

Traumatic Intubation Resulting in a Tooth in the Parapharyngeal Space

A Case Report and Surgical Technique

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Introduction:

- Endotracheal intubation is often used to secure the airway, but also may cause complications such as dental injury.
- This procedure however has the potential to cause life-threatening complications, including aspiration, misplacement of the tube, dental trauma, and failure requiring an emergency surgical airway.¹
- This risk is increased in the emergent setting, when performed by inexperienced personnel, and in patients with poor dentition.
- To the authors' knowledge, this is the first report of a traumatic endotracheal intubation causing multiple simultaneous injuries resulting in the displacement of a tooth into the parapharyngeal space.

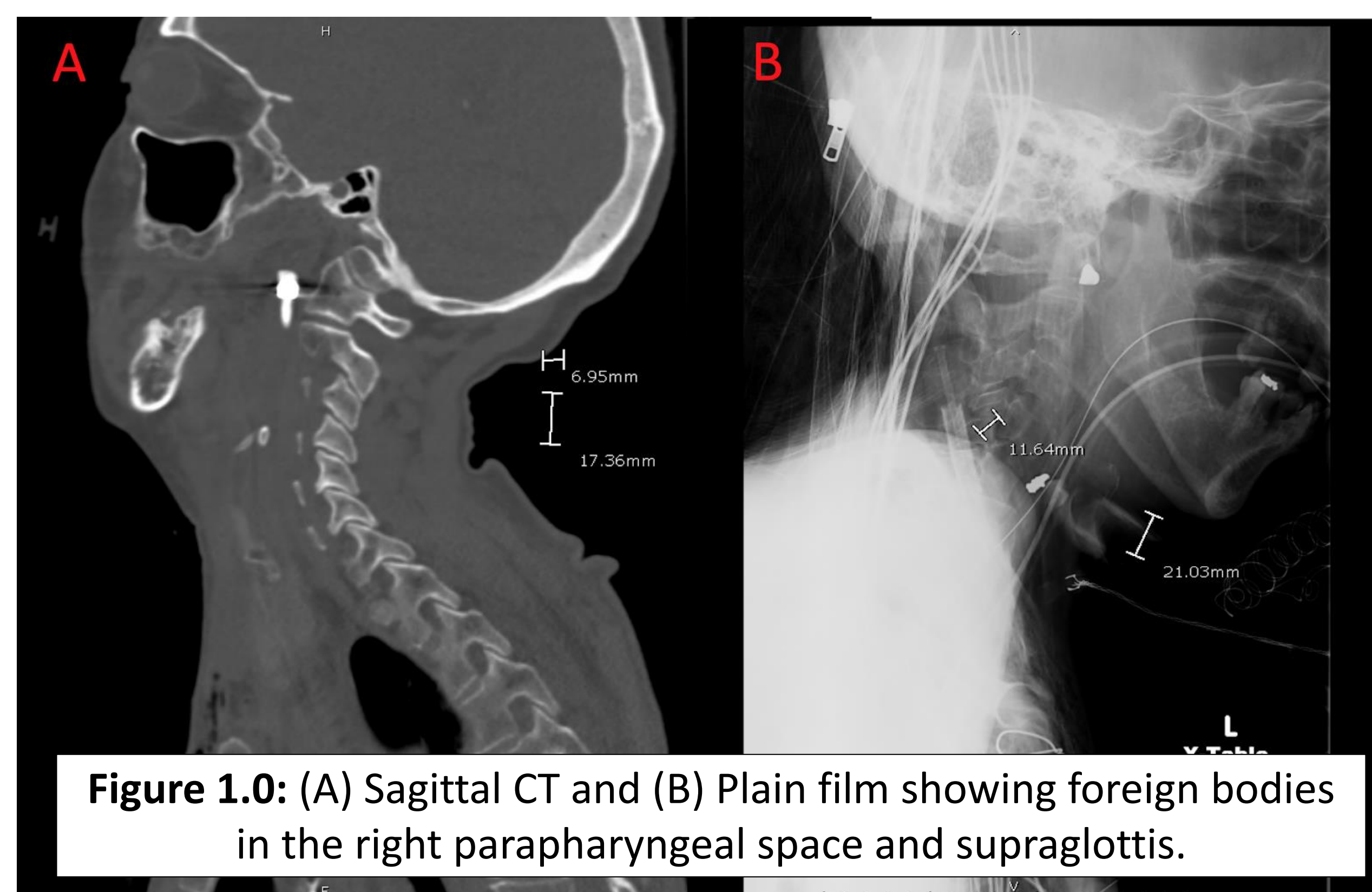


Figure 1.0: (A) Sagittal CT and (B) Plain film showing foreign bodies in the right parapharyngeal space and supraglottis.

Case Presentation:

- History: 67 y/o F with a past medical history of COPD and atrial fibrillation, was found unresponsive on the floor of her home and intubated by EMS in the field with a supraglottic airway, then brought to Albert Einstein Medical Center Emergency Room and intubated with a 7.5 cuffed ETT. Two days following admission, ENT service was consulted for a foreign body visualized in the nasopharynx on prior CT imaging.
- Physical examination: revealed a laceration posterior to the right posterior tonsillar pillar. Nasopharyngoscopy - significant findings included an intermittently visualized metallic tooth filling in the region of the oropharynx, which was unable to be retrieved after several attempts.
- Plain Film XR: tooth in the left hypopharynx and two radiopaque foreign bodies in the oropharynx and hypopharynx (Figures 1.0 and 2.0).
- CT Head & Neck: confirmed a radiopaque foreign body in the post-styloid region of the right parapharyngeal space (Figures 1.0 and 2.0).
- Pre-op: patient was started on ampicillin and sulbactam, and taken to the operating room for exploration of the right parapharyngeal space with transoral foreign body removal under endoscopic guidance.
- Surgery: aforementioned laceration was identified and a 30-degree endoscope visualized a foreign body deep in the parapharyngeal space. A Schmidt forceps was then used to remove what appeared to be a tooth with dental amalgam (Figure 3.0). The wound was copiously irrigated and left to heal by secondary intention.

