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# Foreign Body Causing Destroyed Lung - The Case of a Missing Tooth

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**About the Author:** Dr Sreekanth is presently working as assistant professor in the department of anaesthesiology and intensive care, Nizams Institute of Medical Sciences, Hyderabad. He did his under graduation from Kurnool medical college and post graduation in anaesthesiology from SV Medical College, Tirupathi. He did his fellowship in cardiac and neuro-anaesthesia from Nizams Institute of Medical Sciences, Hyderabad.

**Abstract:** We report a case of 11 year old girl, who was referred to the hospital with destroyed lung due to an unusual foreign body, the patient's own deciduous tooth. After pneumonectomy, the foreign body was found in the contra lateral lung with nearly catastrophic consequences. The aspects of lung isolation in paediatric age groups, the implications of a foreign object in the residual lung and the attempts to recover it are discussed.

**Keywords:** foreign body; pneumonectomy; one lung ventilation

**Introduction:** Destroyed lung in the post-anti tubercular era is rare in the paediatric population, and should generally raise the suspicion of a foreign body. We report a case of a destroyed lung due to an unusual foreign body- the patient's own deciduous tooth. The implications of a foreign object in the residual lung and the attempts to recover it are discussed. This case has thrown up interesting aspects of the aetiology, diagnosis, intra and post operative management which we discuss.

**Case Report:** An 11 year old girl was referred with a history of cough with expectoration for the past 5 years, increasing steadily over the past 2 years. Sputum was yellow in colour, more in the morning, approximately two teaspoonfuls and with occasional streaky haemoptysis. Patient had low grade fever, night sweats and weight loss and a first degree relative was treated for tuberculosis. There was no history to suggest any foreign body aspiration. She was started on anti tubercular regimen by a local physician after she tested positive on Mantoux test. Despite several evaluations, sputum was negative for acid fast bacilli. Chest excursions on the left were reduced with concomitant tracheal deviation. Percussion notes were dull and vocal fremitus was reduced in all areas on the left. Air entry was markedly diminished with bronchial breathing. The breath holding time was 10 seconds.

Haematological investigations were within normal limits. Chest X-ray (Fig 1) and CT scan of the chest revealed destroyed left lung with bronchiectatic changes and occasional infective changes on the right upper lobe. Bronchoscopy done prior to surgery showed narrowed lumen of left bronchus.

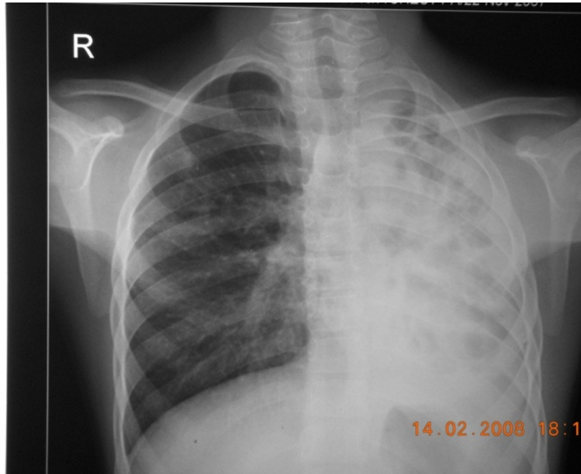


**Figure 1:** Pre operative chest radiograph showing destroyed Left lung.

Left pneumonectomy was planned to alleviate the symptoms, preserve the other lung from spillage, and to interrupt the physiological right to left shunt. Patient was induced with Fentanyl in a dose of 2 mcg/kg body weight, Midazolam 0.25 mg/kg Thiopentone 3 mg/kg and Rocuronium 0.7 mg/kg. Left bronchus isolation was attempted using a Fogarty catheter, since the requisite sized double lumen tube (DLT) was not available. This failed and a 6 mm cuffed endotracheal tube was passed into the right bronchus. The patient was maintained on sevoflurane, $O_2$+air, and infusion of fentanyl at 1 mcg/kg/hr and atracurium at 0.5 mg/kg.

During pneumonectomy through the postero-lateral thoracotomy approach, patient initially had bradycardia and heart rate came down to 35/min, BP fell down to 60/30 mmHg. Atropine was administered to which she did not respond. So she was turned to supine position and adrenaline (0.1mg) was administered. The endotracheal tube was full of secretions for which thorough suctioning was done. The patient's heart rate increased to100/min and BP also improved to120/70. After that episode surgery went on well and the patient was extubated after 2 hours. Post operatively, after 8 hours, there were fall in saturations and bradycardia. She was re-intubated and was revived. Immediate post operative chest radiograph showed a radio opaque shadow in the right lung field (Fig 2).The shadow persisted despite aggressive physiotherapy and postural drainage. Bronchoscopy done subsequently revealed a glistening white object suggestive of a tooth. All teeth, however, were intact on inspection of the oral cavity. The object however could not be removed despite multiple attempts and the patient was discharged. Patient subsequently developed increased cough with expectorations and was readmitted within 2 weeks. CT scan showed the foreign body with collapse of the postero-basal segment of the right lower lobe. Bronchoscopy was repeated. This time the spatial depth of the object was assessed by passing a fibre optic bronchoscope through the rigid bronchoscope and the object was removed through the rigid bronchoscope. It was a canine tooth, probably the deciduous tooth of the patient (Fig 3).

