

## Incidental tracheobronchial aspiration of a ball pin in a healthy young professional basketball player - a case report

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**Abstract.** Tracheobronchial foreign body aspiration is a rare condition in a healthy adult who has not any predisposing factors such as diminished mental status and oropharyngeal dysfunction. A variety of items including age, sex, nutritional habitus, socioeconomic level and geographical distribution determines what is aspirated. The aspiration of an ever not reported object will open new horizons of concepts for preventing its following occurrence. A 21-year-old professional basketball player was referred to our center with a 20 hours history of cough and dyspnea after aspiration of a large ball pin. The PA and lateral views of chest X-ray revealed a metal aspirated object in the tracheobronchial tree. Therefore, rigid bronchoscopy was performed for removal of pin lodged in the distal portion of left main bronchus. No complication was occurred and patient was discharged after a few hours.

**Key words:** tracheobronchial aspiration, ball pin, basketball player.

### Introduction

Unlike tracheobronchial foreign body aspiration in both extremes of age groups, its prevalence is rare in adults. This occurrence in adults who are not in advanced ages are mostly associated with decreased level of consciousness or impairment in the swallowing reflex. Such underlying susceptibility are seen in general anesthesia, sedation, poisonings, alcohol consumption, poor dentition, convulsions and neurological disorders affecting normal oropharyngeal function (1-3). Several factors including age, sex, nutritional habitus, socioeconomic level and geographical distribution determine what is aspirated (4). In children, the aspirated material is an easily accessible object like toys, screws and other household items. Among organic materials, nuts, seeds, vegetables and bone fragments are those which are most common in adults (3). However, aspiration of inorganic materials including scarf pins is a subject of concern in girls and women of Islamic societies (5). Inhalation of betel nut in South East Asia, hazelnuts in Turkey and bone fragments among the Chinese are examples of geocultural influence in foreign body aspiration (6-8). The symptoms of foreign body aspiration

vary from remaining asymptomatic to cough, dyspnea, hemoptysis, asphyxia, respiratory arrest and eventually death (9). The current paper represents tracheobronchial aspiration of a ball pin in a professional basketball player which has never been reported in the English literature. We hope that report of this case would provoke proper sports officials' decision on informing athletes about this life-threatening hazard so that this case would be the only one reported forever.

### Case report

A 21-year-old professional basketball player from Ramhormoz, southwest Iran, was referred to our center on June 6, 2012 with a 20 hours history of cough and dyspnea. He said that his symptoms started after a basketball pin aspiration. While holding the pin in his mouth between the incisors of upper and lower jaws, he was distracted by his father shout and abruptly aspirated the pin. After a short episode of repeated coughs, a period of relative quiescent started.

He gradually developed dispersed episodes of dry cough eventually changed into productive ones as well as mild hemoptysis and shortness of breath.

No chocking or fever was reported and the patient could not be able to exactly localize the site of embedment of foreign body. On arrival, he was calm and no cyanosis was visible. His core body temperature was 36.8°C and his blood pressure, respiratory rate and heart rate were 125/80 mmHg, 16/min and 78 bpm respectively. Both sides of the chest wall were symmetrical in shape and expansion. The percussion of both sides revealed equal resonance. However, in auscultation, a hardly audible high-frequent localized sound resembling wheeze was heard on the anterior aspect of left lung with maximal intensity pointed to medial part. The other parts of his physical examination revealed an otherwise healthy young man. Unfortunately, the neglect of his respiratory symptoms and signs had contributed to twice esophagoscopy with uneventful results for finding the object in hypopharynx and upper esophagus. In our center, the radiographs were promptly repeated. The PA and lateral views of chest X-ray showed a large metal aspirated object in the tracheobronchial tree. Despite normal count of anterior ribs in the PA view, the increased distance between ribs in the left side and its mild diminished density both inspired high suspicion of mild hyperinflation of whole left lung. Following confirmed diagnosis, the patient underwent rigid bronchoscopy. Bronchoscope no 3.5 was utilized for removal of pin which was lodged in the distal part of left main bronchus. A large amount of mucopurulent secretion was suctioned while performing the procedure. The patient was observed for a few hours in the ward. No complication was occurred and he was discharged with oral antibiotics.



