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CASE REPORT

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# Esophageal Foreign Body in a Patient with COVID-19 Infection - A Case Report

## Abstract

Foreign body ingestion is not an uncommon encounter in adults, especially denture ingestion in the elderly. Dentures usually studded with wires can be categorized among sharp, irregularly shaped, and impacted foreign bodies, which necessitates their urgent removal considering their capability of triggering fatal complications if left unattended. Aerosolization procedures, especially in patients who are positive for coronavirus disease 2019 (COVID-19), is a high-risk procedure that may cause infections in healthcare professionals. We hereby present the challenges faced and the protocol followed for managing the case of a 60-year-old patient with COVID-19 infection who presented with accidental denture ingestion, which manifested as a foreign body in the upper end of the esophagus.

**Keywords:** Coronavirus disease 2019, denture, esophagus, foreign body

## Introduction

The coronavirus disease 2019 (COVID-19) pandemic has generated fear among healthcare workers as the infection has been contracted by medical professionals even with the use of appropriate protective gear. However, in developing countries, the appropriate protocols for conducting operative procedures and management of patients infected with COVID-19 are not easily available. Certain life-threatening otolaryngological emergencies require immediate attention. We encountered a case of denture ingestion and impaction in the upper esophagus, which without immediate removal could have led to the development of fatal complications such as para or retroesophageal abscess, mediastinitis, empyema, perforation, or esophagoaortic fistula.[1]This case report demonstrates the management of denture in the upper esophagus in a patient who was COVID-19 positive at our institute.

## Case Presentation

A 60-year-old female was referred for otorhinolaryngology and head and neck opinion from the COVID isolation ward of our institute. The patient presented with difficulty in swallowing solids and liquids for 6 hours; the symptoms had a sudden onset post ingestion of the right side lower jaw denture (partial fixed denture, M2) during meals. It was associated with discomfort and foreign body sensation in the throat. A week ago, she was admitted owing to the development of fever and mild difficulty in breathing, and an RT-PCR analysis of her sample showed positive result for COVID-19. On examination, the patient was found to be conscious and oriented with normal blood pressure, heart rate, and respiratory rate, and SpO2 was 94% on simple mask oxygenation. The local examination revealed tracheal tenderness with no radiation to the back or interscapular region. No crepitus was appreciated in the neck or chest.

X-ray of the neck (Figure 1) revealed a shadow of only a radio-opaque wire in the esophagus. The prevertebral soft tissue thickness in front of C7 was more than half the thickness of the vertebral body, although the patient's X-ray (Figure 2) and high-resolution computed tomography (CT) findings of the chest at the time of admission revealed the presence of ground-glass opacities with interstitial septal thickening involving lobes bilaterally suggestive of viral pneumonitis. As the facility for CT scan of confirmed COVID cases was not available because of the availability of only one machine at the institute, a high index of suspicion and thorough clinical examination were relied upon for management planning.

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Figure 1. Preoperative X-ray of the neck (lateral view) revealing radio-opaque wire part of a denture at the level of cervical vertebrae 7 and below with increased pre-vertebral soft tissue thickness

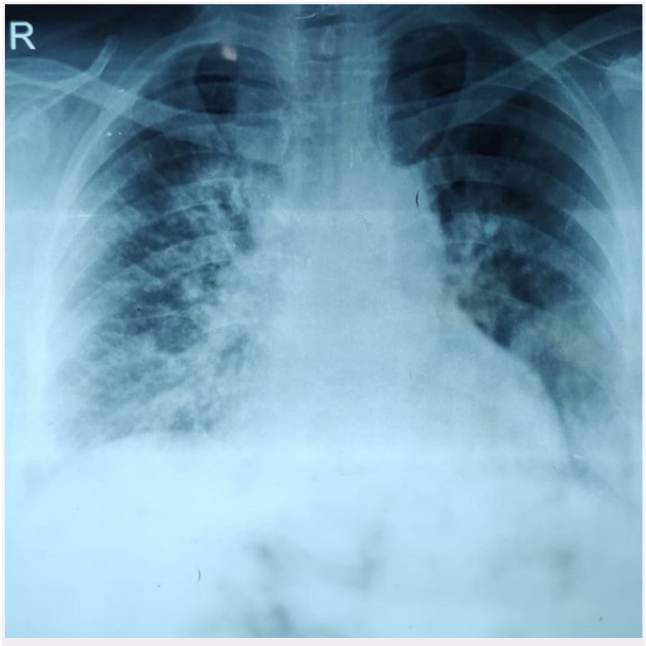


Figure 2. X-ray of the chest (PA view) suggestive of peripheral opacities in bilateral lungs on admission

