
An unusual way of tracheal stoma cleaning could end up with foreign body aspiration in a laryngectomized patient

Esra ÜZASLAN, Ahmet ÜRSAVAŞ, Dane EDİGER, Mehmet KARADAĞ

Uludağ Üniversitesi Tıp Fakültesi, Göğüs Hastalıkları Anabilim Dalı, Bursa.

ÖZET

Larenjektomili bir hastada yabancı cisim aspirasyonu ile sonuçlanan trakeal stoma temizliği

Bu olgu sunumunda, yabancı cisim aspirasyonlarının oldukça olağan dışı bir şekli olarak, larenjektomili bir hastanın trakeal stomasından ağaç çubuğu aspirasyonunu sunmayı amaçladık. Olgumuz, ucunda zeytinyağına batırılmış pamuk olan ağaç dalını trakeostomi deliğinden geçirerek üst solunum yolu sekresyonlarını temizlemeyi alışkanlık edinmişti. Hastaya trakeostomi deliğinden aerosol lidokain verilerek yapılan lokal anesteziyi takiben fleksibl fiberoptik bronkoskopi uyguladık ve 11 cm'den daha uzun bir ağaç dalını dışarıya çıkardık. Bronkoskopiye takiben hastanın yakınmaları düzeldi. Bu tür olgularda deneyimli bir ekip ve uygun bronkoskopi aksesuarlarının bulunması durumunda lokal anestezi altında fleksibl fiberoptik bronkoskopi uygulanmasının emniyetle yapılabileceğini gördük. Aynı zamanda bize bu olgu, kulak burun boğaz uzmanlarının ve larenjektomili hastaları takip eden diğer hekimlerin hastalarını stoma temizliği hakkında eğitimlerinin ve hata yapmaları sonucunda hayatı tehdit edici durumlar ile karşılaşabilecekleri konusunda bilgilendirmelerinin önemini gösterdi.

Anahtar Kelimeler: Trakeal stoma, yabancı cisim aspirasyonu, ağaç çubuğu.

SUMMARY

An unusual way of tracheal stoma cleaning could end up with foreign body aspiration in a laryngectomized patient

Üzaslan E, Ürsavas A, Ediger D, Karadağ M

Department of Chest Diseases, Faculty of Medicine, Uludağ University, Bursa, Turkey.

We report a case of a laryngectomized patient who accidentally aspirated a wooden stick through his tracheal stoma in highly unusual circumstances. He was in a habit of cleaning secretions of upper airway with a wooden stick covered with cotton on the tip soaked in olive oil, via tracheostomy. After applying topical aerolized lidocaine spray through the tracheostomy stoma a flexible video-bronchoscopy was performed and a tree twig over 11 cm in length was removed. The patient's symptoms were resolved by a bronchoscopy. With experience and availability of accessories, the removal of the foreign body using flexible bronchoscope under local anesthesia can be performed safely and successfully. This case suggests that the physicians and otolaryngologists should educate their laryngectomized patients about stomal care and discuss any potential life-threatening situation they might encounter.

Key Words: Tracheal stoma, foreign body aspiration, wooden stick.

Yazışma Adresi (Address for Correspondence):

Dr. Ersu ÜZASLAN, Uludağ Üniversitesi Tıp Fakültesi, Göğüs Hastalıkları Anabilim Dalı, 16059, BURSA - TÜRKİYE
e-mail: esrauz@uludag.edu.tr

Aspirated foreign bodies (FBs) continue to present challenges to accident and emergency department physicians, otolaryngologists and pulmonologist. The major issues involve the accurate diagnosis, rapid and safe retrieval of the FB (1,2). FB aspiration has a frequent and serious life-threatening potential in young children, but not in adults. Usually in adults the object is expelled spontaneously by coughing following the aspiration, but endoscopy is sometimes required to secure the airway and to remove the FB. The presence of a permanent tracheal stoma in a laryngectomized adult is a predisposing factor for FB aspiration (3). The use of a rigid bronchoscopy to remove an aspirated object can be difficult in these patients, and a high percentage of them require a thoracotomy. We report a case of a laryngectomized patient who accidentally inhaled a tree twig through his tracheal stoma under highly unusual circumstances.

CASE REPORT

A 65-year-old man, who underwent total laryngectomy 9 years ago for a squamous cell carcinoma of the larynx, was admitted to emergency service complaining of aspiration a wooden stick. He was in a habit of cleaning secretions of the upper airway, with a wooden stick covered with cotton on the tip soaked with olive oil, via tracheostomy. However, at this time the tree twig has broken and slipped into the trachea via the stoma and stuck in trachea. The patient was admitted to emergency department with coughing, dyspnea, sputum, hemoptysis and the feeling of a FB. He had sonor rhonchi and crepitations in both lungs. He was generally well except for anxiety over the then life-threatening situation, and did not have fever or signs of infection. The chest X-ray was normal.

