

Cervicothoracic emphysema after foreign body ingestion - when surveillance is the best strategy

Clinical Case

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Abstract

A 58-year-old male patient, admitted to a long-term psychiatric unit because of his history of paranoid schizophrenia, depressive mood and self-harming behaviour. He was referred to the emergency department after accidentally swallowing two dentures, which were subsequently removed. He presented with complaints of anterior neck pain. Physical examination revealed him to be haemodynamically stable and afebrile, with cervical subcutaneous emphysema and oropharynx lacerations. Laboratory tests revealed elevated inflammatory parameters. Both cervicothoracic radiography and computed tomography showed bilateral cervical subcutaneous emphysema and pneumomediastinum with no evidence of foreign bodies. Nasofibrolaryngoscopy revealed lacerations on the posterior wall of the oropharynx with no changes in the hypopharynx or larynx. The conservative medical approach adopted included seven days of empirical intravenous antibiotic therapy, exclusive enteral nutrition via a nasogastric tube and monitoring in the intermediate care unit. He was discharged on the eighth day of hospitalisation with resolution of the oropharyngeal lacerations, emphysema and associated clinical symptoms.

Keywords: Foreign body; Oropharyngeal perforation; Cervicothoracic emphysema; Pneumomediastinum; Conservative medical therapy.

Introduction

Accidental foreign-body (FB) ingestion is a frequent reason for emergency department visits. Adults may accidentally ingest sharp FBs—such as fishbones, which tend to become lodged in the oropharynx—causing food impaction. In this age group, risk groups have been identified as having a higher likelihood of accidental or intentional FB ingestion, including individuals with psychiatric illness, cognitive impairment, self-injurious behavior, acute intoxication with alcohol or drugs of

abuse, incarcerated individuals, and patients with dental prostheses.¹⁻⁴ The impact of FB ingestion depends on several factors, including the characteristics of the FB, its location, and duration of impaction.⁵ Most cases (80%–90%) do not require intervention because the FB passes spontaneously through the gastrointestinal (GI) tract, occasionally causing minor injuries to the GI mucosa. However, approximately 10%–20% of cases require endoscopic removal, and up to approximately 1% of cases require surgery for FB extraction or treatment of complications.⁶⁻⁸ Possible complications include airway compromise, perforation, pneumothorax, pneumomediastinum, mediastinitis, aortoesophageal fistula, severe gastrointestinal bleeding, deep neck abscess formation, and sepsis.^{1-3,9,10}

Cases of hypopharyngeal perforation following penetrating cervicothoracic trauma or iatrogenic injury (from endoscopic procedures or orotracheal intubation) have been described in the literature.¹¹⁻¹³ Hypopharyngeal

perforation associated with FB ingestion is rare.¹⁴ Delayed diagnosis is associated with substantial morbidity.¹⁵ However, there is a gap in the literature regarding oropharyngeal perforation secondary to FB ingestion. To address this gap, the authors conducted a narrative review of the diagnostic and therapeutic approach to this condition, based on a clinical case managed conservatively at their institution.

Case description

We present the case of a 58-year-old man who had been admitted to a long-term psychiatric unit for paranoid schizophrenia, depressed mood, and a history of self-injurious behavior. After accidentally ingesting two dental prostheses, he was referred to the emergency department the following day; the patient had removed the FBs himself while still at the referring institution.

It was noted that the patient presented with anterior neck pain. On physical examination, the patient was hemodynamically stable

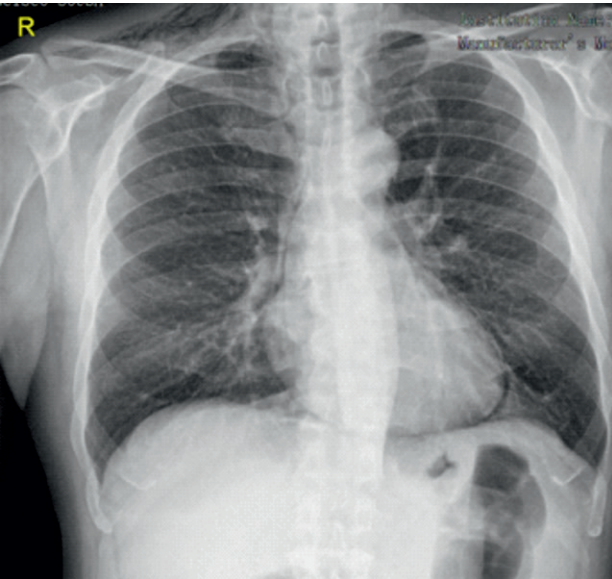
Figure 1

Physical examination of the oral cavity and oropharynx. Fibrin strands on the posterior oropharyngeal wall.



