

A Rare Case of Food Bolus Impaction on top of Stricture Formation secondary to a 12- year Retained Foreign Body (Denture) in the Esophagus of a 34-year old Male: A Case Report*

Kris Anne T. Estoesta, MD; Donnie Jan L. Segocio, MD, FPSO-HNS

ABSTRACT

Objectives: This paper aims to present a rare case of a 34-year old male who had esophageal food bolus impaction on top of stricture formation secondary to a retained 12-year esophageal foreign body (denture). It also aims to state the significance of proper and comprehensive history taking, physical examination and corresponding ancillary procedures to arrive at its diagnosis and to highlight the importance of a multidisciplinary team in the prevention and management of complicated foreign body (FB) impaction.

Methods:

Design: Case Report

Setting: Government Tertiary Hospital

Patient: One

Results: A 34-year old male presented with one day history of dysphagia after ingesting a chunk of pork. He had no other symptoms and was not in any respiratory distress. Physical examination was unremarkable except for missing dentition (teeth #8, #9 by universal notation system). Radiographic imaging, esophagogram and contrast-enhanced chest CT scan revealed partial proximal esophageal obstruction probably secondary to retained foreign body at the level of T5 vertebra. Rigid esophagoscopy with removal of foreign body (food bolus) was done. However, there was difficulty insinuating the scope

beyond this level. Further investigation and the use of multispecialty collaboration eventually led to the retrieval of a 12-year denture covered by a bi-mucosal flap with surrounding stricture formation.

Conclusion: Foreign body impaction, while more commonly found in the pediatric population, may also occur in adults especially those with edentulism, psychiatric disorders, alcoholism and preexistent esophageal pathologies. In rare cases, patients may be asymptomatic resulting to a delay in its diagnosis. In addition to a well-taken history and physical examination, direct visualization and computed tomography are vital for evaluation. A multidisciplinary approach is critical in its management especially when anticipating difficult extraction and considering FB impaction complications.

Keywords: *chronic esophageal foreign body, stricture formation, rigid esophagoscopy, laparotomy, case report*

CASE REPORT

A 34-year old male who was previously well consulted at the emergency room with a chief complaint of dysphagia. A day prior, he had experienced sudden dysphagia after ingesting a portion of pork approximately 2x2cm in size at a drinking bout. He drank water in an attempt to relieve himself but vomited shortly after. He had no other symptoms such as choking, drooling, odynophagia,

*3rd Place, 2022 Philippine Medical Association Case Report Presentation, May 20, 2022
From Department of ENT-HNS, Southern Philippines Medical Center, Davao City

chest pain, fever, and abdominal pain. Past medical history, family medical history and personal social history were all unremarkable.

The patient was seen awake, oriented, ambulatory and not in respiratory distress. It was noted that the patient had dentures and missing maxillary central incisors. There were no unusualities seen upon examination of the oral cavity, as well as in the oropharynx. Upon indirect laryngoscopy using a 70-degree rigid endoscope, there were no masses, Jackson's sign, vocal cord immobility and foreign body visualized. The rest of the head and neck examination were unremarkable.

The primary consideration at this time was food bolus impaction; hence, the patient underwent cervical and chest radiographic imaging which then revealed a straightened cervical spine probably due to myospasm, at least two linear metallic densities, with maximum length of 1.0cm and 0.7cm seen posterior to the carina at the level of T6-T7 and widening of the upper mediastinum which suggests acute mediastinitis (Fig. 1 and 2). A review of the patient's history revealed that he had lost his malfitting, frequently dislodged, maxillary partial denture after a drinking bout 12 years prior to his admission. He had attempted to search for it, but was unsuccessful. Since the said event, he did not experience symptoms such as drooling, choking, dysphagia, odynophagia, fever and chest pain. He had also sought consult with a dentist for new dentures. It was then that the possibility of a chronic esophageal foreign body, specifically a wired denture, was considered on top of the food bolus.

Further workup using esophagogram and a 254-slice contrast-enhanced chest CT scan with sagittal and coronal cuts were done to further assess for mediastinitis and foreign body impaction. These revealed partial proximal esophageal obstruction probably secondary to retained foreign body at the level of T5 vertebra with marked proximal esophageal dilatation and minimal milking of contrast to the distal esophagus and stomach (Fig.

