

Needle in the Lung: A Difficult Case of a Pulmonary Foreign Body

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Abstract

Introduction: Foreign body aspiration is an emergency condition in children, which can lead to death. Most these foreign bodies are usually removed by bronchoscopy. Straight needle aspiration is a rare condition. Sometimes, there are some difficulties in diagnosis and management of this type of foreign body, especially in children.

Case Presentation: We report a case of a needle aspiration.

Conclusions: For intraoperative localization of foreign body, the C-arm device may be used before broncheotomy to decrease morbidity of the patient.

Keywords: Foreign Body, Aspiration, Surgery, Child

1. Introduction

Despite significant advances in emergency airway management and endoscopic technology, airway foreign bodies still lead to significant morbidity and are an important cause of death in the pediatric population (1). Foreign body aspiration (FBA) most frequently occurs in children up to four years of age. The most common foreign bodies in industrialized countries have an organic origin, such as nuts and grains. Inorganic foreign bodies such as magnets, clips, pen caps, and batteries are common in older children (2). In general, removal of foreign bodies is performed by bronchoscopy. On rare occasions, endoscopic extraction of airway foreign bodies is not feasible or may be associated with a high risk for the patient and open surgery is indicated (1, 3). Here, we describe our difficulties with a needle aspiration and the method in which we found the needle at thoracotomy.

2. Case Presentation

A 9-year-old boy was referred to our emergency ward following needle aspiration. He was visited by a physician in a district hospital who ordered a CXR, which revealed the needle in left hemithorax (Figure 1). His symptom was sporadic dry cough and physical examination revealed unremarkable vitals. He was afebrile with a good condition and without any respiratory distress. The trachea was in a normal position, and chest auscultation revealed no abnormal sounds. In our hospital, CXR was repeated (Figure 2A and 2B) and the patient was taken to an emergency operating room for bronchoscopy. After general anesthesia

and laryngoscopy, we found that bronchoscope's no.6 was suitable for the patient and it was passed from the vocal cords without any difficulty and the airway was evaluated (4). The trachea and both main bronchi were normal and there was no foreign body in them. The trachea were also no inflammatory changes in the airways. A chest X-ray was taken in which needle location was unchanged; therefore, we decided to operate the patient. In a right lateral decubitus position, and the classic chest wall incision was opened through the 6th intercostal space. After entering to the chest, and left lung collapsing by the anesthesiologist, we palpated the lung but nothing was found. Left lower lobe bronchus was dissected free from the adjacent tissue and broncheotomy was performed near the main bronchus. With suitable instruments, bronchus exploration was performed but there was no needle in the airway (Figure 3A and 3B and 3C). Therefore, we decided to use the C-arm X-ray device intraoperatively after marking the left lower lobe via a hemostat. On X-ray, we found the needle in the lung parenchyma near the marker and with squeezing of that part of the lung, needle bottom became extruded and was removed (Figure 4). Then, bronchus was closed. A 32 Fr chest was placed and the chest wall was closed in anatomic layers. After two days, bronchoscopy for the removal of secretions was performed. His chest tube was removed seven days later and the patient was discharged.

3. Discussion

Although foreign body aspiration is rare in adult, it is common in children (5-9), and can be a leading cause of accidental death in children under 5 years of age. About