After applying a topical aerolized lidocaine spray through the tracheal stoma a flexible video-brochoscope was introduced and the FB was observed in the left side of the trachea above the carina (Figure 1). When the FB was visualized, through the use of an instrument port, the forceps was used gently to grasp the object for retrieval. The FB was dislodged twice towards the carina, and at the third attempt was removed

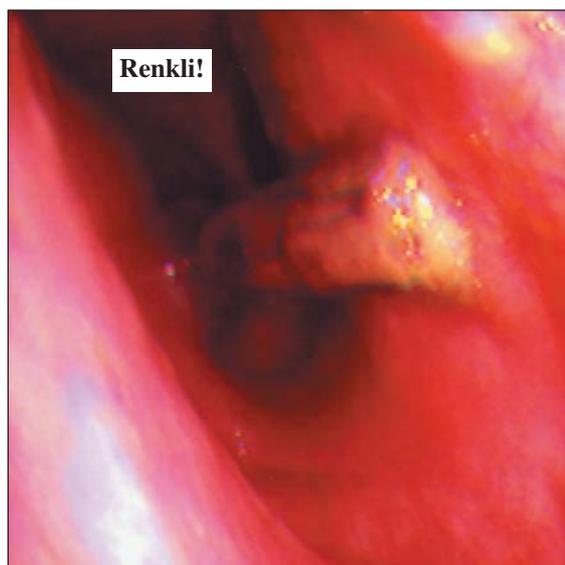


Figure 1. FB, in the left side of the trachea above the carina, visualized via flexible video-brochoscope.

completely with the bronchoscope. The object was quite large in length and width. Therefore, the fiber optic bronchoscope, forceps and the object itself was removed as an single unit. It was quite surprising to discover the length of the stick was over 11 cm as seen in Figure 2. The patient tolerated the procedure unexpectedly well and was discharged following day.

DISCUSSION

Laryngeal and tracheal FB aspiration into the tracheobronchial tree is quite rare in adults, but the presence of a permanent tracheal stoma in a laryngectomized adult is a predisposing factor for FB aspiration, as are other conditions that impair normal protective airway mechanisms (2,3). Limper and Prakash identified several of these predisposing conditions, including primary neurologic disorders, a loss of consciousness from trauma, and the use of sedatives or alcohol (2). In their series, 41.7% of the patients had at least one of these impairments of their protective airway mechanism. Although only seven cases of aspiration in patients with a permanent postlaryngectomy tracheal stoma have previously been published, we think that the presence of such a stoma should be added to the risk factors for foreign body aspiration in adults (3-10). Such an aspira-



Figure 2. FB after removal, the length of the stick was over 11 cm.

tion can easily cause significant morbidity if not managed properly.

A FB is usually removed by bronchoscopy. Rigid bronchoscopy is generally preferred in the removal process, particularly in children, and allows the surgeon to maintain an airway for ventilation during the procedure. The use of a rigid bronchoscopy to remove an aspirated object can sometimes be difficult in patients with a permanent stoma, with a high percentage of these requiring a thoracotomy, especially for the removal of sharp objects such as pins, wild barley, coarse cloth or a fractured tracheostomy tube (8,11-14). Depending on the nature and location of the FB, flexible bronchoscopy might initially be attempted. If the endoscopic extraction of airway FBs is not feasible or is associated with significant risk to the patient, surgery is indicated.

Removal of an FB from the airway is an emergency and represents a considerable challenge to the skill of the endoscopist. The possibility of dislodgment is the great concern during the removal of the FB, since a dislodged body could slide to the previously patent mainstream bronchus while the other air passage is still obscured due to inflammation, or the residual part of the FB (15). With increasing experience and development of better accessories, removal using a flexible bronchoscope under local anesthesia

can be performed safely and successfully. Review of a large series of FB removal indicates a success rate of 86% in more than 400 procedures with flexible bronchoscopy (16,17-20).

The retrieval of FBs has been facilitated by technical improvement with video endoscopy, a broad variety of sized forceps and safer anesthesia. The key to removing FBs lies in being able to secure the object adequately by grasping or enclosing with a forceps or basket (16). Once the object is snared, all three items (bronchoscope, grasping instrument, and FB) are removed from the patient simultaneously. Post bronchoscopic complications occur in 5% of cases and are usually a secondary to FB inflammatory reaction. These reactions include atelectasis, pneumonia, retained fragments, vocal cord swelling, bronchospasm or laryngospasm, pneumomediastinum, bleeding from the FB perforation and arrest (21,22).

Miscellaneous aspirated objects have been reported worldwide, although the most frequent are nuts, vegetable matter, bones, metal and plastic objects, or pills. There are also many unusual objects such as doll shoes, safety pins, turban scarf pins, plastic spoons, fishing weight, cockroaches, straight pin, or iron pill, tetracycline and sucralfate tablet, and plastic whistle. To our knowledge, there has been no previous report in the literature of a wood branch exceeding

11 cm in length aspirated via tracheostomy. One of our aims to reporting the case is that since a FB as long as 11 cm can be removed safely by FOB with the assistance of video endoscopy via tracheal stoma, a pulmonologist might prefer to use this way before selecting the more invasive methods in laryngectomized patients. We also have reported this case to suggest that otolaryngologist, family practioners and physicians who follow up laryngectomized patients may wish to discuss the importance of stomal care with their laryngectomized patients. A laryngectomized patient with a permanent tracheal stoma should realize that the stoma is now part of their airway. The stoma renders direct and easy access to their lower tracheobronchial tree, and also increases the risk of FB aspiration. Patients should also know that the negative intrapleural pressure gradient that is generated during deep breathing or paroxysms of coughing might cause a vacuum effect, which can also facilitate the aspiration of an object held loosely around the stoma (3). Laryngectomized patients use a variety of tools for tracheostomy cleaning, some of which may vary greatly depending on their sociocultural status. The use of inappropriate tools may lead to complications. Our case illustrates the need for detailed and consistent education of laryngectomy patients on proper stomal cleaning and on the associated complications that may arise from the use of inappropriate tools. An emphasis on patient education regarding the handling of objects around the stoma in laryngectomized adults is key to preventing aspiration and its complications.

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