3). There was also a curved metallic density approximately measuring 1.4cm at the level of the carina, with thickening of the esophageal wall and dilatation of the proximal esophagus above the foreign body with no evidence of pneumomediastinum or pleural effusion, bilateral pneumonia with emphysematous changes, and cavity formation in the left (Fig. 4). Due to these findings suggestive for obstruction, the patient was scheduled for stat diagnostic rigid esophagoscopy with removal of foreign body. He was also started on ceftriaxone 2g IV OD, clindamycin 600mg IV Q8, omeprazole 40mg IV OD while on NPO, dexamethasone 8mg IV Q8.

Intraoperatively, a meat bolus which was 2cm in diameter was visualized and removed from the second esophageal constriction, 22cm from the central incisors with note of an abrasion occupying the same area. However, no metallic foreign body was seen. There was also granulation tissue seen obstructing the esophageal lumen making the insinuation of the rigid esophagoscope difficult. The procedure was then terminated and a referral was made to gastroenterology service for esophagogastroduodenoscopy (EGD) under sedation as well as general surgery for evaluation and possible exploratory laparotomy (double set-up) in the event that the foreign body could not be removed via EGD. In addition to this, the patient was started on blenderized feeding via nasogastric tube (NGT) while waiting for the second procedure.

The EGD showed a foreign body, most likely a denture, covered by a bi-mucosal flap and embedded in the mucosa of the lateral wall of the mid-esophagus, 32cm from the maxillary incisors (Figure 5). Mucosectomy as well as release of the bi-flap were performed. Multiple maneuvers were then done to move the denture upward. However, there was difficulty extracting the foreign body due to stricture formation superior to it. The denture (Figure 6), which indeed had wires, was then pushed towards the stomach. Mini laparotomy, gastrotomy, removal of foreign body (denture) and primary repair of

gastrotomy under general anesthesia were subsequently done by general surgery. The final diagnosis in our case was Foreign Body (Food Bolus) Impaction, 2nd esophageal constriction on top of Chronic Foreign Body (Denture) Impaction with stricture formation, 3rd esophageal constriction.

Removal of the nasogastric tube was done on post-operative day 2 and the patient was then started on general liquids. He was then discharged on post-operative day 3 with no subjective complaints. Follow up consult was done a week after surgery for removal of sutures. At this time, the patient still did not complain of symptoms such as dysphagia, odynophagia, drooling, vomiting, chest pain and fever. He was advised for repeat EGD but was not able to comply.

DISCUSSION

Foreign body ingestion resulting to esophageal foreign body impaction (EFBI) is a common cause for emergency room consultation [3]. This may occur in adults with advanced age, complete or incomplete edentulism, psychiatric disorders, intellectual disability, alcohol intoxication and preexistent pathologies such as strictures (~37%), malignancy (~10%), esophageal rings (~6%), achalasia (~2%) and eosinophilic esophagitis (~33%) [1,2]. This is especially common in the pediatric population between ages 6 months to 6 years [3].

Chronic esophageal foreign bodies (CEFB), defined as foreign body impaction of more than or equal to one week, can have serious sequelae such as bronchoesophageal fistula, aortoesophageal fistula, esophageal stricture with obstruction, pulmonary edema, esophageal diverticulum, and esophageal perforation with overlying mediastinitis or abscess which may possibly lead to death [4,5].

Based on a comprehensive search of existing databases such as PubMed, and

MedLinePlus, there have been multiple accounts of chronic esophageal foreign bodies. Most of which were in the pediatric population. However, there was one published case report on May 2020 of a 45-year-old female who had a 13-year history of denture impaction in the mid- esophagus which was managed using right thoracotomy and esophagotomy. Though these two case reports appear similar due to the long, symptom-free period of the foreign body impaction, our case is unique, because it is the only one which presented with dysphagia due to a superimposed acute food bolus impaction.

The diagnosis of EFBI can be established in most cases at the time of the incident [6]. It is imperative that the duration, symptoms and type of foreign body ingested are promptly noted. The clinical presentation of a patient may vary depending on which clinical phase of foreign body he/she is in. The first phase, also known as the initial stage, implicates airway obstruction, choking, gagging immediately after the incident. The second phase or the asymptomatic stage starts when the reflex weakens and lasts from hours to weeks, resulting to a delayed diagnosis. The last phase is when complications such as obstruction, pneumonia mediastinitis, perforation, etc. arise [7]. In our case, the patient was in the third phase wherein he already had stricture formation.