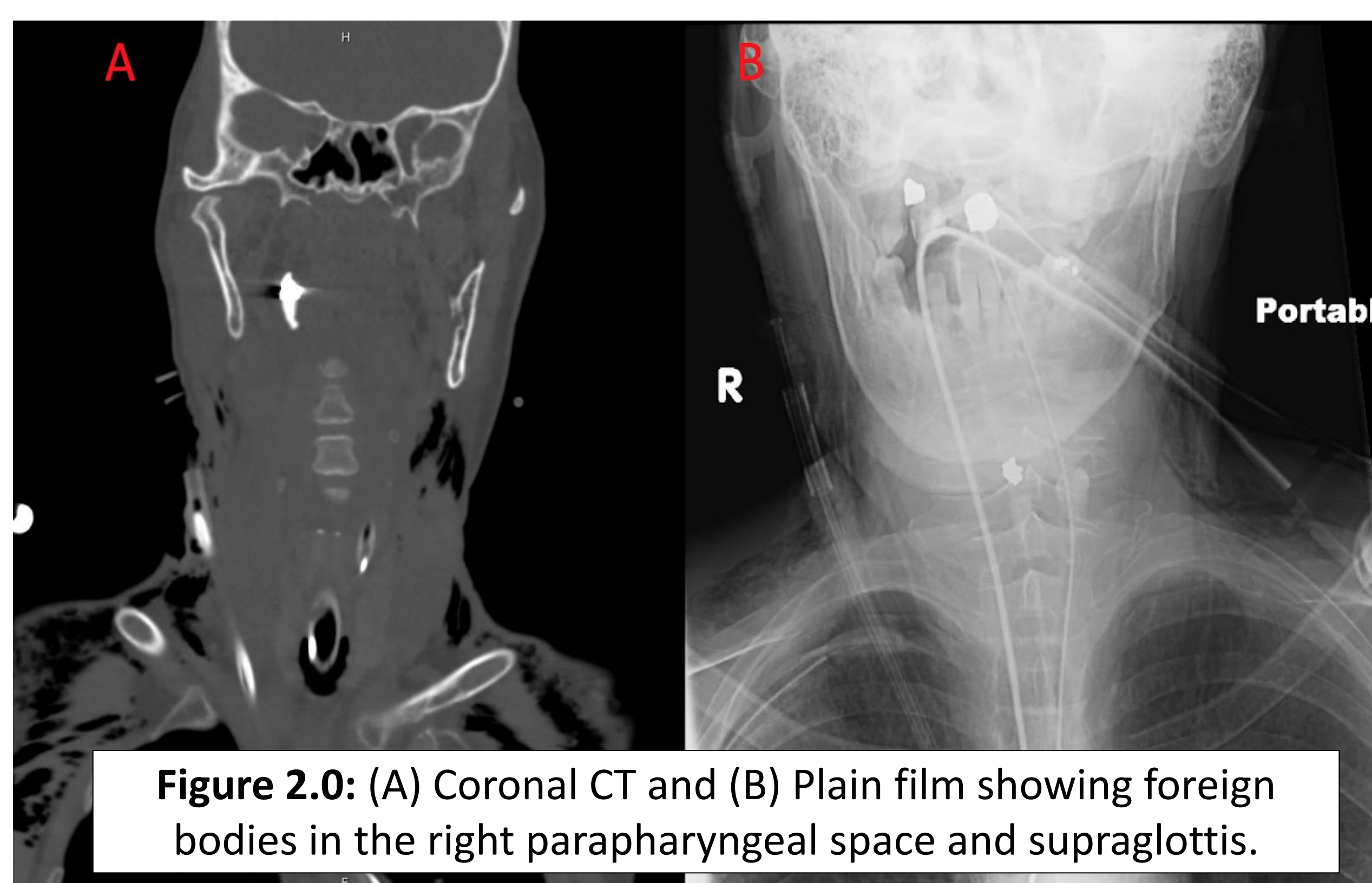


Figure 2.0: (A) Coronal CT and (B) Plain film showing foreign bodies in the right parapharyngeal space and supraglottis.



Figure 3.0: Foreign body (tooth with dental cap) that was successfully retrieved from right parapharyngeal space.

Discussion:

- There are a variety of complications related to endotracheal intubation
- Injury to the oro-dental tissue is the most common iatrogenic complication, and occurs in 0.17-12.1% of intubations^{4,5}
- The flange of the Macintosh blade appears to be responsible for the majority of these injuries.⁶
- Dental injuries caused by endotracheal intubation include tooth avulsion, fracture, and aspiration into mainstem bronchi.^{2,3,7}
- The main causes of these complications are the experience and surgical skill of the intubating personnel, the anatomical condition of the oral cavity structures, and the mode of conducting the procedure.⁸
- Another well-known complication of is upper aerodigestive tract perforation.
- Typically occur in the hypopharyngeal region, adjacent to the cricopharyngeus muscle, or the piriform sinus, but also have been reported in the oropharynx and vallecula.¹⁷
- Have been attributed to the laryngoscope blade, rigid stylet, and the endotracheal tube itself.¹²
- Increased incidence of pharyngeal perforation in emergency airway management, difficult intubations, and intubations with inexperienced operators.¹³
- Inappropriate patient positioning, incorrect use of a stylet, and "blind" intubations are also associated with increased risk of perforation.¹⁷

Conclusions:

- Our case is unique in that multiple complications occurred simultaneously as a result of endotracheal intubation.
- Several dental injuries were sustained, including dental fractures and avulsions.
- Additionally, an oropharyngeal perforation was sustained in the right posterior oropharynx extending into the parapharyngeal space.
- As a result of these synchronously sustained complications, a tooth containing dental amalgam was introduced into the parapharyngeal space.
- To our knowledge, this is the first reported case of a traumatic endotracheal intubation resulting in a tooth being displaced into the parapharyngeal space.

References:

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