



An Unusual Case of Tracheobronchial Foreign Body Aspiration in a Laryngectomized Patient: Rolled Tissue

Nilay Taş¹, Hakan Korkmaz², Özgür Yağan¹, Mukadder Korkmaz², Recep Akgedik³

¹ Department of Anesthesiology, Faculty of Medicine, Ordu University, Ordu, Turkey

² Department of Otorhinolaryngology, Faculty of Medicine, Ordu University, Ordu, Turkey

³ Department of Pulmonology, Faculty of Medicine, Ordu University, Ordu, Turkey

Abstract

Tracheobronchial foreign body aspirations are the most common cause of acute respiratory obstruction and vital health problem that have to be diagnosed and managed immediately. Aspiration can lead to serious consequences up to respiratory arrest, if complete or near complete airway obstruction occurs or intervention is delayed. The existence of tracheal stoma after previous surgeries is an important factor that facilitates foreign body aspiration. In this article we present a case with total laryngectomy who aspirated roll of tissue when he tried to clean tracheal stoma. It is very important to keep in mind the possibility of foreign body aspiration through stoma in tracheotomized patients presented with respiratory compromise. Immediate diagnosis and proper intervention of this situation is life-saving.

Keywords: Tracheal stoma, foreign body, aspiration

(Rec.Date: Oct 08, 2014

Accept Date: Jan 06, 2015)

Corresponding Author: Nilay Taş, Department of Anesthesiology, Faculty of Medicine, Ordu University, Ordu, Turkey

E-mail: drnil.anest@hotmail.com **Phone:** +90 452 2252344 **Fax:** +90 452 2250190

Introduction

Tracheobronchial foreign body aspirations are the leading cause of acute respiratory obstructions. Delayed intervention may cause serious complications such as respiratory arrest, negative pressure pulmonary edema, pneumomediastinum, emphysema, hypoxia and cardiac arrest. If not diagnosed properly, dislodged foreign body in the bronchial tree may lead to chronic complications such as recurrent pneumonia. Although foreign body aspiration can be seen in all age groups, it occurs most commonly in children. The most common foreign bodies aspirated are safety pins, food pieces and other inorganic foreign bodies in the adult age group [1,2]. The existence of tracheal stoma is an important factor that facilitates aspiration [3]. In this article, we report a case with total laryngectomy who aspirated a roll of tissue while he was cleaning the tracheal stoma. We aimed to present this unusual case of foreign body aspiration and emphasize the importance of education of tracheotomized patients and their relatives about proper stoma and cannula hygiene. Informed Consent Form has been taken from the patient for this presentation.

Case

A 55 year old male was admitted to emergency room with the findings of acute respiratory distress. His daughter told that he had aspirated the foreign body through the tracheal stoma. History revealed that the patient underwent total laryngectomy ten years ago and had been survived carcinoma of the larynx. He had prior history of coronary artery disease, hypertension and hypercholesterolemia. At the time of admission, his heart rate was 130/min, blood pressure was 150/90 mmHg, SPO₂ 80% and his respiratory rate was 40/min. On auscultation tracheal stridor has been heard, respiratory sounds were decreased bilaterally and expiration was prolonged. The patient had been oxygenated immediately from his stoma and suction was performed through stoma and nothing but some secretion was aspirated. Peripheral venous line was accessed and NaCl 0,9% infused. Methylprednisolone 80 mg was administered. Only the anteroposterior chest radiograph was obtained, because of acute distress of the patient. Chest graph was not ideal due to improper positioning and because it was not obtained during full inspiration. No foreign body was detected on X-ray (Figure 1). The patient tried to throw away the foreign body by coughing, but he couldn't succeed. Emergency bronchoscopy was planned. While his transfer to the operating room, he threw away the foreign body after a strong cough. The foreign body was 11 cm length and 1 cm

diameter thick textured tissue roll that had been inadvertently inhaled by the patient while he was cleaning the stoma (Figure 2). The patient was observed in emergency unit and evaluated by Otorhinolaryngology and Pulmonology branches. After vital signs were stabilized a short-term training had been given to the patient and his relatives about aspiration risks and stoma cleaning. After follow up of three hours, the patient was discharged.