**Main points**

- Denture ingestion is one of the few otolaryngological emergencies which need immediate attention and intervention as can lead to dreadful complications.
- Proper use of Personal protective equipment and donning and doffing techniques is essential and there is no replacement for this.
- The minimum staff exposure with appropriate use of anaesthetic techniques including reusable barrier can prevent the inadvertent exposure of healthcare workers to COVID-19.

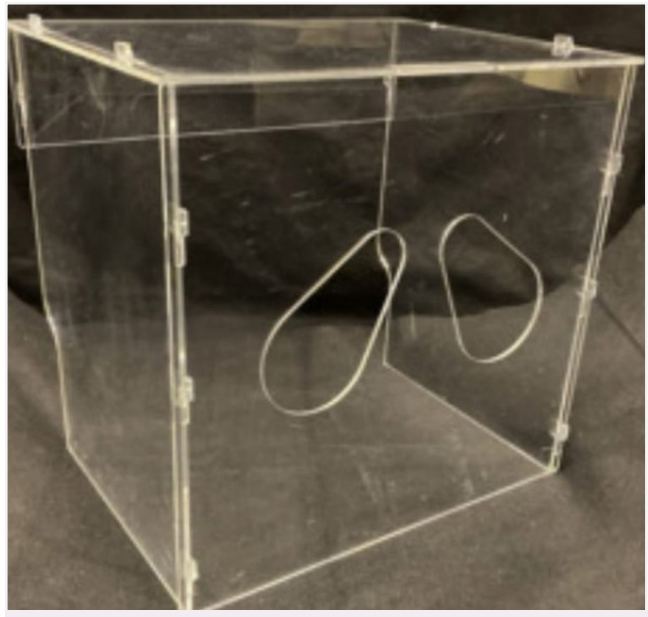

Figure 3. The passive intubation box or reusable barrier used for exercising additional precaution and protection from aerosols during laryngoscopy

Figure 4. The image demonstrating the partial mandibular denture of the second last molar removed along with part of the molar tooth maneuvered and cut using denture-cutting forceps

Preoperatively, the patient was instructed to perform povidone-iodine gargles. The preanesthetic evaluation was conducted, and the patient was immediately shifted to the emergency COVID operation theatre that was well-ventilated. There was non-availability of a negative pressure room for this emergency case at our institute; however, the rest of the available mandatory precautions were exercised.

The entire team donned appropriate personal protection equipment (PPE), including an N95 respirator. The experienced anes-

thesia team performed intubation of the patient using a video-laryngoscope, and a closed suction circuit and a heat and moisture exchange filter were used with a rapid sequence induction method for general anesthesia. The passive intubation box (Figure 3) was used for performing suspension laryngoscopy, and the denture was detected immediately below the cricopharynx and was found to be obliquely impacted. A slight maneuver was performed to change the orientation of the sharp end and was broken off using a pair of cutting forceps. The denture was grasped using a pair of locking forceps and was carefully removed (Figure 4). Re-inspection of the site revealed the occurrence of only mild bleeding owing to mucosal injury. A Ryles feeding tube was inserted and maintained for seven days, and the patient was kept under observation for the exhibition of any new signs and symptoms. The postoperative period was uneventful. The patient was gradually shifted to an oral diet and was discharged after 17 days. Informed consent was obtained from the patient. The entire surgical team was subjected to tests for COVID-19 using RT-PCR to detect any contraction of infection during the procedure and results were found to be negative after 7 days of the procedure. This also ruled out the existence of any asymptomatic state.