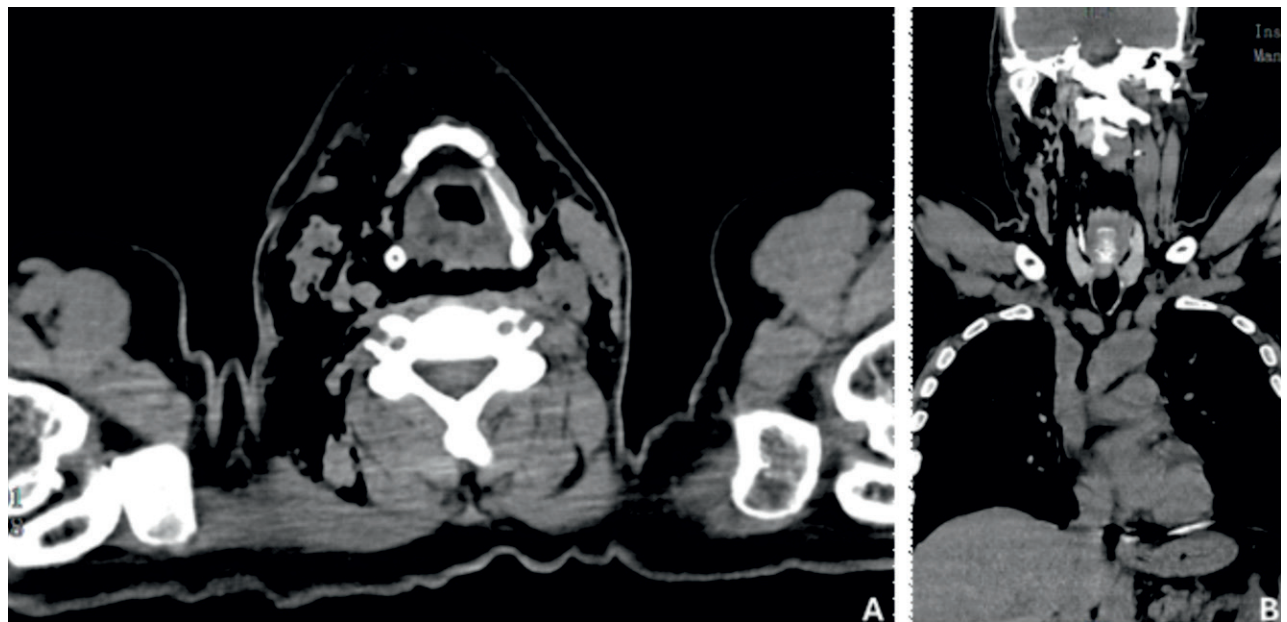
and afebrile. Examination revealed cervical subcutaneous emphysema (more pronounced on the right), a retention cyst in the right tonsil, and lacerations of the posterior oropharyngeal wall (Figure 1). Laboratory testing showed elevated inflammatory markers: leukocytosis ($16.78 \times 10^3/\mu\text{L}$) with neutrophilia ($14.3 \times 10^3/\mu\text{L}$) and elevated C-reactive protein (12.2 mg/dL). Neck and chest radiographs revealed bilateral cervical subcutaneous emphysema and pneumomediastinum, with no evidence of a FB (Figure 2). Computed tomography (CT) of the neck and chest confirmed extensive cervical subcutaneous emphysema with bilateral anteroposterior extension (more pronounced on the right), extensive pneumomediastinum extending to the inferior pericardial recesses and juxtadiaphragmatic region, and two small gas bubbles within the esophageal wall (approximately 13.5 cm from the incisors). No residual FBs or other findings relevant to the case were identified (Figure 3). Flexible nasopharyngolaryngoscopy revealed lacerations of the posterior oropharyngeal wall. No abnormalities were detected in the hypopharynx or larynx; the glottis was patent, and vocal-fold mobility was preserved.

Figure 2
Chest radiograph. Cervical subcutaneous emphysema and pneumomediastinum



Conservative medical management was adopted to avoid progression to acute mediastinitis and resolve the cervicothoracic emphysema. The patient completed 7 days of empiric antibiotic therapy (ceftriaxone and metronidazole), received enteral nutrition via a nasogastric tube, and was monitored in the intermediate care unit.

Figure 3
Computed tomography of the neck and chest. (A) Axial image: cervical subcutaneous emphysema with bilateral anteroposterior extension, more pronounced on the right. (B) Coronal image: extensive pneumomediastinum extending to the inferior pericardial recesses and juxtadiaphragmatic region.



On the eighth day of hospitalization, the patient was clinically stable, tolerated an oral diet, had complete resolution of the subcutaneous emphysema, and demonstrated no abnormalities on flexible nasopharyngolaryngoscopy. Inflammatory markers were trending downward: leukocyte count of $5.35 \times 10^3/\mu\text{L}$, neutrophil count of $3.80 \times 10^3/\mu\text{L}$, and C-reactive protein level of 1.53 mg/dL. The patient was therefore discharged to the referring institution.