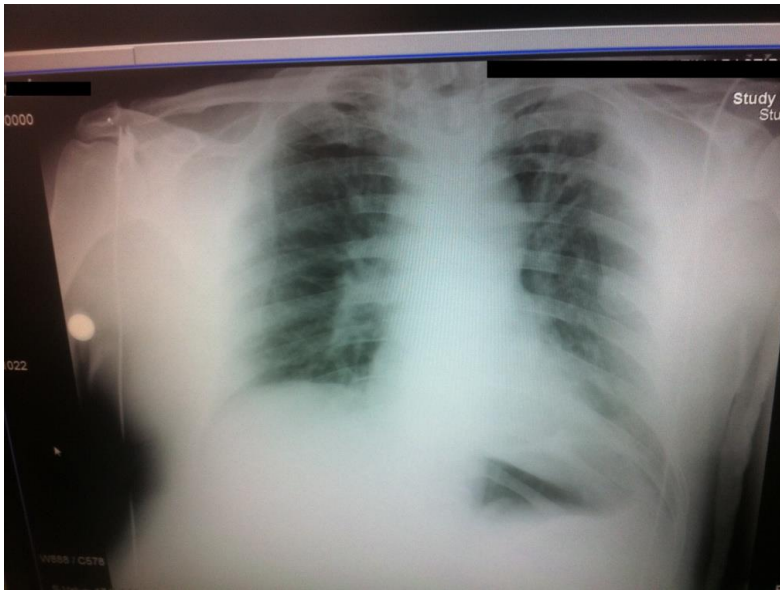


Figure 1. Chest radiography



Figure 2. Rolled tissue

Discussion

Tracheobronchial foreign body aspirations are emergency cases that can be encountered frequently in adults. In the case of tracheostoma, absence of the protective airway mechanisms is the main reason for the foreign body aspirations in adults [3]. Organic substances, safety pins, dentures or different types of inorganic foreign bodies constitute the majority of foreign bodies aspirated to tracheobronchial system in adults. Especially in geriatric age group, some factors like underlying neurological diseases, alcohol consumption, the usage of sedative or hypnotic drugs etc. facilitate foreign body aspiration [2,4,5]. The type of foreign bodies and incidence varies according to age, sex, and sociocultural differences. While inorganic substances like plastics have been encountered in industrial societies, organic substances and foods like nuts are commonly observed as foreign bodies in undeveloped societies [5,6]. The patient's history is important for correct diagnosis and immediate intervention. Mostly the patients or their relatives can express that a foreign body escaped to the respiratory tract with a sudden reflex. However symptoms like dyspnea, cough, hoarseness etc. may give a clue for diagnosis. The size of foreign body and its location are the most important factors that determine the clinical picture and the prognosis. If not intervened early, big foreign bodies may cause acute respiratory arrest. In such cases, cyanosis, loss of consciousness and exitus occur in a short time. Small foreign bodies can also present with symptoms like dyspnea or cough [7]. Chronic foreign body aspiration cases may present with pneumonia, hemoptysis, cough and abscess [4,5,8]. Especially in the cases intervention delayed over 24 hours, the incidence of complications increases. For this reason, early diagnosis is of paramount importance. If there is a partial tracheal stenosis in foreign body aspiration cases, biphasic stridor is observed. If the foreign body has located to main bronchus, key finding is unilateral wheezing [4].

In tracheobronchial aspiration cases, early intervention saves life and one of the most important factor in diagnosis is “to suspect” [9]. In some cases, aspirated material stays in tracheobronchial system for a long time and has been detected causally for other diagnostic procedures not because of causing an important problem. It has been reported that tracheobronchial aspiration must be suspected even in the absence of aspiration history in patients that have unexplained respiratory complaints [9,10]. A chest graph is the first step for visualization of the foreign body. If there is radioopaque substance, posteroanterior direct chest graph may be enough. But to determine the location exactly, lateral and oblique views must be obtained. Normally appearing graph does not exclude foreign body and any suspicion about aspiration must be an indication for bronchoscopy [6,7]. In our case no foreign body image or finding was detected in anteroposterior graph because the aspirated material was not radioopaque. But the history of aspiration was sufficient for bronchoscopy. In retrospective review of the literature, it has been reported that different materials including mostly cannula pieces had been aspirated to tracheobronchial system in laryngectomized patients with permanent stoma. Negative intrapleural pressure gradient facilitates foreign body aspiration around the stoma by vacuuming during deep respiratory or coughing bouts in laryngectomized patients [11]. This group of patients can aspirate some objects which they use for sanitation according to their socio-cultural status [12]. Şentürk et al. presented a laryngectomized case who aspirated the silicon tracheostomy cannula. The patient was admitted to emergency unit, but no finding was detected on his physical examination and radiograph. The aspirated cannula had been detected at the left main bronchus in his thoracal computerized tomography which didn't cause obstruction and the cannula was removed by bronchoscopy. Radiographic visualization methods may not be enough in diagnosis of foreign body aspiration and in such cases bronchoscopy pretends as life saver for diagnosis and

