

## REMOVAL OF INHALED FOREIGN BODY FROM TRACHEA – A UNIQUE APPROACH

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### INTRODUCTION

Foreign body removal from the Aerodigestive tract can be a challenging endeavor despite improvements in technology. Rigid bronchoscopy has been demonstrated to be a safe and effective means of airway foreign body removal with appropriate training and expertise. However, potential complications exist. [1].

The most common foreign bodies are organic for example nuts, seeds, vegetables, berries, corn and beans [2]. We came across one such case where beaded piece of rosary (tasbih) was a foreign body in a child and that was removed by a different approach.

### CASE REPORT

An eight year old boy presented with six days history of foreign body inhalation No symptoms were reported after inhalation of foreign body. On examination in preanaesthesia clinic he was comfortable, with slight dysnea on exertion. Vital signs were within normal limits. Examination of respiratory system revealed bilateral wheeze. Rest of the systemic examination was unremarkable. Chest x-ray showed round to oval foreign body in trachea just above the carina.

Removal of foreign body was planned by rigid bronchoscopy under general anesthesia with spontaneous breathing and mask inhalation. Patient was induced with ketamine 2 mg/kg and anesthesia was maintained by 100 % oxygen and halothane.

Rigid bronchoscopy was carried out by ENT surgeon to visualize trachea. A round glistening bead of tasbih (prayer beads used by Muslims) was seen in the trachea with reddened and swollen mucosa around it.

Conventional forceps which could be negotiated through the bronchoscope used in an eight year old child could not hold the bead adequately. After many unsuccessful attempts by ENT surgeon, a different approach was conceived to remove the foreign body by anaesthesia team.

A pre-sterilized dental wiring, with a small improvised hook especially for the purpose of removing the bead, was placed in the rigid metallic suction. Wire and suction was then advanced through the bronchoscope. When inside the trachea the wire hook was advanced in the hole of the bead and hinged against the bead under direct vision which was then easily removed. There was minimal bleeding from tracheal mucosa which was controlled in a short while. The patient was recovered from anesthesia and post operatively kept in intensive care unit for 24 hours. Post operative chest x-ray was negative for pneumomediastinum and patient was discharged on antibiotics and analgesics after 48 hours.

### DISCUSSION

Foreign body aspiration may be a life-threatening emergency in children requiring immediate bronchoscopy under general anesthesia. Both controlled and spontaneous ventilation techniques have been used during anesthesia for bronchoscopic foreign body removal. Use of controlled ventilation with muscle relaxants and inhalation anesthesia provides an even and adequate depth of anesthesia for rigid bronchoscopy [3]. We used general anaesthesia with spontaneous breathing technique to keep airway patent and to avoid any airway obstruction during the procedure. Because controlled ventilation

would have further pushed foreign body towards carina. Spontaneous ventilation helped us to keep the airway patent. Despite multiple laryngospasms which were managed by intubation and ventilation no serious consequences were encountered. One thing which we were concerned was that, this case was unique in this way because manipulation of bead was risky as it could change the direction and it was difficult because no forceps could hold the bead. We had to improvise a technique whose efficacy we were not sure of.

In children up to 3 years of age, there is no significant difference in foreign body distribution and in children aged 3 and older foreign bodies were more commonly found in the right main bronchus [4]. The right main bronchus has a predilection for foreign body impaction because it is wider than the left, the carina is slightly to the left of the midline and the right main bronchus has more direct extension of the trachea than the left main bronchus [5].

The inhaled foreign body can get impacted at any site from the laryngeal inlet to the terminal bronchioles. The location of foreign body in the right or left main bronchus depends on patient's age and physical position at the time of inhalation. The angle made by the main stem bronchi with the trachea is similar until the age of 15 years. So, naturally, up to this age the foreign bodies are found on either side with equal frequency. As a result of growth and development after the age of 15 years, the right and left main stem bronchi diverge from the trachea with very different angles. Thus the right main stem bronchus becomes more in line with the trachea and this makes a relatively straight path from the larynx to bronchus. Therefore, the inhaled objects that descend beyond the trachea are more

commonly found in the right than the left side of the bronchial tree [4].

In our patient foreign body was above the carina because of its size that stopped it in trachea. The shape of oval bead was a blessing in disguise which made the bead to stop vertically, allowing passage of air through the hole in the bead. General anesthesia for rigid bronchoscopy to rule out a tracheobronchial foreign body in children carries low morbidity. Most of the complications originate from the foreign body itself especially in patients with late diagnosis. The risk for serious complications caused by retained foreign bodies outweighs the low morbidity of explorative rigid bronchoscopy in children with suspected FBA or children with prolonged cough or pulmonary infection unresponsive to medical treatment [6].

All foreign bodies are removed much more readily if bronchoscopy is done immediately. If days are allowed to pass before treatment is instituted, one has to deal not only with the foreign body itself but also with the secondary inflammatory changes which result from its prolonged stay. The mechanical principles involved in the removal of foreign bodies depend largely upon whether the object is smooth or sharp. Sharp bodies and dentures are usually extracted with a metal loop; those of complex configuration were pulled out by a forked forceps [7].

Bronchoscopy is invariably indicated on the basis of reliable history alone even when symptoms are minimal, and imaging studies are negative. Secondary bronchoscopy should be done in patients with persistent signs and symptoms to rule out overlooked organic foreign body particles or to remove persistent granulation tissue to avoid long-term complications necessitating lobectomy. The long duration of the procedure, presence of dense granulation tissue and type of foreign

body are important predictors of complications. Bronchoscopy should be regarded as an expert procedure and done with great care to avoid lethal complications [8].

We chose rigid bronchoscopy as various clinicians still believe it a reliable method. Like Asif et al [4] shows rigid bronchoscopy offer good visualization and is the preferred method for foreign body removal.

Regarding technique and selection of Suitable instruments Wan et al suggested that suitable instrument and technique chosen for every individual case is the key to successful operation. Suitable surgical instrument should be well selected and the best operation should be applied according to different conditions of the foreign bodies. Rigid bronchoscopy for removal of specific foreign bodies under general anesthesia is a main measure presently [9].

Public awareness through mass media needs attention to prevent foreign body inhalation. More attention should be given to the need for a careful history and the use of radiographs as supplemental information to make the decision to perform a bronchoscopy. Suitable instruments and technique should be

discussed prior to procedure with the Anaesthesiologist to have better outcome.

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