

Bronchotomy for removal of foreign body bronchus in an infant

Sir,

Foreign body aspiration into the bronchus is a frequent accident in childhood. Flexible and rigid bronchoscopy is the mainstay of treatment for removal of the foreign body bronchus. However, surgical removal of the foreign body bronchus via thoracotomy and bronchotomy is required in <2% of cases when bronchoscopy fails.^[1] Anaesthesia for bronchotomy in the paediatric population is as challenging as anaesthesia for bronchoscopic removal.

A 3 months old infant weighing 4 kg presented with a history of having ingested an iron nail. The 4 cm long nail was pushed down the oral cavity by her elder sibling. Pulse oximetry on room air was 96% and chest X-ray posteroanterior view showed a nail lengthwise in the right main bronchus with emphysematous air trapping in the right lung and a mediastinal shift to the left [Figure 1].

An awake flexible fibreoptic bronchoscopy with paediatric fibreoptic bronchoscope was performed. The head of the nail was visualized completely

occluding the right main bronchus with mucosal oedema around the head of the nail [Figure 2]. Appropriately sized forceps capable of gripping the head of the nail for removal were not available for both the paediatric fibreoptic bronchoscope and the paediatric rigid bronchoscope. The option of surgical removal of the foreign body via a thoracotomy was offered to the parents who consented to the procedure.

Fasting status was ensured, and the patient was premedicated with atropine 0.12 mg intravenously (IV). Anaesthesia was induced by the inhalational technique with oxygen, nitrous oxide and halothane 2%. Muscle relaxation was facilitated with succinyl choline 4 mg IV, gentle mask ventilation performed and trachea intubated with 3.0 mm inner diameter uncuffed endotracheal tube (ETT). The ETT was then intentionally manipulated into the left main bronchus till air entry was good on the left

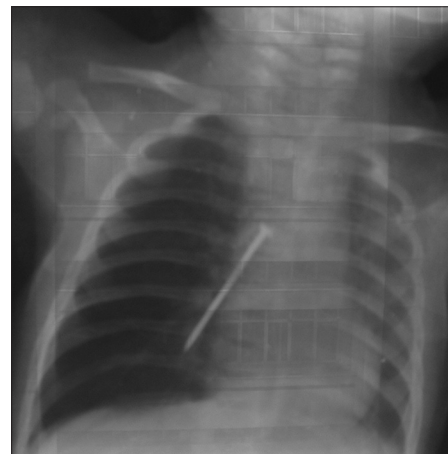


Figure 1: Chest X-ray posteroanterior view showing a nail in right main bronchus



Figure 2: Fibreoptic bronchoscopy showing head of the nail occluding right main bronchus

side and absent on the right side and then secured. Oxygen saturation was maintained above 93% at all times. The infant was placed carefully in the left lateral decubitus position for right posterolateral thoracotomy. Thoracotomy was performed, and bronchotomy just distal to the carina was made and the nail delivered lengthwise through the small incision. There was minimal loss of ventilation during the bronchotomy due to the uncuffed ETT used, which was handled with intermittent manual occlusion of the defect by the surgeon till the defect was repaired. The ETT was then withdrawn into the trachea, and a leak test was performed to confirm the integrity of the bronchus. Neuromuscular block was reversed, good respiratory efforts; intact airway reflexes and normothermia was ensured and the infant was extubated. Post-operatively the infant was placed in a humidified oxygen tent, and chest tube was removed on the second post-operative day.

Although rigid bronchoscopy remains the 'gold standard' for removal of the foreign body, bronchoscopic removal may fail due to impaction, peripheral location or technical difficulty thus necessitating a thoracotomy. Isolation of the affected lung is technically difficult to achieve in infants and children. Lung isolation is required to prevent soiling of dependent lung with blood and to prevent loss of ventilation during the bronchotomy. If the affected lung is not isolated migration of the foreign body into the opposite bronchus or into the trachea may occur leading to complete loss of ventilation.^[2]

One lung ventilation by intentional main stem bronchus intubation was done in this case with an ETT of small size. The small sized ETT was manipulated into the left main bronchus by rotating the tube clockwise by 180° after it had entered the trachea so as to enable the bevel to face right and slide down the carina into the left main bronchus. Main stem endobronchial intubation is also facilitated by turning the head to the opposite side and elevation of the opposite shoulder. The advantage of selective endobronchial intubation by single lumen tube over the other techniques such as Arndt paediatric bronchial blocker, Univent tube and Fogarty's embolectomy catheter is that it is easy to perform and there is no need for sophisticated equipment.^[3] However, it has the disadvantage of easy dislocation and inadequate ventilation in case of obstruction. It also does not allow for bilateral bronchial suctioning and recruitment of the collapsed lung. Furthermore,

if a smaller uncuffed tracheal tube is used it may be difficult to provide an adequate seal of the intubated bronchus.^[4] In spite of these drawbacks selective main stem endobronchial intubation remains a viable and attractive option for lung isolation in paediatric patients.

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REFERENCES

1. Causey AL, Talton DS, Miller RC, Warren ET. Aspirated safety pin requiring thoracotomy: Report of a case and review. *Pediatr Emerg Care* 1997;13:397-400.
2. Ghosh I. Delayed removal of a foreign body in the bronchus of a child. *Indian J Anaesth* 1990;38:91-2.
3. Lew YS. Paediatric one lung anaesthesia by selective bronchial intubation. *Singapore Med J* 2000;41:398-400.
4. Hammer GB. Differential lung ventilation in infants and children with pulmonary hyperinflation. *Paediatr Anaesth* 2003;13:373-4.

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