Diagnostic evaluation and the urgency of intervention should be based on the type of foreign body, subjective and objective findings. Foreign bodies are classified according to size, surface consistency (sharp versus blunt), material (food, drugs, battery, magnet) and characteristics such as radiodense, metallic and/or chemically inert. Radiographic imaging with two views is recommended as initial evaluation to gather data such as location, configuration, quantity and dimension of the foreign body. Computed tomography (CT) scan may be used for non-radiodense and small radiodense foreign bodies. It is also more sensitive (100%) compared to x-ray (32%).

The use of contrast medium is discouraged in some literature as a radiological diagnostic due to the risk of aspiration, difficulty in evaluating the mucosa and the possibility of concealing the foreign body [2].

Rigid endoscopy, as compared to flexible esophagoscopy, has the advantage of a dilated lumen and permits removal of foreign bodies under direct visualization. Since it uses endotracheal intubation, it also lowers the risk of aspiration during the procedure [8]. It is also used to assess the whole length of the esophagus after the removal of foreign bodies to assess for abrasions, tears or bleeding. Hence, it remains the gold standard of treatment especially for sharp, penetrating, complicated foreign bodies.

Our patient underwent rigid esophagoscopy with removal of foreign body (food bolus) within 24 hours of admission. Subsequently, EGD and gastrostomy were used to dislodge and remove the remaining mediastinal mass which was actually a denture with surrounding stricture and granulation tissue formation.

Consequently, according to Aiolfi et al., surgical intervention using an open approach should be considered in cases with esophageal perforation and in instances where there is inability to remove a foreign body after multiple endoscopic attempts [1]. After endoscopic removal was deemed unattainable in our patient, he was referred to general surgery for mini laparotomy, gastrotomy and removal of foreign body.

Our patient did not complain of dysphagia but had endoscopic evidence of esophageal stricture. Further management for benign esophageal strictures is based on its classification (simple or complex). Simple strictures pertain to those that are generally short (<2cm) with a decreasing proximal margin and lumen located its center. Insinuation of endoscopes beyond the level of simple strictures is not difficult [9, 10]. Complex strictures, on the other hand, have irregular margins

and are longer (≥ 2 cm). An esophagus with a significantly reduced lumen is always classified as having a complex stricture. Schatzki found that strictures which led to a reduced esophageal lumen diameter of ≤ 20 mm (radiographically measured) presented with recurrent dysphagia. [9] This was not present in our patient. Further workup, however, is required to evaluate his need for esophageal dilatation for his benign inflammatory esophageal stricture and to mitigate the risk of developing other future complications such as recurrent foreign body impaction, dysphagia, and pulmonary aspiration resulting to reflux of food components.

Though it is important to discuss the management of foreign body impaction, it is likewise important to point out that foreign body impaction is preventable. According to Felton et al., patients who use dentures should have annual follow up with their dentist for evaluation of oral health status, cleaning and adjustment to ensure the proper fit and function of their dentures. [11] Loosening of dentures could inevitably lead to ingestion which is what happened to our patient.

CONCLUSION

This report highlights the importance of prompt evaluation, diagnosis and treatment of foreign body impaction which is a common cause for emergency room consultation in all ages. In assessing the patient, it is important to note the duration, symptomatology, type of foreign body and subjective findings.

Chronic esophageal foreign body impaction can lead to serious complications such as fistula, esophageal strictures, obstruction, perforation and mediastinitis; thus, prompt evaluation and treatment are warranted.

Radiographic imaging is a good screening tool for radiodense foreign bodies and is used to determine different information such as orientation,

number, location, and characteristic. CT scan may also be used for nonradiodense and small radiodense foreign bodies.

Rigid esophagoscopy is the preferred treatment because it is both diagnostic and therapeutic. It should be done before invasive surgical intervention is ensued. In our case, the patient underwent gastrostomy due to multiple failed attempts in endoscopic removal of the foreign body.

A significant factor that led to the success of the foreign body removal was also the multidisciplinary approach taken wherein different services exhibited good communication and collaboration to achieving one common goal.

Last but not the least, foreign body impaction is preventable. Regular check up with a dentist is recommended to ensure proper fit of dentures and to mitigate the risk of foreign body impaction.

