

Inhalation of Pin – A Rare Case Report

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Abstract

A boy aged 1 year presented with persistent cough, sputum and fever for last two months which is not subsiding inspite of antibiotic therapy. For last 15 days symptoms were deteriorating and not responding to medical management. Chest X-ray shows a pin in the right main bronchus with more radiolucency of right lung. CT scan shows radiodense linear opacity in the right lower lobe primary and secondary bronchus with partial collapse consolidation of right lower lobe medial basal and lateral basal segment. Rigid bronchoscopic removal was tried but failed. Ultimately thoracotomy was done to remove the foreign body.

Introduction

In children foreign body aspiration or inhalation is very common [1-3], however may have dangerous complications. Children are very inquisitive in nature, they put everything in their mouth. Foreign body aspiration accounted for 7% of all accidental deaths especially in children under 4 years of age in the US during the year 1986 [4]. About 75% to 85% of all foreign body aspiration occur in children younger than 15 years old; however, most are younger than 3 years of age [5]. Boys are affected more frequently than girls [6]. The common inhaled items are edibles like nuts, beans, seeds, chicken bone and comprises of 75% of cases. Non edible items are not uncommon which includes pin, needles, screws, plastic objects [7]. The scarf pin inhalation has been reported as a cultural hazard in Arab women [7]. Recently the authors have encountered such a case of foreign body (metal pin) which was lodged in right bronchus in one year old child and managed successfully by thoracotomy removal of that pin after failed attempt at bronchoscopy.

Case Report

A 1 year old male baby presented with recurrent chest infection since last two months. His parents could not give any history of specific inhalation or the cause of cough, sputum, fever persisted for last two months. In spite of optimal medical therapy

On examination baby thrived normally with good nutritional status and he is vigorous and active. His pulse rate was 110/min. On auscultation, it was found that there was diminished air entry in the right middle and lower zone of the lungs with few audible rhonchi. No cardiac murmur was present. Haematological and biochemical reports were normal. Chest Roentgenogram PA view showed a pin in the right main bronchus with more radiolucency over right lung indicating air trapping (**Figure 1**). CT scan

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showed radio dense linear opacity in the lumen of right lower lobe primary and secondary bronchus with partial collapse consolidation of right lower lobe medial basal and lateral basal segment. Rest of the lung fields was normal (**Figure 2**). A rigid bronchoscopy was tried for the removal of the foreign body but unfortunately it failed. Then emergency thoracotomy was decided. After opening the thorax by right lateral thoracotomy, right bronchotomy was done and it was seen that, a metallic pin was embedded in the right bronchus which partially obstructing the air entry (**Figure 3**). The pin was removed successfully without any operative complications. There was no leak or bleeding

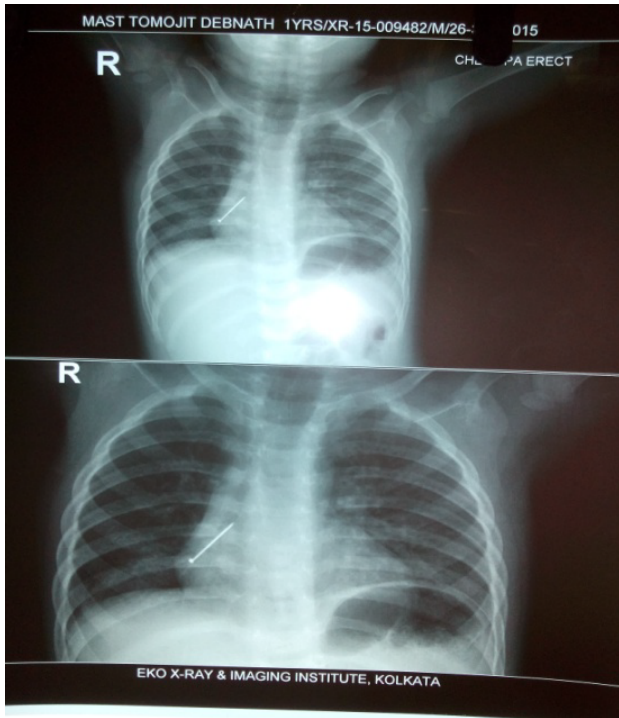


Figure 1 CXR pin in right bronchus.

