

# Massive surgical Emphysema and Pneumomediastinum in foreign body Aspiration

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The Authors declares that there is no conflict of interest.

## ABSTRACT

**Introduction:** Foreign body ingestion is a potentially serious problem that peaks in children aged six months to three years. It causes serious morbidity in less than one percent of all patients, and approximately 1,500 deaths per year are attributed to ingestion of foreign bodies in the United States.(1) The most common symptoms of foreign body inhalation are positive history following by cough and breathlessness. Commonly ingested foreign body includes: sharp needles, tooth picks, chicken and fish bones, peanuts, straight-ened paper clips and coins.

Rigid bronchoscopy (RB) remains the mainstay of management for retrieval of foreign bodies, however alternative methods can be adopted in special circumstances. Occurrence of massive surgical emphysema and pneumomediastinum is one of the rare complications in patients with foreign body inhalation which can be managed conservatively.

**Key Words:** Foreign body; Massive surgical emphysema; Rigid Bronchoscopy.

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## Case Report

**W**e reported a case of six years old boy known case of cerebral palsy and mentally retarded presented to our ER by his family with positive history of foreign body ingestion which mostly was some pieces of stones, patient was cyanosed, tachypneic, tachycardiac and in severely distressed.

In ER intubation was attempted however it was failed due to impaction of foreign body in subglottic area after which the patient arrested and CPR was done for five minutes and patient revived. An emergency tracheostomy done to secure his airway and the airway was reinspected, the foreign body was visualized and removed by Magill forceps. After stabilization of vital signs and oxygen saturation the tracheostomy was closed, and the endotracheal intubation done by cuffed endotracheal tube. The follow-up chest x ray showed bilateral pneumothorax with massive surgical emphysema extending up to anterior abdominal wall. Bilateral chest tubes were inserted and connected to pleurovac and negative suction. Patient was kept on mechanical ventilation. Weaning was attempted on day seven and it failed. As

prolong intubation was anticipated, he was re-tracheostomized and connected back to mechanical ventilation.

As there was massive surgical emphysema extending up to anterior and lateral chest wall, abdominal wall and scrotum, chest tubes were put on continuous suction. The tracheostomy site was reinspected to rule out any leak from the stoma site which was found out to be negative. The patient was managed conservatively and after two weeks, the pneumothorax was resolved and surgical emphysema was resolved. The patient was weaned off mechanical ventilator on day15.

## Discussion

A massive database describing pediatric foreign body injury in European and other countries, recently published information regarding nearly 17,000 cases in children aged 14 years and younger.<sup>1,2</sup> Many of children may be fed foreign bodies by older children or by abusive adults. Psychiatric problems and mental disturbances are an important risk factor in pediatric age group.

The risk of complications is increased with long sharp

metal objects; a retrospective review found that 50 % of children with confirmed foreign body ingestions were asymptomatic.<sup>3</sup>

Foreign body most commonly impacted in Right main bronchus 49.09% followed by Left main bronchus 31.42% and lastly the trachea 19.49 %.<sup>4</sup>

Around 61.4% FBs are found in the right main bronchus, 31.6% are found in the left main bronchus, 5.3% are found in the trachea, and 1.7% FB was found in the larynx located over false vocal cords.<sup>5</sup>

Pneumomediastinum and subcutaneous emphysema without pneumothorax are uncommon presentation with FB in the airway, the plastic FB with sharp projections pierced the mucosa and went into submucosal tissue making a false passage for the entry of the air into the tissue to develop subcutaneous emphysema.<sup>6-9</sup>

Chest radiography is usually the first diagnostic study ordered, with a reported sensitivity and specificity of 72% to detect abnormalities consistent with an FB aspiration and indicated for all patients suspected of having ingested a foreign body.<sup>3,5</sup> Recent progress in medical imaging, with the development of MDCT has decreased the acquisition time and improved image quality. The 3D images on the basis of multi detector computed tomography (MDCT) can provide virtual tracheobronchoscopy, thereby facilitating the management of bronchial FB in children by replacing RB in doubtful cases.<sup>6</sup>

The best way to manage it is an early diagnosis and a rigid bronchoscopy (RB) removal under general anesthesia used by fully trained staff.<sup>8</sup>

## Conclusion

A timely diagnosis is critical in ensuring the optimal clinical course for patients with suspected FB aspiration. In practice, Rigid Bronchoscopy (RB) should always be performed as a first-line procedure in the presence of a combination of characteristic clinical and radiographic signs. However sometimes the criticality of situation might need alternative ways to relieve the life threatening airway obstruction and

retrieve FB. The associated complications like massive subcutaneous emphysema as we experienced in our patient can be dealt with vigilant observation and conservative management.

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