

## Anaesthetic Management of Removal of Aspirated Hypodermic Needle in Trachea: A Case Report

Jubil Thomas<sup>1</sup> · Áine Heaney<sup>2</sup> · Pradipta Bhakta<sup>1</sup> · Suzanne Crowe<sup>3</sup>

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**Abstract** Aspiration of foreign body is a very common emergency in paediatric age group. It is very rare in adult population. Moreover common foreign body in adults are food materials. Aspiration of hypodermic needle is very rarely reported. But this can happen accidentally during use of hypodermic needle for dental block. We hereby report such a case of aspiration of hypodermic needle accidentally aspirated during performing a dental block. Aspiration of sharp foreign body and its bronchoscopic removal can lead to injury to airway. We report successful management of such a case where needle was removed under general anaesthesia successfully using rigid bronchoscope.

**Keywords** Anaesthetic management · Aspiration of hypodermic needle · Case report

Dear Editor,

A 19-year-old male belonging to ASA 1E presented to our emergency department (ED) with severe respiratory distress. He attended a dental clinic for drainage of abscess 1 h earlier. The hypodermic needle used for the local anaesthetic infiltration got detached from the syringe and was aspirated by the patient. This was followed by paroxysms of severe coughing.

On assessment, patient was found to be in tripod position having tachypnoea (respiratory rate of 40–45 min), peripheral oxygen saturation of 95 % breathing room air. He was fasting for more than 6 h. Chest radiography confirmed presence of foreign body in the trachea (Fig. 1).

Patient was immediately transferred to operating theatre for removal of the aspirated needle under general anaesthesia. Standard monitoring was attached. Anaesthesia was induced using inhalational technique with sevoflurane and 100 % oxygen in upright position. It was intended to preserve the spontaneous respiration to avoid any intermittent positive pressure ventilation (IPPV). After achieving adequate plane of anaesthesia, laryngoscopy was done to topicalize the upper airway with 2 % lignocaine. After this, otorhinolaryngologist was allowed to pass rigid bronchoscope. Anaesthesia was maintained with sevoflurane in 100 % oxygen through side port of rigid bronchoscope. Needle was found to be located at the level of carina (Fig. 2). The needle was grasped with a forceps and both the forceps as well as bronchoscope was removed as a unit under vision. After removal of foreign body (FB) bronchoscope was reintroduced to rule out any damage caused or any residual FB. At the end of the procedure patient received intravenous dexamethasone to prevent any airway oedema. After achieving adequate recovery from the effect of the anaesthesia, patient was transferred to postanesthesia recovery unit. No postoperative complication was

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✉ Pradipta Bhakta  
bhaktadr@hotmail.com

Jubil Thomas  
jubil.thomas7@gmail.com

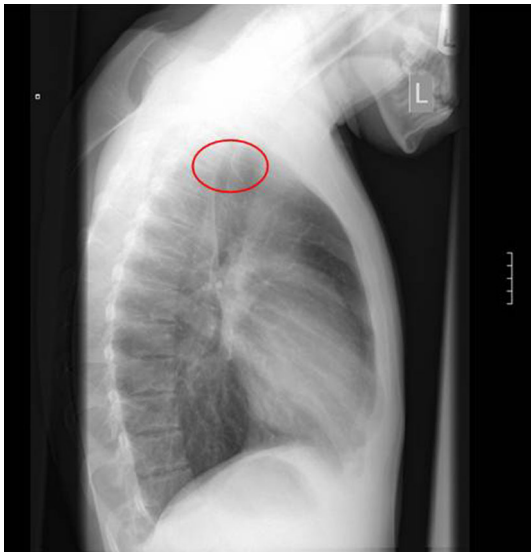
Áine Heaney  
aineheaney@hotmail.com

Suzanne Crowe  
suzannecrowe2014@gmail.com

<sup>1</sup> Department of Anaesthesia and Intensive Care, Our Lady of Lourdes Hospital, Drogheda, Ireland

<sup>2</sup> Department of Cardiac Anaesthesia, Royal Brompton Hospital, Sydney, London, UK

<sup>3</sup> Department of Anaesthesia, Pain Medicine and Intensive Care Medicine, Adelaide, Meath and National Childrens' Hospital, Tallaght, Dublin, Ireland