**Figure 1.** The PA view of chest X-ray revealing a metal sharp object with a pear-shape head in the left main bronchus and mild hyperinflation of left lung



**Figure 2.** The lateral view of chest X-ray demonstrating a sharp metal object in the tracheobronchial tree

## Discussion

Despite the subtleness of symptoms, their acute presentation and the patient's cooperativeness were both key factors affecting early management in our case. Precise history taking in the absence of usual symptoms may contribute to high suspicion of foreign body aspiration in an adult which will prevent late complications including post-obstructive pneumonia, atelectasis, lung abscess, empyema, bronchiectasis, stricture, hemoptysis, polyp formation, and impaired lung perfusion even in patients with apparently innocuous manifestations (10). This is why our case, apart from the image of aspirated sharp metal object and mild hyperinflation of the affected lung, had no further significant sign in the chest radiography. Consideration of tracheobronchial foreign body aspiration in people with minimal alarming symptoms is much more highlighted in adults with no predisposing condition. The chest X-ray is the first paraclinical evaluation in patients who are thought to aspirate a foreign body. If the aspirated object is radio-opaque, it will be demonstrated in the radiography, whereas the radiolucent objects are recognized by their following complications including pneumonia, hyperinflation or atelectasis (3). The frequency of negative radiographs in patients with suspected tracheobronchial foreign body aspiration is reported between 8% and 80% in adults (11). Although not always specific, chest CT-scan is more sensitive than chest X-ray. However, a normal appearing chest CT-scan does not remove the need for further evaluation (12).

Direct visualization of tracheobronchial tree via bronchoscopy has a both diagnostic and therapeutic value. Flexible bronchoscopy is associated with lesser chance of airway tract injury. However, a rigid bronchoscope is usually necessary for foreign body removal (13).

Among sharp inorganic materials, head scarf pins are a common object for tracheobronchial aspiration in adolescent Islamic girls who are newly trained to wear scarf by the beginning of puberty. Because both hands are involved in wrapping and adjusting the scarf around the head, the girls get used to hold a number of pins in the mouth between their teeth and use them one by one to fix the scarf. Loss of concentration which easily occurs while laughing, talking or deep breathing will cause incidental tracheobronchial aspiration of scarf pins (14). Such this process was occurred in our case. The ball pin aspirated was 6 cm in length and had a very narrow lumen without sharp pointed end. Its pear-shaped head was 5 mm in width in the largest diameter. Foreign bodies entering the tracheobronchial tree via the vocal cords, mostly lodge at right main bronchus because it is wider and more in line with the trachea (8,15). In cases of scarf pins, there is a relative predilection for aspirated pins to be embedded in the left main bronchus. The greater negative pressure of left side of the chest cavity following coughing or laughing which directs pins to be lodged in left main bronchus is related to narrower diameter of it than the opposite side (7,14). Regarding its similarities to scarf pins, such this mechanism may be responsible for the embedment of aspirated ball pin in the left main bronchus in the case presented. The possibility of aspirating chewing gum during an intense athletic activity such as playing basketball is supposed to be striking (16). However, to our knowledge, there is no paper presenting its prevalence. Our case was a healthy young man without any conditions having a role in foreign body aspiration. Incidental aspiration of a relatively large ever not reported object while distraction in a professional basketball player who was survived due to his typical presentation and further early management was interesting enough for us to make sports societies be aware of the potential morbidity and mortality following tracheobronchial aspiration of such this object.

## Conclusion

Tracheobronchial foreign body aspiration is a rare but potentially life-threatening condition in an adult. However, the preventable nature of foreign

body aspiration emphasizes educating people how to get rid of its occurrence. The significance of this subject becomes much more obvious when somebody is more prone to such aspiration due to a kind of habit, occupation or activity. Such person would be even a professional basketball player who has used a ball pin for a long period of time without any complication, but this is time to occur!

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Received: 20 June 2012

Accepted: 25 August 2012