Corpus Alienum Esophagus (Denture) with Proximal Esophageal Perforation Complications

H. Sarira Tandi1*, M. Akil Amsyar2

Abstract

Introduction: The corpus alienum of the esophagus had to be diagnosed quickly and extracted to prevent further complications. The magnitude of complications is dependent on the type and diameter of the corpus alienum as well as the method and duration of the extraction procedure from the time of ingestion. One of the complications of the corpus alienum of the esophagus is esophageal perforation. Appropriate management is needed to make clinical improvement of patients who swallowed the corpus alienum esophagus with complications of esophageal perforation.

Case Illustration: A 54-year-old male patient with a history of swallowing dentures for the previous 3 days and complaining of dysphagia when swallowing water or eating solid food. Odynophagia is felt constantly. The patient has been using dentures for 3 years, the patient's dentures consist of 2 front teeth with braces. Vital signs were within normal limits and there were no signs of dehydration. Tactile tenderness is in the anterior cervical region on laryngeal movement, and subcutaneous emphysema is minimal. The results of AP-Lateral chest X-ray, corpus alienum (confirmed dentures) impression on the CV C7 esophagus, and soft tissue swelling with subcutis emphysema. The patient was diagnosed with a corpus alienum esophagus (denture) as high as CV C7. The patient was given antibiotics and anti-inflammatory then performed an esophagoscopy procedure which when entering the esophageal lumen, the corpus alienum (denture) was 17 cm high from the incisors. After post-extraction evaluation, a perforation was found in the length of approximately 4 cm in the proximal tracheal esophagus, then the wound was closed (5 sutures) in the perforation area and a nasogastric tube number 16 was placed. The patient was given antibiotic therapy, anti-pain, anti-inflammatory, PPI, and liquid diet via nasogastric tube. On the 22nd day of post-extraction evaluation, from the clinical and radiological picture, it was found that the perforation had closed tightly. Sutures were removed, a nasogastric tube was removed and the patient was able to eat and drink orally.

Conclusion: Esophagoscopy is an appropriate procedure for extracting the corpus alienum (denture) of the esophagus, although it causes complications of perforation due to the large, rigid, and sharp dimensions of the corpus alienum. Esophageal perforation can be treated with the insertion of a nasogastric tube for a liquid diet and with oral antibiotic and PPI therapy.

Key Words: Corpus Alienum Esophagus, Case Report, Esophageal Perforation Wound.

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Introduction

Problems related to the corpus alienum in the esophagus are common in children and the elderly and some occur in adults.1 2 The causative factors in adults and the elderly relate to anatomical characteristics, and physiological features such as impaired swallowing coordination, chewing capacity, and a higher respiratory rate.3

Corpus alienum in the esophagus can cause various symptoms depending on the location and nature of the corpus alienum such as foreign body sensation, excessive salivation, or respiratory distress due to tracheal compression, dysphonia, choking, dysphagia, and vomiting.3

Corresponding author: H. Sarira Tandi
Address: 1,2Department of Ear Nose Throat Health Sciences, Faculty of Medicine, Hasanuddin University, Makassar, South Sulawesi, Indonesia.

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Corpus alienum in the esophagus becomes a serious medical condition because it can cause complications such as esophageal perforation, development of mucosal ulceration, vascular trauma, mediastinitis, pseudoaneurysm, aortoesophageal fistula, tracheoesophageal fistula, paraesophageal abscess, pericarditis, pneumothorax, and other conditions. In adults, the corpus alienum of the esophagus causes higher mortality than in children.\textsuperscript{4}

Esophagoscopy is an appropriate procedure in the diagnosis and extraction of the corpus alienum of the esophagus, although there is some controversy regarding the best indication and timing as well as its benefits, one of which is reported that as much as 80-90\% of the corpus alienum spontaneously passes through the digestive tract so that it does not require esophagoscopy. However, esophagoscopy is successful in more than 90\% of cases, with side effects occurring in less than 5\%.\textsuperscript{5}

Similar to that study, Park et al. reported complications associated with esophagoscopy procedures occurring in 8.3\% related to the duration of ingestion of the corpus alienum of the esophagus and the presence of initial mucosal injury.\textsuperscript{6} Shin et al. reported that secondary complications of esophageal foreign bodies include megaesophagus, esophagitis, esophageal perforation, lacerations, diverticulum, and pleurisy. The location and duration after swallowing the corpus alienum as well as the dimensions of the corpus alienum increase the risk of esophageal laceration and perforation.\textsuperscript{7} Injury to the esophagus is very rare but poses a high risk of death, so there is a need for timely treatment and appropriate treatment options for the patient's recovery.\textsuperscript{8}

**Case Presentation**

A 54-year-old male patient was referred to the hospital's emergency department. Wahidin Sudirohusodo Makassar with a history of swallowing dentures 3 days before entering the hospital. The patient complains of dysphagia on swallowing water or eating solid food, and odynophagia is present. No complaints on the nose and ears. The patient only drank a little bit since he started swallowing the dentures. The history of other diseases is not known. The patient has been using dentures since 3 years ago, namely on 2 front teeth.