REFERENCES

1. Aiolfi A, Ferrari D, Riva CG, Toti F, Bonitta G, Bonavina L. Esophageal Foreign Bodies in Adults: Systematic Review of the Literature. *Scandinavian Journal of Gastroenterology*. DOI: 10.1080/00365521.2018.1526317
2. Ambe P, Weber S, Schauer M, Knoefel WT. Swallowed foreign bodies in adults. *Dtsch Arztebl Int* 2012; 109(50): 869–75. DOI: 10.3238/arztebl.2012.0869
3. Yahyaouia S, Jahaouatb I, Brinib I, Sammoud A. Delayed diagnosis of esophageal foreign body: A case report. *International Journal of Surgery Case Reports* (2017) 36:179–181
4. Glover P, Westmoreland T, Roy R, Sawaya D, Giles H, Nowicki M. Esophageal diverticulum arising from a prolonged retained esophageal foreign body. *Journal of Pediatric Surgery* (2013) 48: E9–E12
5. Tashtusha NA, Batainehb ZA, Yusefa DH, et al. Ingested sharp foreign body presented as chronic esophageal stricture and inflammatory mediastinal mass for 113 weeks: Case report. *Annals of Medicine and Surgery* 45 (2019) 91–94. DOI:10.1016/j.amsu.2019.07.028
6. Fung BM, Sweetser S, Wong Kee Song LM, Tabibian JH. Foreign object ingestion and esophageal food impaction: An update and review on endoscopic management. *World J Gastrointest Endosc* 2019 March 16; 11(3): 174–192. DOI: 10.4253/wjge.v11.i3.174
7. Rodriguez H, Passali GC, Gregori D, Chinski A, Tiscornia C, Botto H, et al. Management of foreign bodies in the airway and oesophagus. *International Journal of Pediatric Otorhinolaryngology* 76S (2012) S84–S91. DOI:10.1016/j.ijporl.2012.02.010
8. Myer, CM. Aerodigestive Foreign Bodies in Adult Ethiopian Patients: A Prospective Study at Tikur Anbessa Hospital, Ethiopia. *International Journal of Otolaryngology* (2014) 1–5. DOI: 10.1155/2014/293603
9. Ravich WJ. Endoscopic Management of Benign Esophageal Strictures. *Curr Gastroenterol Rep* (2017) 19: 50. DOI 10.1007/s11894-017-0591-8
10. Shami VM. Endoscopic Management of Esophageal Strictures Gastroenterol. *Hepatol (N Y)*. 2014 Jun; 10(6): 389–391.
11. Felton D, Cooper L, Duqum I, Minsley G, Guckes A, Haug S, et al. Evidence-based guidelines for the care and maintenance of complete dentures. *Journal of the American Dental Association* (2011) 142 (1): 1S–20S. DOI: 10.14219/jada.archive.2011.0067

Figures



Figure 1. Cervical x-ray of patients showing straightened cervical spine most probably due to myospasm



Figure 2. Chest x-ray of patient with metallic linear densities (yellow arrows, encircled) measuring 1.0cm and 0.7cm at level T6-7 vertebra

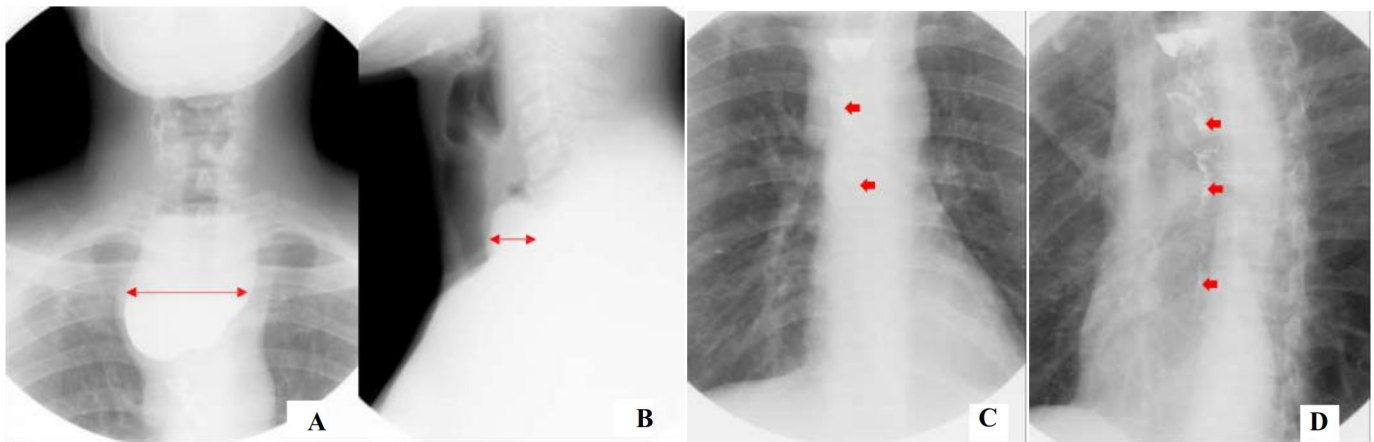


Figure 3. Esophagogram of patient showing marked proximal esophageal dilatation (A, B) and minimal milking of contrast to the distal esophagus and stomach (C, D)

