

IN BRIEF

- First documented case of ingestion/inhalation of dental radiograph film.
- Provides persuasive supporting argument for the use of film holders.
- Highlights the need for all GDPs to keep up to date with current resuscitation guidelines.

An unusual complication of dental radiography: Case report

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We present the case of a 46-year-old man who was undergoing a routine dental examination when a radiograph film plate became lodged in his upper aero-digestive tract. The foreign body was successfully removed in the ENT department of the local hospital without significant harm being done. The case highlights the potential risks of even the simplest procedures, and makes a good argument for using radiograph film holders, when possible.

INTRODUCTION

The aspiration or ingestion of foreign bodies during dental procedures is a recognised risk. It is a well documented risk during endodontic work, where particularly small instruments are used. For this reason, among others, the use of a rubber dam is considered good practice in the majority of endodontic work.¹ A review of the literature reveals multiple cases where small foreign bodies of dental origin have been swallowed or inhaled. These include incidents involving rubber dam clamps, crowns, dental mirror fragments, extracted teeth and dentures.²⁻⁴ Happily, it has also been noted that foreign body ingestion is far more common than their aspiration. Tiwana's 10 year review of cases⁵ reported a ratio of 25 swallowed to one lodged in the lower airway. The following case presents inhalation of the radiograph film as a potential hazard of intra oral radiography.

CASE REPORT

A 46-year-old man was recently admitted to the Worcester Royal Hospital after suffering an episode of difficulty in breathing. He had travelled from a local dental surgery by ambulance. His symptoms had started suddenly, in the presence of his dentist, while he was undergoing periapical radiographic examination of the upper left quadrant following three days of persistent pain in that region. According to the patient a film holder had not been used, and from the patient's description of the procedure it would seem that a bisecting angle technique had been implemented. During this investigation the dental film packet became displaced, with immediate onset of respiratory distress. The dental practitioner was unable to retrieve the film packet and arranged for the patient's prompt transfer to hospital. The film was presumed to be lodged in the patient's upper aero-digestive tract.

By the time the ambulance arrived, the patient was settled with no respiratory distress but was in moderate discomfort. When reviewed by the casualty officer, the patient was reasonably comfortable, having no stridor and oxygen saturations of 99%. His respiratory rate was 20 breaths per minute. He was, however, unable to talk or swallow his own saliva. Examination of the oropharynx revealed nothing abnormal, however, a lateral soft tissue neck radiograph clearly demonstrated a 4



Fig. 1 4 cm radio opaque linear object positioned obliquely across the AP diameter of the hypopharynx

cm radio opaque linear object positioned obliquely across the AP diameter of the hypopharynx (Fig. 1). Nasendoscopy by the ENT team revealed the inferior border of the 4 x 3 cm radiograph film lodged in the post cricoid region.

Xylocaine spray was applied to the nose and oropharynx. The film was removed in the resuscitation area of the Accident and Emergency department using McGills forceps with guidance from a flexible nasendoscope. There was no resulting trauma or swelling in the pharynx and the film appeared intact (Fig. 2). The patient recovered his voice instantly and was observed

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Fig. 2 The intact film

for one hour during which time he was able to eat and drink normally. He was then discharged.

DISCUSSION

Retrieval of pharyngeal and oesophageal foreign bodies is a routine part of otolaryngology. We have, however, been unable to find another reported case where a dental radiograph film has become lodged in the upper aerodigestive tract. This may be due in part to the size and shape of this type of radiograph film along with the routine use of dental film holders. Film holders are not used as a safety precaution, but rather to ensure the acquisition of a reliable, reproducible image, and to allow for the routine use of rectangular collimation to reduce the patient dose. Their use is not mandatory, but is strongly recommended.⁶ The use of a film holder may reduce the risk of aspiration of the dental film packet, however there is still the potential for the film to be displaced from the holder. Film holders should be used whenever possible, however poor tolerance experienced by a small group of patients can prohibit their use in certain areas of the mouth. Some patients may experience difficulties including pain on insertion of the film, an increased gag reflex, or simply have a small oral cavity. In these situations it may be appropriate to use an alternative radiographic technique, for example the bisecting angle technique where the beam is angled perpendicular to a line bisecting the angle of orientation between

the film and the tooth. Radiographic techniques that do not use a film holder carry a decreased likelihood of yielding useful diagnostic information. This can be due to inconsistent film positioning and angulation, coupled with the lack of a beam aiming device making the use of rectangular collimation likely to result in 'coning off' of the dental radiograph. For these reasons the use of these techniques should be kept as limited as possible.

It is also worth mentioning that despite the patient in this case having a soft tissue lateral neck radiograph (STLN) to locate the foreign body this investigation is not always appropriate. The Royal College of Radiologists Guidelines state that a STLN radiograph is indicated only in specific circumstances when investigating a swallowed or inhaled foreign body. This is due to the fact that 'the majority of foreign bodies are not seen on radiographs. The clinical history and findings are more accurate indicators of the presence of a foreign body. Direct examination of the oropharynx, laryngoscopy and endoscopy are the investigations of choice.'⁷

With the patient presented here there was no doubt the foreign body had been swallowed. However, it was not visible on direct examination of the oropharynx by the A&E staff. The radiology was performed to assess the exact location of the film which was easily identified because of the lead foil present in the packet. There was initially concern that the film may have been in the proximal trachea or

oesophagus which would not necessarily be identified on nasendoscopy but instead would require bronchoscopy or endoscopy to remove it. By locating the film the patient avoided having unnecessary, more invasive investigations and so the radiological imaging here is justifiable.

The consequences of this type of incident may be severe. These include discomfort and local trauma as well as infection, perforation of the oesophagus and asphyxiation.^{8,9} The latter is a particular risk in children, due to their narrow airway calibre. This case highlights an often overlooked risk of dental radiography. While in this case the patient maintained good oxygen saturation and experienced only relatively minor difficulty in breathing, there is always the risk of complete airway obstruction. In these cases prompt action is clearly essential. If the object is not easily removed with dental instruments then further attempts should not be made in the surgery due to the risk of moving the foreign body into a position that completely occludes the airway. The patient should be sat forward to ensure that any displaced foreign body is expelled from the mouth, as opposed to being displaced further into the airway, and encouraged to continue coughing. An ambulance should be called immediately and oxygen can be given to try to maintain the oxygen saturation. In the event of a complete airway obstruction then current emergency resuscitation guidelines should be followed.¹⁰

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