CHAPTER 33

TRACHEOBRONCHIAL FOREIGN BODIES

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INTRODUCTION

Despite the increasing efforts of physicians, surgeons and public health providers to raise awareness toward its dangers and hazards; inhalation of foreign bodies into tracheobronchial tree continue to be a growing health problem that, if not diagnosed and treated well, carries high risk of complications which may be life threatening. Tracheobronchial foreign body may cause varying amounts of airway obstruction. The obstruction can lead to difficulties with ventilation and oxygenation thus resulting in hypoxic-ischemic brain injury. Moreover, there is the changing face of the nature of the inhaled foreign bodies, its clinical presentations as well as the methods of its extractions.

EPIDEMIOLOGY

There is wide range of variation regarding the rate, age incidence and nature of inhaled foreign bodies worldwide. Foreign body aspiration reported to be the most likely cause of accidental fatalities in children under 1-year-of-age[1]. According to the National Safety Council, in 2016 the rate of fatal choking in American children under 5 years of age in the general population was 0.43 per 100,000. However, an earlier study analyzing non-fatal choking data of children under the age of 14 has revealed a comparatively higher rate of 20.4 per 100,000 population. 55.2% of these non-fatal choking cases in children under 4 years of age[2-4].

The prevalence in young children between 9 months and 5 years of age could be because of their lack of development of full set of teeth specially lack of molars necessary for proper grinding; small caliber of upper airways and the larynx is not fully developed and is still descending in the neck; poor swallowing of food; their tendency to put and play with objects in the mouth; talking, crying, or moving while eating; having weak protective laryngeal reflexes; and having the desire to explore the world through oral contact[5-8].

Foreign body aspiration in adults is more common in the setting of advanced age, underlying neurological disorder, poor dentition, alcohol consumption and sedative use[9]. However, in Islamic countries, where women wear veil, scarf pin is a common foreign body aspirated in young adult females[10-12]. Islamic girls begin wearing headscarves when they start to show secondary sex characteristics, and headscarf pins are special items that young girls and women use to fasten their scarves in place. The pins are held between the lips or teeth while the hands are busy arranging the scarf in position. In this case inhalation occurs by accident if speaking, coughing, laughing or taking a deep breath occurred currently[13-15].

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centre of its tip is withdrawn under direct vision, maintaining the postural drainage. He claim that this minimize the air way trauma and take less time.[20] Elsayed et al. use the binding technique to get the scarfpin when it is impacted on the bronchial wall they instruct that The sheath is advanced and rotated to ensure that its most distal end touched the pin. This could be easily felt by a metal to metal click sensation. Using heavy-toothed forceps, the nearest part to the tip of the pin (the most medial part in the case of medially impacted pins) is grasped. double-check to ensure that only the pin is grasped. The sheath is firmly fixed and slightly pushed distally by the left hand to ensure that it would not be proximally displaced. Sustained forcible traction is applied to the forceps while it is firmly closed. The pin usually offered resistance for 2 to 3 seconds, followed by a sudden release, indicating that the pin is bent and free from the bronchial mucosa. The pin is then withdrawn inside the sheath. While the sheath remains in position in the endobronchial tree. The tracheobronchial tree is then thoroughly examined for any signs of injury or bleeding. The extracted pin then examined to detect any missing parts. Once it is confirmed that the pin was completely removed and the airways were clear and free of bleeding, the sheath is removed to complete the procedure.[37]

There is still a need for new tailored techniques for un-usual foreign bodies with specific nature or impaction.

BRONCHOTOMY AND COMPLICATIONS

A second look bronchoscopy is always advised prior to deciding to do either a thoracotomy or video-assisted thoracoscopic surgical (VATS) removal of the inhaled foreign bodies.

In a report of un-usual foreign bodies in the aero-digestive tracts they define un-usual as foreign body occur less often than 0.5% in a series of more than 1000 cases. Patients require bronchotomy in this series were 2 who had sharp objects (earring and pressure pin) that can't be extracted safely via bronchoscopy and the other 2 were for slippery objects (marble ball and stone) that can't be grasped via forceps.[33] Other reports use surgery in case of unavailable bronchoscopic equipment with large sharp foreign body in the main airway[38] or in case of bronchial injury that require repair either via open surgery or more recent via VATS[39].

Complications of bronchoscopy for foreign body aspiration can occur even with experience. Injury during rigid bronchoscopy can be due to the foreign body itself like in cases of sharp objects or from the manipulations. Most of those injuries respond well to simple chest tube with release incision for surgical emphysema but in cases of major injury with massive air leak, urgent surgical exploration is mandatory.

PREVENTION

Prevention of aspiration of foreign bodies is better than cure. Increasing Public awareness through mass media is needed to reduce the number of accidents and deaths associated with foreign body aspiration. Educational measures recommended by pediatric associations include: safety guidelines on toys for children under 3 years old, avoidance of food chunks, seeds should not be offered to children below four years, sweats should not be offered to children less than three years and diet before one year of age should be smooth and not taken in prone position without supervision.

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