On physical examination, vital signs were within normal limits and there were no signs of dehydration. Pain on palpation of the anterior colli region was found to be present during laryngeal movement, accompanied by minimal subcutaneous emphysema. Pharyngoscopy and dental examination were performed. Almost all of the patient's teeth were carious and fragile, the posterior pharyngeal wall appeared hyperemic and there was a lot of mucus in the throat. On indirect laryngoscopy, the examination is difficult to evaluate because the patient complains of pain. On auscultation of the thoracic region, there were no crackles or wheezing. On examination of the ears and nose, no abnormalities were found. Lateral AP chest X-ray, corpus alienum (confirmed dentures) impression on CV C7 esophagus, and soft tissue swelling with subcutis emphysema.

**Figure 1.** Chest radiograph of the esophagus corpus alienum (dentures with braces), impression as high as CV C7

**Figure 2.** Corpus alienum that has been extracted
The patient has been instilled with RL 28 drops per minute intravenously, and given cephalosporin antibiotics, namely ceftriaxone 1 gram every 12 hours intravenously, omeprazole 40 mg per 12 hours intravenously, painkillers with ketorolac 30 mg/8 hours intravenously, tranexamic acid 500mg/8 hours intravenously, and the anti-inflammatory dexamethasone 5 mg 8 hours intravenously. The patient underwent an esophagoscopy procedure where upon entering the lumen of the esophagus, the corpus alienum (denture) was 17 cm high from the upper incisor and there was a perforation about 4 cm long on the posterior pharyngeal wall, the perforation wound was closed (5 sutures) in the area. After the perforation, a nasogastric tube number 16 was placed.

Postoperative evaluation on day 1, reduced dysphagia and odynophagia, teeth in the maxillary region looked loose and brittle, decreased crepitus in the colli region and continued antibiotic therapy, anti-pain, anti-inflammatory, and omeprazole and liquid diet via Nasogastric tube. On the 2nd day of treatment, complaints of cough increased considerably, mucus was abundant in the throat and the esophageal perforation sutures in the proximal part of the posterior wall were completely detached, dysphagia and odynophagia were minimal, crepitus was palpable in the neck area. Therapy was continued and added mucolytic and re-closure of the sutured area was removed, diet via nasogastric tube. The results of the chest x-ray showed that a nasogastric tube was attached with the corpus alienum no longer visible in the thoracic area. On day 5, the patient complained of black stools. Diet via nasogastric tube was continued. On the 6th day, a CT scan of the thoracic region showed a perforation of the proximal esophagus and trachea with a gastric tube attached. On day 22, the perforation wound was closed tightly by clinical assessment and radiological examination. Hecting was removed, and the patient was able to eat and drink orally.

**Discussion**

In this case, the patient was diagnosed with corpus alienum esophagus (dentures). The patient complains of dysphagia when swallowing water or eating solid food, and has odynophagia. In previous studies reported that corpus alienum esophagus can cause symptoms of difficulty swallowing, acute pain, dysphagia, choking and excessive salivation and respiratory problems. The longer the corpus alienum lodges in the esophagus, the more severe the symptoms of respiratory distress. 

In this case, the history of swallowing dentures had occurred 3 days before but there were no symptoms of respiratory distress. This is because the symptoms that appear are also influenced by the type of corpus alienum, gastrointestinal localization, patient age, and accompanying complications. When the corpus alienum becomes lodged in the esophagus, non-specific symptoms may include a feeling of suffocation, increased salivation and eating disorders, and symptoms such as a tendency to prefer soft foods and liquids due to decreased esophageal diameter, dysphagia, odynophagia, and chest pain. Diagnosis and extraction of the corpus alienum must be carried out immediately to prevent severe complications. Diagnosis is based on history, physical examination, and investigations. The history of swallowing dentures was confirmed by examination with a chest X-ray. Lateral AP chest radiograph confirmed the corpus alienum (dentures) on the CV C7 esophagus and soft tissue swelling with subcutis emphysema. Similar results
in the study of Chirica et al. that the majority (96.8%) of patients with a corpus alienum were found to have lodged in the upper esophagus. The time interval from ingestion of the corpus alienum to the presentation of more than 15 hours was considered an independent risk factor for significant complications. Esophageal perforations mostly occur at C5-6 or C6-7 because these areas of the esophagus are most susceptible to lesions. In this area, the esophagus lies directly on the cervical vertebrae and is covered only by the fascia on the dorsal side. In addition, the lateral wall of the piriform sinus is at the level of the thyrohyoid membrane. In this case, the patient came after 3 days of ingestion of denture so that the corpus alienum of the esophagus was included as a risk factor for severe complications.

