodies migrate extraluminally. In Remsen et al's series⁽⁶⁾, in which 321 cases of penetrating foreign bodies were reviewed from the literature, only 43 were found extraluminally. Interestingly, analysis revealed that an intraluminal penetrating foreign body had a higher overall mortality than a migrated one. The most common cause of mortality was due to vascular complications, followed by suppurative processes. Another interesting finding was that the duration of foreign body retention had no correlation with mortality. In other words, the migrated foreign body may remain quiescent for years before causing a catastrophic complication.

In the following discussion, we relate our experience with this unusual problem and discuss our approach to its management. While any type of foreign body can migrate extraluminally, in the authors' previous experience of 6 cases, the object involved has always been a fish bone prior to the case presented. The foreign body is typically of a linear, sharp, pointed type which would logically cause less resistance on travelling through the soft tissue. More irregularly shaped foreign bodies such as chicken or duck bones are less likely to migrate through the soft tissue. The case presented is our first encounter with a metallic foreign object. There is little known about the mechanism by which these foreign bodies appear to be propelled through the soft tissues, but it may possibly be due to a combination of esophageal peristalsis and neck movements. Tissue reaction to the foreign body as well as infection and abscess formation could also play a part.

The clinical presentation is typically the same as that of the case presented. A foreign body should be suspected to have migrated extraluminally when esophagoscopy fails to identify a foreign body and post operative X-rays confirm it is still in the neck. The patient should then be started on intravenous antibiotics. A combination of metronidazole together with a wide spectrum antibiotic is recommended to cover anaerobic and gram negative organisms which are the common organisms cultured in such circumstances.

A barium swallow is of limited value in localising migrated foreign bodies but can be useful in detecting esophageal leaks. A CT scan of the neck, utilising extra fine cuts of 1 mm is the investigation of choice and is invaluable in confirming the presence of the foreign body⁽⁶⁾. It also serves as a "road map" for localising the foreign body. CT scans however are not without their drawbacks. It is sometimes impossible to tell if the foreign body is partially or completely extraluminal. A CT scan taken first without, and then with oral contrast can sometimes be useful. If the foreign body can be seen distinctly separate from the contrast in the lumen, it can be presumed to be completely extraluminal.

In addition, one should bear in mind that the position of the head and neck at surgery may be different from that when the CT scan was taken. As the soft tissues of the neck are mobile in relation to the bony and cartilaginous structures, the foreign body at surgery may not be sited exactly where it is shown to be in the CT scan. The experienced surgeon may be able to make a good estimate as to where the foreign body would be situated with the neck positioned for surgery. In spite of this, the CT scan still gives the most accurate localisation of the foreign body we have available at present. In comparison, the MRI scan would not image a migrated bone, and metallic foreign bodies would contraindicate its use due to the effect of the strong magnetic field.

Having confirmed that the foreign body is extraluminal, exploration and removal of the foreign body via an external approach is recommended, to avoid life threatening complications. With the patient under anaesthesia, prior to commencing the exploration, a rigid esophagoscopy should be repeated by an experienced surgeon. If a small portion of the foreign body has remained intraluminal, it may be identified and removed without the need for an open operation. If oesophagoscopy proves unsuccessful, the exploration proceeds. The surgery should be done in an operating theatre with an operating table that is equipped with facilities to take intraoperative X-rays. While such X-rays are not very useful because of the poor quality of the images, they might be necessary as a last resort in cases where the foreign body cannot be found after an extensive search.

The surgical approach is via a skin crease incision on the side the foreign body is impacted on. If necessary, this can be extended into an apron incision with access to both sides of the neck. The posterior end of the incision should be just behind the anterior border of the sternomastoid muscle. The skin flap can then be elevated subplatysmally on either side before the strap muscles of the neck are separated and the thyroid gland mobilised and retracted. The esophagus should then be explored systematically in an anterior to posterior direction. Occasionally, an area of tissue reaction may surround the foreign body and permit its identification. If not, a finger can be used to palpate the oesophageal wall. If this still fails to reveal the foreign body, it is necessary to use a fine artery forceps to gently separate the outer muscle layer at the point where the foreign body is located as shown on the CT scan.

As a last resort an esophagostomy or pharyngostomy can be made and the wall palpated bimanually between fingers placed on the outside and inside of the lumen. In some cases, several areas will need to be explored before the offending foreign body is found. Once identified the foreign body can usually be easily removed without further trauma. In the rare case where the foreign body cannot be found after a careful search, the exploration should be abandoned and a repeat CT scan done post operatively.

In all cases, a suitably sized nasogastric tube is passed to protect the esophagus and allow feeding. Any esophagostomy or defect in the esophageal wall should be repaired meticulously. Intravenous antibiotics are usually continued for 24 hours if there has been contamination. Nasogastric feeds are started in the first post operative day and continued for up to 5 to 7 days if an esophagostomy was done.

CONCLUSION

The management of this rare presentation of ingested foreign bodies becomes less daunting when approached systematically. A careful rigid oesophagoscopy examination and 1 mm cut CT scan with and without oral contrast are the two important steps to a successful outcome. Systematic exploration of the neck via an external approach using the CT scan as a guide will decrease the chances of an unsuccessful exploration. Successful removal of the foreign body will prevent the occurrence of life threatening complications. In the future, perhaps real-time CT guided surgery could make exploration more precise.

REFERENCES

1. Leong HK, Chan R. Foreign bodies in the upper digestive tract. Singapore Med J 1987; 28:162-5.
2. Lim CT, Quah R, Loh LE. A prospective study of ingested foreign body in Singapore. Arch Otolaryngology Head & Neck 1994.
3. Jemerin EF, Amoff JS. Foreign body in thyroid following perforation of esophagus surgery. 1949; 25:52-9.
4. Muhanna AA, et al. Thyroid lobectomy for removal of a fish bone. J Laryngol Otol 1990; 104:511-2.
5. Sethi DS, Stanley R. Migrating foreign bodies in the upper digestive tract. Annals Academy of Medicine Singapore 1992; 21:3.
6. Remsen, et al. Unusual presentations of penetrating foreign bodies of upper GIT. Annal Otolrhinol Laryngol 1983; 105:32-44.



Fig 1 - Photo shows a radiograph of the soft tissues of neck, lateral view, showing a densely radioopaque wire-like foreign body anterior to the body of the seventh cervical vertebra.



Fig 2 - Photo shows a computerised axial tomogram of the neck with a radio-opaque foreign body lying in the prevertebral space. Note the large calcified multinodular goitre which had to be resected for surgical access to the foreign body.