## Discussion

The National Health and Nutrition Examination Survey-III has found that 20% of the individuals aged between 18 and 74 years use either full or partial dentures.[2] Patients presenting with psychological or neurological deficits, maxillofacial trauma, drug overdose, and those undergoing general anesthesia are at a higher risk of denture ingestion and aspiration. Moreover, the decreased oral mucosa sensation and a poor motor control of the hypopharynx render edentulous patients the most vulnerable to foreign body ingestion, including dentures. Additionally, the population is ignorant regarding denture replacement and regular follow-up visits. The incidence of denture impaction in the esophagus varies from 0.4% to 17.6%.[3]

The clinical manifestations and complications of denture ingestion depend upon the site of impaction, which can be the esophagus, or small or large intestines.[3] Sharp foreign bodies should be removed immediately as these can result in the occurrence of esophageal and intestinal perforation. Upper dentures have larger surface areas than the lower ones, which facilitates an easier extraction.[4] In this case, the patient ingested the lower denture, which posed challenges in removal.

Dentures are usually made of a radiolucent material, such as acrylic resin, polymethyl-methacrylate, and porcelain with radio-opaque wire clasps, which can be detected at times in X-ray findings.[3] CT scans and magnetic resonance imaging are more sensitive than plain radiographs and can be used to image acrylic dentures. However, the most sensitive modality for foreign body detection is upper gastrointestinal endoscopy.[2]

The COVID-19 pandemic has challenged the otolaryngological practice remarkably; however, unavoidable emergencies should be dealt with immediately as it can lead to the development of life-threatening complications as the one observed in the present case of an impacted denture in the esophagus of a patient who was COVID-19-positive. There were certain noteworthy safety measures undertaken by our team. For aerosolization procedures, the current literature has recently suggested the use of negative pressure rooms and draping techniques like preparing a surgical tent over the crossbar and installing a smoke evacuator under the tent.[5] This might not be the ideal; but as COVID warriors, we should do our best under the given circumstances.

Gargles using the povidone-iodine solution are afforable as the solution is cheap and easily accessible and the method is reportedly efficacious[6]; gargles were prescribed before the conduction of the procedure. The minimum number of experienced personnel required was allowed to enter the operating room with appropriately donned PPE kits. The reusable barrier in the form of an intubation box along with disposable drapes provided additional benefits during laryngoscopy. Apart from the safe, accurate, and swift techniques of intubation, experienced otolaryngologists should attempt the maneuver and removal of sharp and impacted foreign bodies from the esophagus. Utilization of the grasping forceps with lock provides an additional advantage. Assisted doffing is essential as there is a high chance of contracting an infection during this period if doffing is conducted inappropriately.[7] Francom et al.[5] have recommended waiting for a duration of 10-25 minutes in a negative pressure room to enable the settlement of the droplets and the occurrence of a complete circulation of room air before transferring the patient out of the room.

Our healthcare workers are frontline workers, and ensuring their protection and breaking the infection cycle is the need of the hour. There are advances in coronavirus management strategies reported every day worldwide, including the development of triple therapies or vaccines. This phase will eventually pass; however, it should motivate the scientific community to develop new strategies and techniques to brace ourselves for future pandemicsThere are restrictions and guidelines for head and neck practice during the pandemic; however, emergency circumstances such as impacted denture in patients with COVID-19 infection, where observation and follow-up can be life-threatening for the patient, warrant urgent action. Any aerosolization procedure can be a source of infection for the medical personnel, and the procedure must be performed by wearing protective gear to break the vicious circle of virus spread. There is a lack of availability of literature on procedures performed in patients with confirmed COVID-19 infection, and this may be demotivating for otolaryngologists who counter aerosol-generating procedures frequently.

Additionally, an emergency during a pandemic with limited access to diagnostic facilities such as a CT scan emphasizes the fact that the collection of comprehensive data on patient history and the implementation of subsequent clinical practices are mandatory.

**Informed Consent:** Informed Consent was obtained from the patient who participated in this case.

**Peer-review:** Externally peer-reviewed.

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