

CASE REPORT

Removal of an aspirated open safety pin from trachea

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ABSTRACT

Swallowing of foreign bodies is a fairly common pediatric emergency. Children usually swallow foreign objects into their bodies accidentally during playing. Foreign body in the trachea is a common condition which may be life threatening. Foreign body in bronchus is usually managed by bronchoscopy, though open surgical procedure may be rarely needed and sometimes it is life threatening. We report a case of a 5 year old male child who accidentally inhaled an open safety pin. Bronchoscopy was done to localize the site of the foreign body, but it was not possible to be removed by bronchoscopy as the pin was open. Then, tracheotomy was done and foreign body was removed successfully. Tracheotomy stoma was closed after the removal. Patient developed surgical emphysema within minutes of closure and presented with difficulty in breathing with bradycardia, immediately surgeon explored the surgical site and reopen tracheostomy site and the patient was managed successfully.

Key words: Foreign body; Foreign Bodies/diagnosis; Tracheostomy; Bronchoscopy; Bronchoscopy/methods; Trachea

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INTRODUCTION

Aspiration of foreign body (FB) into the respiratory tract is a commonly encountered and serious problem in childhood and can be a significant cause of morbidity and mortality.

Tracheobronchial FB aspiration can lead to fatal acute respiratory failure when it causes near-complete occlusion at the tracheal level. However, the FB's that have lodged in the lower tracheobronchial tree can cause respiratory tract problems at the distal region, because occlusion can lead to ventilation failure which creates a favourable environment for infection. Laryngotracheal FBs, although less common than the bronchial ones, are particularly more dangerous as they could lead to choking and complete blockage of the airway.^{1,2}

Rigid bronchoscopy is the mainstay of the treatment in these patients. However, on rare occasions, when the FB is sharp, pointed and risks perforating the airways, the removal may be performed by opening

the trachea.

We report a case of 5 yr old male child who aspirated a sharp FB into the airway (open safety pin) which was removed with endoscopic instruments and concomitant performance of tracheostomy. It is important to note that tracheostomy indication for removal of tracheobronchial FBs is reported in only 11 cases in literature suggesting that this is an extremely rare event.¹⁻³

CASE REPORT

A 5 year old boy presented in ENT OPD with complaints of cough and difficulty in speaking for 7 days and difficulty in breathing for 3 days. History given by the parents suggested accidental ingestion of an open safety pin about 1 month back.

Preoperatively, the patient was conscious, oriented, afebrile, pulse rate was 102/min. Blood pressure 104 / 70 mm of Hg, respiratory rate of 22 / min and oxygen saturation was 95 % on room air. He



Figure 1: X-ray soft tissue neck (lateral view) showing open safety pin in the subglottic region

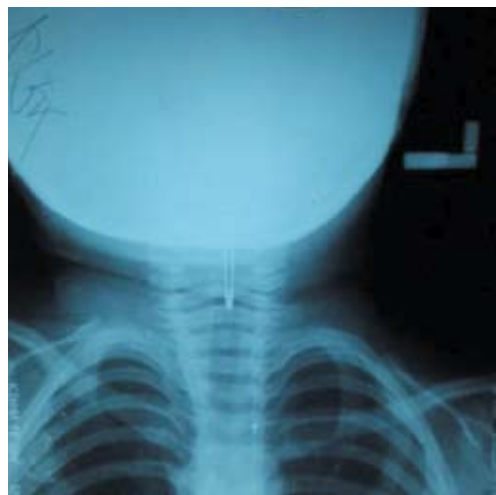


Figure 2: X-ray soft tissue neck (AP view) showing open safety pin in the subglottic region

had mild inspiratory stridor and on auscultation, there was bilaterally equal air entry, but slightly decreased. Other systems were examined and were within normal limits. Routine blood investigations were normal.