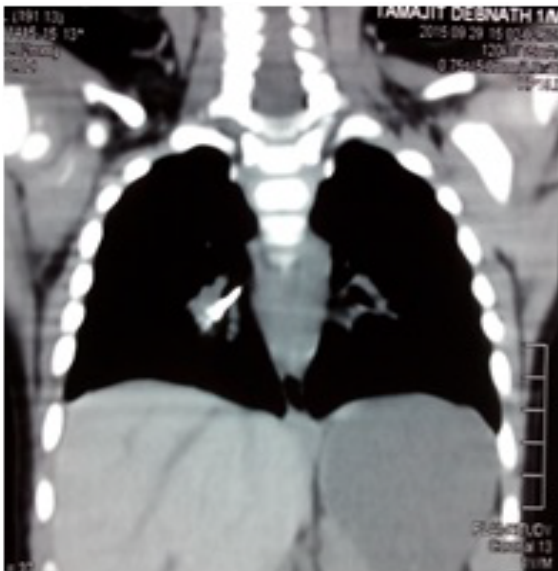


Figure 2 CT chest pin in right lower bronchus.

Most common route of ingestion of foreign bodies is either in the esophagus or in the trachea [8]. Accidental inhaled objects in adult usually lodged in the right bronchus as it is more straight and wide as compare to left one. That's why almost half of the reported cases right side is usually affected [1-3] as also happened in the present case. But in case of very small children both sided bronchus are equally angulated. Two thirds of aspirated objects lodge in main stem bronchi rather than in the distal bronchi [9,10].

In case of metallic object, X-ray is diagnostic. Absence of the classical history and/or physical or radiographic findings may lead to a delayed diagnosis [11]. It has been reported that about 50% of patients with foreign body aspiration do not have a contributing history, and 20% of all children are given medication for other disorders for longer than a month before diagnosis [12-14].

Intra thoracic pin can cause severe complications endangering patient's life. Migration of the pin may cause minor irritation to death of the patient when accidental perforation of vital



Figure 3 CT chest pin in right lower bronchus.

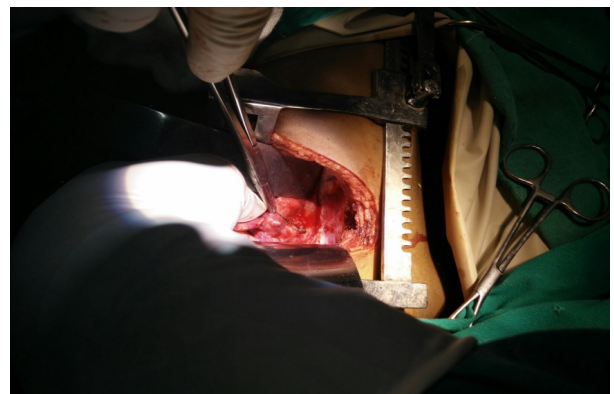


Figure 4 Pin in right bronchus after bronchotomy.

postoperatively. Patient was extubated on table after proper leak testing. Postoperatively patient was doing well and gradually all symptoms subsided. Patient was discharged on 5th postoperative day (Figures 4 and 5).

Discussion

Children inhale or aspirate foreign objects very often. They suffer more due to inadequate dentition and immature swallowing coordination.



Figure 5 Pin after removal.

structures occurs. Several complications has been reported till now like pericardial tamponade, arrhythmias, pericarditis, false aneurysm, aorta-innominate and aorta-pulmonary fistulas, pneumothorax, hemoptysis and subclavian steal syndrome [15]. Two cases has been reported where pin had penetrated the wall of pulmonary artery and aorta without any significant symptom [16,17]. It may cause recurrent haemoptysis to irreversible damage of the obstructed airways or lung parenchyma, which often necessitate emergency surgical exploration. All deaths in such cases mentioned in the literature were caused by catastrophic cardiovascular events [17].

In this case, persistent cough of the baby was due to infection or tissue reaction by the foreign body which partially obstructed

the airway resulting in retention of secretions and persistent infection of corresponding lung segments.

Prompt diagnosis and early management is essential in case of foreign body aspiration to avoid potential; sometimes life threatening complications [18]. Surgical removal is mandatory in case of foreign body specially when the object is metallic to avoid serious complications even in case of asymptomatic patient.

In present case, the pin was aliened in such a way that could not be removed. Surgeon could visualize that metal object but was not able to pull it out, This could be due to surgeon's limited skill or critical distal lodgment of that pin. That is why rigid bronchoscopy was unsuccessful to remove the intraluminal pin.

Retrieval of foreign body depends on site of lodgement, physical nature, efficacy of bronchoscopist, accessibility and feasibility of interventional facilities available. The pin type has also been suggested as an important factor [19]. Rigid bronchoscopy is the choice and preferred over flexible one while attempting for removal of foreign body in a child. Laser has been used now a days but surgery is the last resort when all other procedures are unsuccessful [1,2,3,7,11,20]. Recently thoracoscopy has been employed in foreign body removal but it was not possible in this case due to unavailability of such instrument in the operating room. Thoracoscopic removal is preferred over thoracotomy due to its less invasiveness and early postoperative recovery. However, thoracoscopic removal may fail in case of foreign body where patient then might be subjected to thoracotomy. However this case was successfully managed by thoracotomy removal of that metallic pin followed by uneventful postoperative course.

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