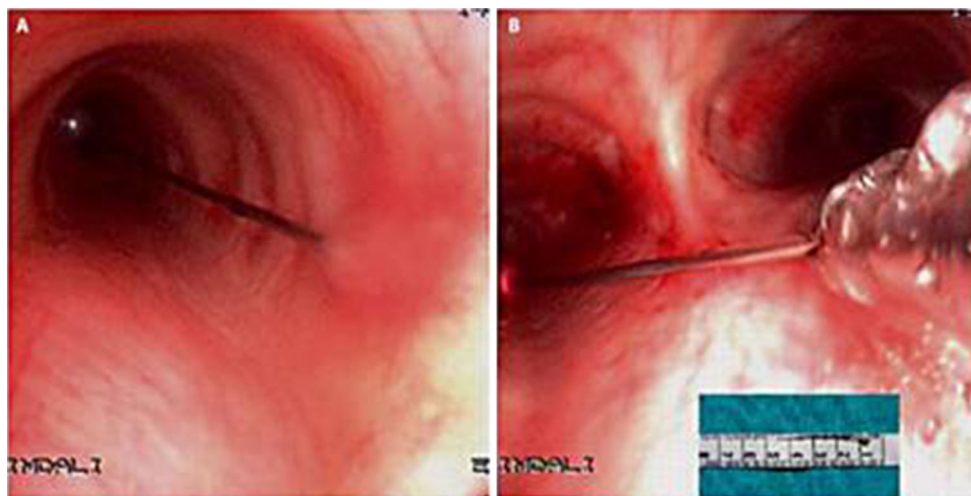
**Fig. 1** X-ray picture showing the needle in the trachea

observed. He was discharged from the hospital the next day.

Aspiration of FB (AFB) is a leading cause of morbidity and mortality in children, however, it is relatively uncommon in adults [1–4]. Risk factors for AFB in adults include neurological disorders (e.g. Parkinson's disease), cervicofacial trauma, sedation or intoxication [2, 4]. Most common foreign bodies (FBs) in adults are organic like bones, food particle [2, 4, 5], bean, seeds; [2] whereas inorganic FBs can be dental prosthesis, pills, tops of beverage cans, turban pins [2, 4]. In adults aspirated FB most commonly lodge in the right bronchus because of its vertical nature [2–4]. The most common symptom is called 'penetration syndrome' characterised by choking and intractable cough with or without vomiting. History of witnessed choking is highly suggestive of AFB [3]. Other

symptoms can be cough, fever, breathlessness, wheezing and cyanosis [2–4]. Most common clinical finding in AFB is unilateral or bilateral decreased breath sounds, stridor and localized wheeze [5]. Though most of the FBs are radiolucent, but an antero-posterior and lateral chest and neck X-ray should be obtained in all the cases [2, 5]. Computerised tomographic scan [3, 4] and virtual bronchoscopy can be very helpful and confirmatory in diagnosing the location of aspirated FB [3]. AFB is a life-threatening emergency if complete airway obstruction occurs [2]. Aspiration of needle can be very debilitating and any inadvertent displacement can lead to damage to sensitive structures [6]. Management consists of resuscitation and bronchoscopic removal of the FB [2, 4]. Though rigid bronchoscopy (RB) is the standard of care in children with AFB, but flexible fibreoptic bronchoscopy (FOB) is increasingly being used both for diagnostic and therapeutic management of AFB in children and adults [1–5]. But for sharp AFB RB is still the standard of care [1].

Both inhalational and intravenous anaesthesia induction techniques have been advocated for removal of aspirated FB [3]. Inhalational induction with preservation spontaneous ventilation may reduce the need for IPPV and the risk displacing the FB more distally and thereby converting a partial obstruction to a complete one [3]. Advantage of total intravenous anaesthesia is that depth of anaesthesia can be maintained even in the period of apnoea and ventilation can be controlled [3]. IPPV through the side port reduces the incidence of intraoperative hypoxaemia, as compared with spontaneous ventilation [3]. Aspiration of hypodermic needle is rare but can be potentially fatal. Urgent removal is essential for the safety of the patient. We opted for RB under general anaesthesia as the FB was a sharp hypodermic needle; removal of which with FOB can cause damage to vital structures of airway, and the young



**Fig. 2** Bronchoscopic picture showing the hypodermic needle lying on the carina

age of the patient. Also it was the preference of our surgeon as he felt more comfortable with RB. Also the point of depth of anaesthesia as well as oxygenation can be better maintained with RB [2, 4] and a variety of FB retrieval forceps are available with RB [4].

Though aspiration of hypodermic needle has been reported previously mostly in drug addicts [5, 6], but aspiration of needle used for local anaesthesia for dental procedure and its successful removal using RB has not been reported previously as far as our knowledge goes. We understand a single case report does not have much educational value in medicine, but this case report shows us that one should be cautious during use of hypodermic needle as it can get displaced and aspirated into the airway. Removal of such sharp FB can be challenging due to inherent chance of damage to airway. Though FOB is now used mostly for such cases but rigid bronchoscope can be successfully used with traditional anaesthetic technique.

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**Conflict of interest** The authors report no conflicts of interest.

**Ethical standard** The case report involves human patient. The patient's consent has been taken for the publication of the data.

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