Figure 1. Chest X-Ray

96% of the patients have a history of foreign body aspiration; so, history taking is of great importance for the diagnosis of FBA (10). Symptoms depend on the nature, location and the degree of obstruction of the airway, and can mimic other diseases such as croup or asthma (11). The classic triad of coughing or choking, wheezing and unilaterally reduced breath sound is present in 57% of the patients in Tan et al. study (1), but physical examination in our patient was normal and X-ray suggested the diagnosis. Aspiration of a straight pin has very low incidence and it is difficult to diagnose and treat. Baharloo showed that out of 113 FBA patients, pins were found only in two patients (12). In literature reviews, there are various methods for straight needle extraction. Rigid bronchoscopy is the method of choice, especially in symptomatic cases but failed bronchoscopy is a challenge for any surgeon (13). Some studies have reported that fiberoptic bronchoscopy is safe for FBA, but the straight needle is an exception (14). In our case, rigid bronchoscopy failed because the needle was lodged in the periphery. Thoracotomy, broncheotomy and thoracoscopy may be needed for management of complicated FBA and are strategic (15-18). In a study by Fraga et al. (19), the authors report a case of an 8-year-old boy presenting with an airway foreign body that was too large to be extracted through the subglottic region. In this case, extraction was accomplished through a tracheotomy under bronchoscopy. Sometimes at operation there are challenges to find the needle and palpation of the lung cannot

be helpful; so, in the next step, broncheotomy is needed as in our case. There are some reports using fluoroscope guidance in fiberoptic bronchoscopy in similar cases before surgical intervention (20). However, there is no report using fluoroscope guidance at surgery in this area and as explained in case presentation it was useful in our case. Further studies are required to ascertain the management of failed bronchoscopy in FBA.

In conclusion, use of the fluoroscope C-arm device before bronchotomy may decrease the morbidity of the patients.

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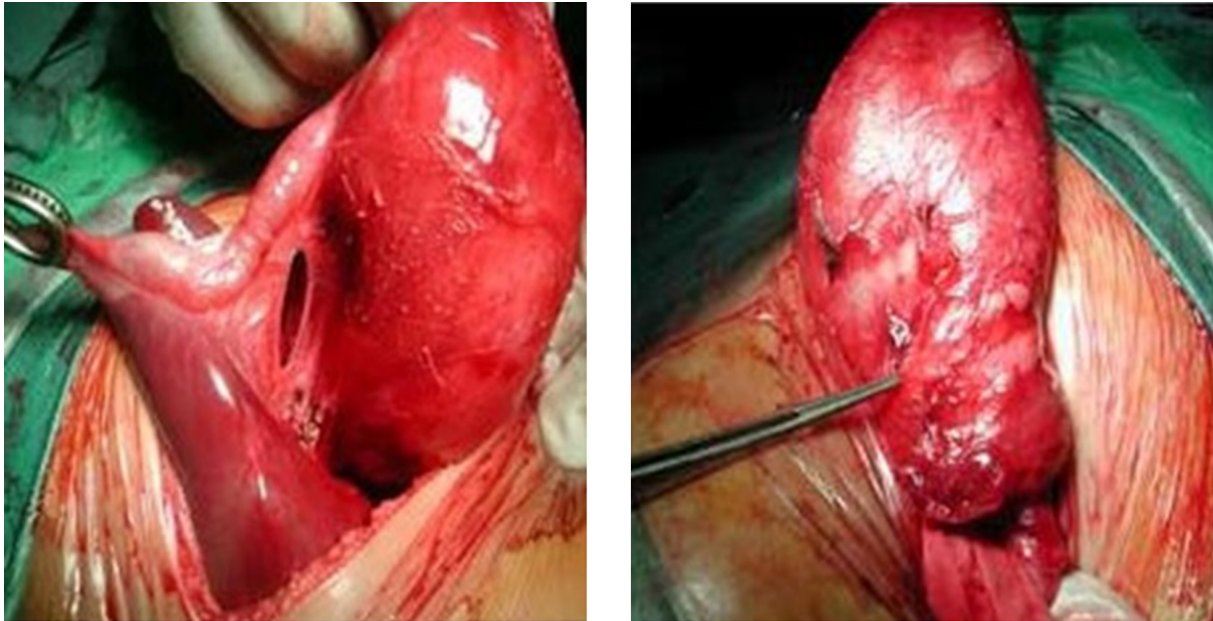


Figure 2. Figure 2.