Discussion

FB ingestion is a frequent reason for emergency department visits and assessment by the otolaryngology team.^{1,3,4,16}

First, the ABCDE method should be followed. Signs of respiratory distress, tachycardia, fever, and/or shock should raise suspicion for complications such as oropharyngeal, hypopharyngeal, or esophageal perforation; retropharyngeal abscess with airway obstruction; mediastinitis; or sepsis.^{15,17}

Once airway safety and hemodynamic stability have been guaranteed, the clinical history should be obtained. It should include (1) the patient's most recent meals and whether the patient had easy access to small objects (to help identify the FB)² and (2) an evaluation of characteristic symptoms: food refusal, odynophagia, dysphagia, vomiting, neck or chest pain or discomfort, FB sensation, sialorrhea, and blood-tinged saliva.² It is to be noted that pain may be referred and may not correspond to the true location of the FB.² The nature of the FB, the patient's anatomical and functional abnormalities (such as strictures, previous gastrointestinal surgery, intestinal motility disorders, or eosinophilic esophagitis),¹⁸ and the time elapsed since FB ingestion all influence the clinical presentation. The site of FB impaction depends on multiple factors, including (1) patient age/anatomy, (2) FB shape, and (3) impaction time: (1) <65 years – oropharynx; >65 years – cervical esophagus; (2) sharp or irregularly shaped FB – oropharynx; blunt FB – cervical esophagus; and (3) the longer the impaction

time, the more distal the FB location.¹⁹ If the FB is suspected to be impacted in the oro-/hypopharynx or proximal esophagus (up to the level of the cricoid cartilage), the patient should be assessed by the otolaryngology team for diagnostic and, potentially, therapeutic laryngoscopy (FB extraction). If laryngoscopic removal is unsuccessful or if impaction below the level mentioned above is suspected, upper gastrointestinal endoscopy should be performed.¹⁸ The first-line imaging study for evaluating the presence, size, and location of an FB is cervical, thoracic, or abdominal radiography, which is particularly useful for radiopaque FBs.¹⁷ Radiography may reveal indirect signs of oropharyngeal, hypopharyngeal, or esophageal injury, such as subcutaneous emphysema, hydrothorax, pneumothorax, pleural effusion, pneumomediastinum, and pulmonary atelectasis.²⁰ CT is useful for detecting radiolucent FBs¹⁷ and has high sensitivity (92%–100%) for detecting and evaluating complications such as perforation, pneumomediastinum, pleural effusion, and intraperitoneal collections.²¹

The patient in this case had risk factors for FB ingestion, namely psychiatric illness with self-injurious behavior and dental prosthesis use. On arrival at the emergency department, the patient was hemodynamically stable and afebrile. The clinical history identified the ingested FB (information provided by the patient) and revealed anterior neck pain, suggesting pharyngeal or proximal esophageal injury. Considering the characteristics of the FB and its manual extraction, oropharyngeal injury was suspected. Both imaging modalities were performed: neck and chest radiographs to search for residual FBs and assess subcutaneous emphysema and pneumomediastinum, and CT to identify the perforation and evaluate the extent of the pneumomediastinum. The on-call otolaryngology team was contacted; who subsequently assessed the patient, and performed flexible nasopharyngolaryngoscopy. Because no lesions were identified in the hypopharynx or larynx, the cervical

subcutaneous emphysema and pneumomediastinum were considered to have originated from one of the lacerations in the posterior oropharyngeal wall.

Considering the lack of information on oropharyngeal perforations, we based our therapeutic approach on the management of hypopharyngeal and cervical esophageal perforations, which are more common injuries. In hemodynamically stable patients with perforations measuring <2 cm in maximum diameter, conservative management is preferred:¹³ admission to an intensive care unit, exclusive nasogastric or parenteral nutrition, a proton pump inhibitor, broad-spectrum antibiotic therapy for 7 to 14 days (covering aerobic gram-positive and gram-negative microorganisms and anaerobes), and percutaneous drainage, to be considered if pneumothorax or pleural effusion is present.²² In cases of hemodynamic instability, perforations with a maximum diameter >2 cm, extension of the injury to the esophagus, or penetrating trauma, surgical management is preferred.¹³ The patient was hemodynamically stable and had a perforation confined to the oropharynx measuring <2 cm in maximum diameter; therefore, conservative management was chosen. Timely diagnosis and treatment contributed to a favorable clinical and laboratory course, and the patient was discharged to the referring institution on the eighth day of hospitalization.

Conflicts of Interest

The authors declare that there is no conflict of interests regarding the publication of this paper.

Data Confidentiality

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

Protection of humans and animals

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics

Committee and to the 2013 Helsinki Declaration of the World Medical Association.

Privacy policy, informed consent and Ethics Committee Authorization

The authors declare that they have written consent for the use of photographs of patients in this article.

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Availability of scientific data

There are no datasets available, publicly related to this work.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the preparation of this work, the authors did not use generative AI or AI-assisted technologies. The authors reviewed and edited the content as necessary and take full responsibility for the content of the publication.

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