The patient underwent an esophagoscopy procedure on the 4th day after a history of swallowing dentures. In the esophagoscopy procedure, upon entering the lumen of the esophagus, the corpus alienum (denture) was 17 cm high from the upper incisors and there was a perforation about 4 cm long in the posterior pharyngeal wall. Rigid esophagoscopy is a safe method for removing the corpus alienum of the esophagus. The most commonly used method for extracting the corpus alienum of the esophagus is rigid esophagoscopy. Its wide lumen is helpful in manipulating, extracting and removing the corpus alienum. The corpus alienum is withdrawn at the same time as esophagoscopy. Endotracheal anesthesia should be used to provide an adequate airway and to minimize the incidence of aspiration during the procedure. The muscle relaxation caused by the anesthetic can also help remove the corpus alienum. However, a rigid esophagoscope performed under general anesthesia, may cause mucosal edema, and weaken the esophageal wall. In addition, the peristaltic activity of the esophagus is inadequate to prevent the retention of swallowed objects. Retention causes perforation. Therefore, esophagoscopy should be performed by a skilled practitioner. In this case, esophagoscopy has been successfully performed for the extraction of esophageal dentures, although perforation complications occur due to the nature of the large (> 5 cm) and rigid dentures that have been ingested for 4 days.

Decision making regarding the extraction method of the corpus alienum of the esophagus is influenced by the type of corpus alienum, localization, time of ingestion of the corpus alienum and the experience of the clinician. Rigid esophagoscopy is the most commonly chosen method for the extraction of the corpus alienum which is sharp and located in the proximal esophagus or located in the pharynx or cricopharyngeal. Thus, the esophagoscopy procedure in this case is suitable because the corpus alienum is a sharp denture and is located in the esophagus. proximal. The denture is made of acrylic resin, which is radiolucent, with radiopaque wire clips. The radiopaque portion of the denture can be identified on radiological examination whereas esophageal perforation is demonstrated on CT scan. Esophageal perforation should be treated immediately. Perforated wounds in the esophagus due to the corpus alienum can cause mediastinal infection and can lead to other severe complications. Various treatment options can be used to treat perforation due to the corpus alienum in the esophagus consisting of surgical and non-surgical management. The management strategy depends on the cause of the perforation wound, the type and dimensions of the corpus alienum, and also the patient's comorbidities. The main goal of treatment is basically to prevent further contamination by curing the infection, Safe and effective nonoperative treatment for esophageal perforation wounds caused by foreign bodies. Even if the perforation is combined with infection, active nonoperative treatment can still achieve a good effect. Early intervention can effectively reduce the risk of infection and improve patient outcomes. In this case, non-operative treatment was carried out by inserting a nasogastric tube and administrated by antibiotics, anti-pain, anti-inflammatory, and PPI to meet nutritional needs, accelerate wound healing, and avoid further complications.

In this case, the corpus alienum (dentures) was found to be 17 cm high in the esophagus with a history of swallowing for 3 days where after esophagoscopy, a nasogastric tube was inserted. Corpus alienum with a length of more than 5 cm or sharp foreign bodies, high-power magnets, batteries localized in the esophagus or stomach, objects with high lead content, and objects that have been lodged in the system for more than 24 hours or an unknown period is an indication for emergency intervention. In these conditions, insertion of a nasogastric tube is necessary, and the use of H2 receptor blockers, proton pump inhibitors, and sucralfate have not been shown to have an effect in reducing damage.
Cho et al. reported that in the event of esophageal perforation the patient should receive intravenous antibiotic therapy and proton pump inhibitors when the site of the perforation is in the upper esophagus. In this case, the perforated wound closed well on the 18th day of follow-up, which was confirmed by CT scan. During treatment, antibiotics were given and a nasogastric tube was placed as well as other drugs, namely anti-pain, anti-inflammatory, and PPIs.

Nasogastric tube intubation is performed for enteral feeding or medication. Nasogastric tube is used in the treatment of perforation because of the prohibition of oral intake for at least 7 days. In contrast to esophageal lacerations, which only require a nasogastric tube for 2 days, perforated esophageal wounds require a nasogastric tube for a longer time of 10-14 days or more according to the length of wound healing. Several studies reported that the duration of insertion of a nasogastric tube for the treatment of esophageal perforation after the extraction of the corpus alienum was 10-20 days. In this case, the insertion of a nasogastric tube was longer than in the previous study, the insertion of a nasogastric tube was carried out for 22 days until the perforation wound was closed.

**Conclusion**

In this case, it is concluded that the corpus alienum is located in the proximal esophagus so that the removal of the corpus alienum can be done by esophagoscopy. The corpus alienum is a denture with large dimensions (>5 cm), rigid and sharp, causing complications of perforation. The perforated wound can be healed by insertion of a nasogastric tube for a liquid diet for 22 days and administration of antibiotics, PPI and anti-inflammatory.

**References**


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