treatment [2]. In their article Hırçın et al. reported a total laryngectomized patient who aspirated the inner part of tracheostomy cannula and they stated this kind of aspiration cases as infrequent and laryngectomy is a potential risk factor for foreign body aspirations [13]. Tracheobronchial foreign body aspirations are emergency cases carrying the risk of death of the patient. Spontaneous expulsion of the foreign body without an intervention has been reported in the literature but these cases are rare. In a case reported by Jaiswal et al., an 18 years old patient who inhaled a pin was going to be operated by bronchoscopy, but just before the surgery the patient experienced a spell of cough and exhaled the pin spontaneously [14]. Our case also aspirated a tissue to the tracheobronchial system with a sudden reflex action while he wanted to make stoma sanitation by putting a rolled tissue in his stoma. A similar stoma cleaning and aspiration case was presented by Uzaslan et al., the patient aspirated a cotton wrapped on the tip of bough while he was cleaning the secretions around the stoma and aspirated material had been removed by bronchoscopy [11]. In most cases of the foreign body aspirations, history, physical examination and roentgenographic evaluation are enough to reach a diagnosis. But if the patient has a pulmonary disease or if the patient does not demonstrate adequate clinical signs, bronchoscopy may be necessary for the diagnosis [15]. Although, most of the time it is possible to remove the foreign bodies aspirated to tracheobronchial system by bronchoscopy, in some cases thoracotomy and direct surgical removal may be necessary especially for sharp-edged substances [3]. The patients who aspirated a foreign body, can remove the substance by coughing strongly but this may not be possible every time [10]. After aspiration of such a big material, rapid arrival of the patient to the hospital and self-removal of the substance by strong coughing are the most important two factors that decreased morbidity and mortality in our case.

Conclusion

In conclusion, in patients with tracheal stoma, foreign body aspiration is a real possibility. Materials used for stoma or cannula hygiene can be aspirated through the stoma in to the tracheobronchial tree. These patients and their relatives must be educated about the proper stoma and cannula hygiene and informed about the potential risks for foreign body aspiration.

Conflict of interest - financial support

The authors declare that they have no conflict of interest or any financial support.

References

1. Ripley DP, Henderson AK. A case of bronchial aspiration: the importance of early diagnosis and clinical suspicion. *Prim Care Respir J.* 2007;16(3):191-3.
2. Şentürk E, Şen S. An unusual case of foreign body aspiration and review of the literature. *Tuberk Toraks.* 2011;59(2):173-7.
3. Nwilo J, Fortson J. Aspirated foreign body in a laryngectomized patient: case report and literature review. *Ear Nose Throat J.* 2001;80(10):744-6, 748.
4. Çapan N, Alıcı İÖ. Trakeobronşiyal yabancı cisim aspirasyonu. *Solunum Hastalıkları Dergisi.* 2009;20(1):39-42.
5. Kurul İC, Yorgancılar CD, Çelik A, Karakurt Ö, Demircan S. Trakeobronşiyal yabancı cisim aspirasyonları; 25 olgunun analizi. *Gazi Tıp Dergisi* 2009;20(1):13-6.
6. Gürsu S, Sırmalı M, Gezer S, Fındık G, Türüt H, Aydın E, Kaya S, Taştepe İ. Tracheobronchial foreign body aspirations in adults. *Turkish J Thorac Cardiovasc Surg.* 2006;14(1):38-41.
7. İlçe Z. Tracheobronchial foreign body aspiration in children. *Kocaeli MJ.* 2012;2:47-54.
8. Oka M, Fukuda M, Takatani H, Nakano R, Kohno S, Soda H. Chronic bronchial foreign body mimicking peripheral lung tumor. *Intern Med.* 1996;35(3):219-21.
9. Tuncer LY, Baysungur V, Tezel Ç, Sulu E, Taşolar O, Öz E, Yılmaz A. İki erişkin hastada rastlantısal olarak saptanan bronşiyal yabancı cisim aspirasyonu. *Göztepe Tıp Dergisi.* 2012;27(1):41-4.
10. Zubairi AB, Haque AS, Husain SJ, Khan JA. Foreign body aspiration in adults. *Singapore Med J.* 2006;47(5) :415-8.

11. Uzaslan E, Ursavaş A, Ediger D, Karadağ M. An unusual way of tracheal stoma cleaning could end up with foreign body aspiration in a laryngectomized patient. *Tuberk Toraks*. 2005;53(1):61-4.
12. San I, Alataş N, Iynen I. An unusual tracheobronchial aspiration in a patient with total laryngectomy. *Kulak Burun Bogaz Ihtis Derg*. 2002;9(2):139-41.
13. Hircın Z, Eskiizmir G. Inner cannula aspiration in a laryngectomized patient: a case report. *J Med Updates*. 2013;3(2):96-7.
14. Jaiswal AA, Garg AK. Spontaneous expulsion of foreign body (sewing machine needle) from right middle lobe bronchus - a rare case report. *J Clin Diagn Res. J Clin Diagn Res*. 2014;8(8):KD01-2.
15. Köse A, Kostak D, Aramagan E, Durak A, Seçkin NS, Dönmez SS, Melek H. Tracheobronchial foreign body aspiration: dental prosthesis. *Case Rep Pulmonol. Case Rep Pulmonol*. 2014;2014:465856.