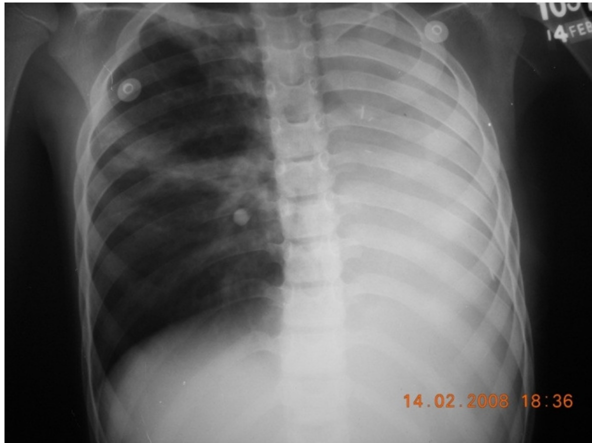


**Figure 2:** Post operative chest radiograph showing opacity in Right lung field

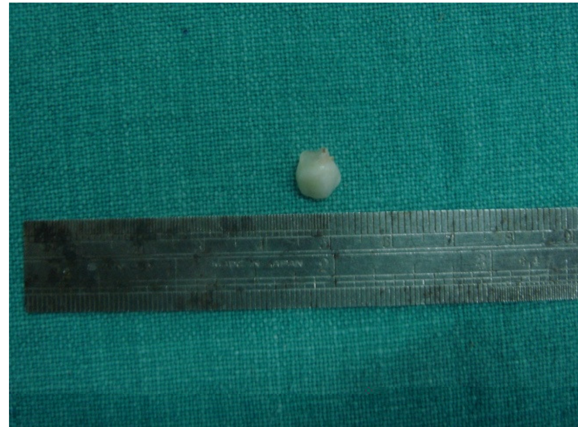

**Figure 3:** Foreign body (Tooth) extracted

The child was followed for 4 months. The cough subsided and there were no new episodes of fever. Patient gained weight and recovered well.

**Discussion:** The above case brings to life several issues. It is common in developing countries to consider destroyed lungs to be a sequel of pulmonary Kochs. However, in the paediatric age group, we feel that it may be due to foreign body unless comprehensively proved otherwise. The history of foreign body aspiration may not be present, and the foreign body may not be visible on radiological investigations, or on bronchoscopy[1]. Even a strongly radio opaque substance like a tooth may be missed in back ground of the destroyed lung or in the cut section of CT Scan[2]. Helical CT with virtual bronchoscopy should be considered in case with suspicion of foreign body aspiration where chest radiograph is found to be normal.[3] Astute anaesthetic management is of paramount importance in these cases. Paediatric patients, though most susceptible, are the subgroup least likely to receive strict isolation due to various technical and hardware issues. Intra-operatively, both surgeon as well as the anaesthesiologist should be aware of the potential problems of spillage of the infected products to the contra lateral side causing instability, or the dis-impaction and migration of foreign body. Both of these may present similarly. During the post operative period too, we recommend a high index of suspicion and early fiber optic bronchoscopy for any retained secretions or foreign bodies. Management of increased cough and secretions in the post resection patient should be seen with a different paradigm. Rather than assuming it to be post operative infection we advocate aggressive active search of etiological factors and early use of higher investigations as CT scan and prompt fibre optic bronchoscopy. Chest radiographs or CT scans are useful adjuncts, however, they have their own limitations, and the residual lungs cannot tolerate even minor compromises too much. In the rare case where it is not possible to isolate the lung, surgeons should consider surgery in prone position with the posterior bronchus first approach. This approach had traditionally been used in the pre DLT era for infected cases, though now they have fallen into disuse. This may be one subset as an indication for this surgical approach. We also highlight that certain foreign bodies, especially round pegs in round holes are most difficult to retrieve. They may require out of the box innovations like a combination of fibre optic and rigid bronchoscopy[4]. Utmost care has to be taken in

retrieving it because dislodgement distally can have disastrous consequences. Thus, destroyed lung in the paediatric age group come with unique set of diagnostic and management issues. Timely diagnosis and appropriate treatment is important to prevent serious complications.[5]

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