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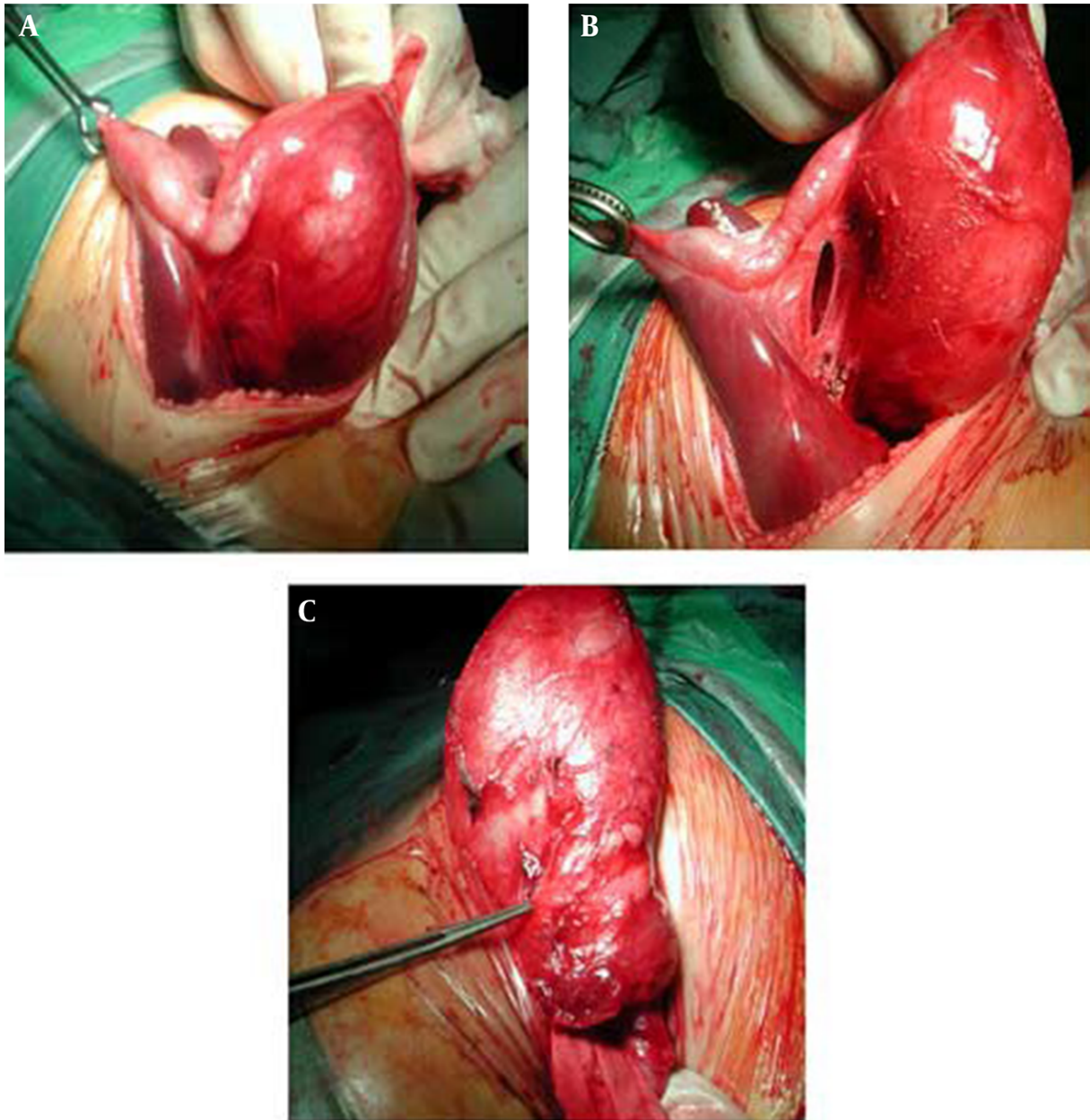


Figure 3. Intraoperative Illustration; A. Exploration of Lung; B. Broncheotomy; C. Marking