X-ray soft tissue neck revealed an open safety pin in the subglottic and cervical tracheal region which was open upwards. A diagnosis of laryngotracheal foreign body (open safety pin) was made and the patient was electively posted for foreign body removal by rigid bronchoscopy under general anesthesia.

After thorough pre-anesthetic check-up and parent's consent, the procedure was planned. The patient was fasted for 6 hrs before surgery. Next morning, the patient was taken in the operation theatre. Basic monitoring, (blood pressure, pulse oximeter, ECG) was attached and the baseline readings were recorded. The patient was preoxygenated with 100% oxygen for 3-4 min. Inhalational induction of anesthesia was done with sevoflurane $\leq 8\%$ in oxygen and the adequacy of mask ventilation was checked. The patient was then given Inj. hydrocortisone 50 mg, inj. fentanyl 40 μg and inj. atracurium 10 mg. Rigid bronchoscope was introduced and ventilation was maintained with the ventilatory port. Anesthesia was maintained with intermittent boluses of inj. atracurium and sevoflurane. An open safety pin was visualized in the subglottic region with the sharp end of the safety pin impinged in the mucosa of the under surface of the vocal cords. Two attempts to close the open end of the safety pin failed.

Removal of an open safety pin or sharp structure is likely to injure the endolaryngeal structures

and can result in permanent voice morbidity. We intubated the child with a non-cuffed endotracheal tube and secured the airway. Then the surgeon performed tracheostomy. Endoscopic forceps were used to pull the FB through the tracheostomy stoma. The safety pin was successfully and safely removed. After the procedure, the surgeon closed the tracheostomy site and the anesthesia was reversed with inj. neostigmine and glycopyrrolate. For postoperative pain relief, inj. paracetamol 300 mg infusion was given and the patient was shifted to PACU. The patient was hemodynamically stable and maintained a saturation of 98% on room air. While shifting the patient to PACU, the patient had few bouts of cough. After about 10 min, the child had had swelling over face, neck and chest and had difficulty in breathing, bradycardia and decreased oxygen saturation. The patient was immediately shifted to operating room and ventilated with 100% oxygen. Inj. atropine 0.8 mg was given. Simultaneously, tracheostomy site was re-explored and a tracheostomy tube #4.5 was inserted by the surgeon. When the patient improved, he was shifted to PACU and close monitoring was done. Postoperatively, the patient was nebulized and steroid cover was continued to decrease laryngeal edema. Subsequent postoperative period was uneventful. Decannulation and strapping was done on 3rd postoperative day and the patient was discharged on 5th day in a satisfactory condition.

DISCUSSION

FB removal in children is a challenging procedure for anesthesiologists as the airway in paediatrics patients is narrow and desaturation is faster. Also,

the surgeon and the anesthesiologist have to share the airway, while rarely necessary it is important that concomitant tracheostomy is indicated for patients who have aspirated particularly sharply pointed FBs lodged in the subglottis or in vocal cords. It is advisable that after removal of FB, tracheostomy stoma can be closed and endotracheal tube should be kept in situ, till the airway edema subsides. Alternatively, a tracheostomy tube is maintained till the subglottic edema subsides.^{2,4,5}

In our case, due to open sharp points of safety pin impinged in mucosa of subglottic region and fear of injury to endolaryngeal structures, although no multiple attempts were taken by the surgeon, so they opted to close tracheostomy before shifting to PACU, but after immediate tracheostomy closure, patient developed airway irritation and cough

leading to surgical emphysema, precipitating hypoxia, bradycardia, hemodynamic instability and cardiac arrest.

In a sharp foreign body, it is advised to remove the foreign body after closing it, although rarely necessitating tracheostomy and it is advisable not to immediately close a tracheostomy site in children. Intense cardiorespiratory monitoring is must in postoperative period.

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Authors' Contribution:

VA: Concept, manuscript preparation and writing

SSB: Concept and manuscript preparation

SM: Manuscript preparation

BB: Concept

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