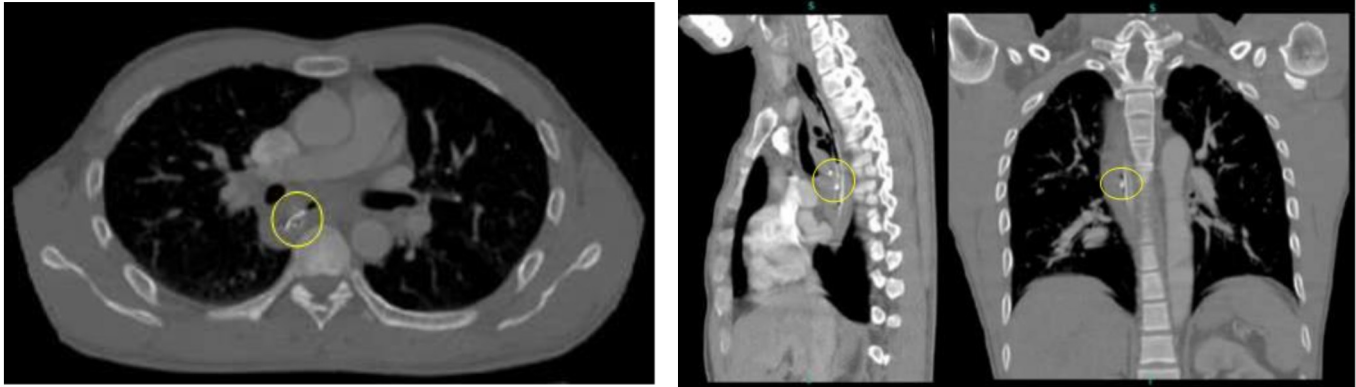


Figure 4. Axial, coronal and sagittal CT cuts showing linear hyperdensities (encircled) at levels T5-7



Figure 5. Esophageal foreign body (red arrows) and stricture (yellow arrows) forming two lumina



Figure 6. Removed foreign body (denture) with embedded wires (red arrows)

Appendix

Table of Literature Discussing Chronic Esophageal Foreign Bodies Retrieved through a Comprehensive Search of PubMed, and MedlinePlus using the keywords: "chronic", "denture", "esophagus", and "foreign body"

	Author(s)	Year of Publication	Title of Study	Type of Study	Remarks
1	S Shahi, T Bhandari, P Thapa, D Shrestha, and K Shrestha	2020	Foreign body esophagus: Six years of silence	Case Report	DOI:10.1177/2050313X20944322 6-month history of progressive dysphagia in a 55-year-old female with retained denture in the esophagus for 6 years
2	R Karthikeyan, I Chandramohan S M, S Harikrishnan, Vigneshwaran VB, and B Singh	2020	Lost Denture Found in Esophagus After a Decade: A Rare Case Report	Case Report	DOI: 10.7759/cureus.8042 Population: 45-year-old female 6 month-history of progressive dysphagia in a 55-year-old female with retained denture in the esophagus for 13 years
3	NA Tashtush, ZA Bataineh, DH Yusef, TM Al Quran, LA Rousan, R Khasawneh, AJ Aleshawi, EM Altamimi	2019	Ingested sharp foreign body presented as chronic esophageal stricture and inflammatory mediastinal mass for 113 weeks: Case report	Case Report	DOI:10.1016/j.amsu.2019.07.028 Foreign body impaction for 113 weeks wherein patient underwent partial gastrectomy and with note of re- stricture formation treated with Mitomycin-C and esophageal dilatation Population: 36-month old female
4	L Cao, N Chen, Y Chen, M Zhang, Q Guo, Q Chen, B Cheng	2018	Foreign body embedded in the lower esophageal wall located by endoscopic sultrasonography: A Case Report	Case Report	DOI:10.1097/MD.00000000000011275 Population: 55-year old male Presented with gastrointestinal complaints for 10 days
5	S Yahyaoui, I Jahaouat, I Brini, A Sammoud	2017	Delayed diagnosis of esophageal foreign body: A case report	Case Report	DOI:10.1016/j.ijscr.2017.05.028 Population: 6-month old male
6	G Mohajeri, S Fakhari, Z Ghaffarzadeh, M Piri-Ardakani	2016	A case of the long time presence of a large foreign body in esophagus without complication	Case Report	DOI: 10.4103/2277-9175.191001 Population: 57-year old male Retained denture for a period of 9 months which was removed via gastrostomy
7	G Dar, F Ganie, M Ishaq, K Jan, Z Ali, G Lone, M Beigh, T Abdullah, M Dar, M Sidiq	2015	Prolonged Impacted Denture in the Esophagus: A Case Report and Review of the Literature	Case Report	PMCID: PMC4771285 Population: 57-year-old male Diagnosed case of esophageal adenocarcinoma who has foreign body (denture) impaction for 3 years
8	RR Naidoo, MBChb, and AA Reddi, FCS Cardio	2014	Chronic Retained Foreign Bodies in the Esophagus	Case Series	DOI:10.1177/0003489414521145 Population: 3 and 6-year old With retained foreign body for 2 months and 2 weeks respectively

9	JC Schramm, RK Sewell, KS Azarow, SC Raynor, SF Abdessalam	2014	Chronic cervical esophageal foreign bodies in children: surgical approach after unsuccessful endoscopic management	Case Report	DOI:10.1177/0003489414521145 Population: Age at diagnosis were 14 months to 4.5 years Foreign bodies were retained for 1 to 10 months
10	P Glover, T Westmoreland, R Roy, D Sawaya, H Giles, M Nowicki	2013	Esophageal diverticulum arising from a prolonged retained esophageal foreign body	Case Report	DOI:10.1016/j.jpedsurg.2012.11.032 Population: 5-year old female Presented with 2-year history of respiratory symptoms
11	JAH Kropf MD, R Jeanmonod MD, DM Yen MD	2013	An Unusual Presentation of a Chronic Ingested Foreign Body in an Adult	Case Report	DOI:10.1016/j.jemermed.2011.06.061 Population: 82-year old female Complaints were odynophagia and worsening pharyngitis for 4 months
12	S Cole, D Kearns, A Magit	2011	Chronic esophageal foreign bodies and secondary mediastinitis in children	Retrospective	DOI:10.1177/000348941112000809
13	G M Narasimhappa, Arun K Baranwal, Sunit C Singhi	2009	Impacted esophageal foreign body mistaken for chronic pharyngitis	Retrospective Case Report	DOI: 10.1007/s12098-009--0152-8]
14	M Khemiri, A Labbessi, Y Tlili, F Ben Mansour, S Boukthir, S Barsaoui	2008	[Digestive hemorrhage revealing a chronic esophageal foreign body. Report of a pediatric case]	Case Report	DOI:10.1016/j.arcped.2008.08.004 Article in French, No English translation available
15	RS Miller, JP Willging, MJ Rutter, K Rookkapan	2004	Chronic esophageal foreign bodies in pediatric patients: a retrospective review	Retrospective cohort	DOI:10.1016/j.ijporl.2003.09.021 Population: pediatric 41 (8%) patients from May 1990-January 2002 6 presented with chronic esophageal foreign body (≥ 7 days); 2 of which had >14 weeks duration
16	PJ Knight	2004	Hooking a chronically embedded esophageal coin	Case Report	DOI:10.1016/j.jpedsurg.2003.09.022 Population: 11-month old Patient had 1-month history of cough with no witnessed foreign body ingestion
17	TW Haegen, HA Wojtczak, SS Tomita	2003	Chronic inspiratory stridor secondary to a retained penetrating radiolucent esophageal foreign body	Case Report	DOI:10.1053/jpsu.2003.50066 Population: 17-month-old female 6-month history of inspiratory stridor
18	BF Gilchrist, EP Valerie, M Nguyen, C Coren, D Klotz, ML Ramenofsky	1997	Pearls and perils in the management of prolonged, peculiar, penetrating esophageal foreign bodies in children	Retrospective cohort	DOI: 10.1016/s0022-3468(97)90554-6 Population: Average of 3 years old Had retained foreign body for 2 months to 2 years