

# Accidental discovery of foreign body aspiration through tracheostomy inlet

*Descoperirea accidentală a unei aspirații de corp străin pe orificiul de traheostomie*

## Abstract

The risk of foreign body aspiration is significantly higher in patients with permanent tracheostomy due to bypassing the larynx and natural barriers. We present the case of a 60-year-old patient with a larynx tumor surgically removed in 2013 and permanent tracheostoma, who refused to wear a cannula. He addressed the emergency room for symptoms of arterial hypertension, and presenting dyspnea, headaches and cough. During the examination, a chest X-ray was indicated and two irregular right supraclavicular opacities were discovered. He was redirected to our pulmonology clinic for specialized investigations under the suspicion of pulmonary metastasis. The fibro-bronchoscopy showed a soft process on the internal wall of the left main bronchus (LMB), bleeding easily on touch. Biopsy showed inflammatory tissue with no tumoral aspects. The CT examination showed a metallic foreign body (approximately 4 cm long) enclaved in the LMB wall, piercing it and missing the left pulmonary vein by millimeters. Under general anesthesia, an attempt of extraction via fibro-bronchoscopy was successful. It amazed us to learn that the foreign body was a green syringe needle (gauge 21) probably aspirated 3 years ago during a post operator routine tracheostoma cleansing.

**Keywords:** foreign body, bronchial endoscopy, bronchoscopy removal, tracheostoma foreign body

## Rezumat

Riscul de aspirare a unui corp străin în căile respiratorii este semnificativ mai mare la pacienții cu traheostomă, din cauza lipsei barierei bucale și laringiene și a protecției suplimentare a acestor structuri anatomice. Prezentăm cazul unui bărbat, în vârstă de 60 de ani, cunoscut în antecedente cu o tumoră laringiană extirpată chirurgical în 2013, cu traheostomă permanentă pentru care a refuzat să poarte o canulă. Acesta se adresează Serviciului de Urgențe (UPU) pentru simptome sugestive unei decompensări cardiovasculare, prezentând hipertensiune arterială. După tratamentul crizei hipertensive, se indică explorare radiologică. La radiografia toracică se decelează două opacități supraclaviculare cu contur neregulat, la nivelul câmpului pulmonar drept, motiv pentru care este trimis la Clinica de Pneumologie pentru continuarea investigațiilor, suspiciunându-se metastaze pulmonare secundare neoplasmului laringian. S-a efectuat examen computer-tomografic, care a decelat un corp străin endobronșic cu structură metalică, enclavat în bronhia primitivă stângă. Examenul fibrobronhoscopic efectuat în Clinica de Pneumologie a pus în evidență corpul străin și l-a extras, acesta fiind un ac de seringă (gauge 21) care a fost, probabil, aspirat în timpul efectuării toaletei orificiului de traheostomă de către personal insuficient pregătit.

**Cuvinte-cheie:** corp străin endobronșic, fibrobronhoscopie, endoscopie bronșică, extragere corp străin, traheostomă

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## Introduction

Always an emergency, the foreign body aspiration into respiratory airways is a life-threatening condition that has to be managed by skilled medical professionals and followed-up in order to insure that no immediate or short-term complications can endanger the patient's life.

Intrabronchial foreign bodies can be successfully extracted in the bronchoscopy compartment, using rigid but also flexible endoscopy<sup>(1)</sup>, the latter gaining more ground as a variety of tools have been developed and used but not always as efficient as rigid bronchoscopy.

The most susceptible population group to foreign body aspiration are children, followed by elderly patients and debilitated ones, and the diagnostic is often missed due to the patient's impossibility to verbalize or the symptoms being misinterpreted<sup>(2)</sup>.

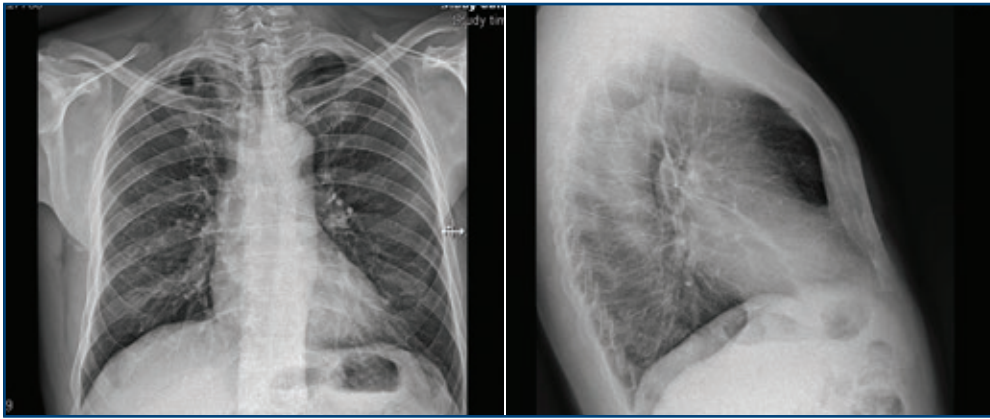
The aspiration of foreign bodies through the tracheostomy inlet is uncommon, but the risk is significantly higher since the natural barrier of the larynx is

bypassed. The removal of a foreign body through the tracheostomy orifice is difficult because it cannot be performed by rigid bronchoscopy and the only option available is the flexible bronchoscopy. Usually, these patients must be referred to the surgery department and the foreign body must be removed by thoracoscopy<sup>(3)</sup>.

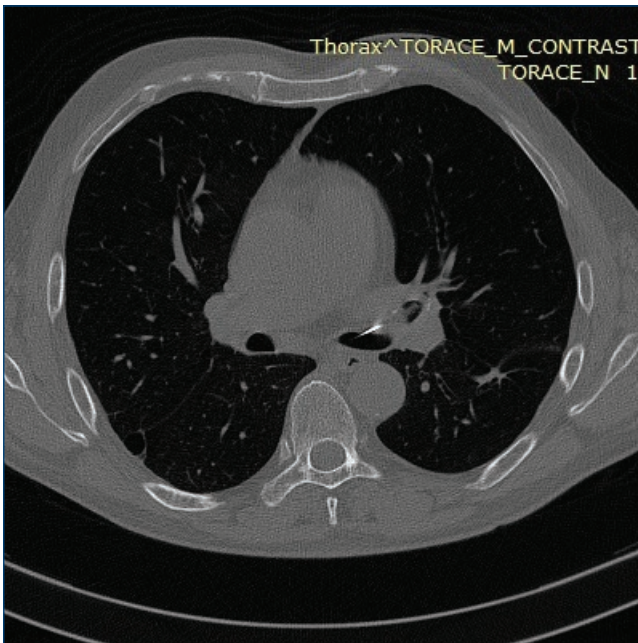
## Case presentation

We present the case of a 60-year-old man, with a history of smoking (40 Pack Years), alcohol usage, recently retired, who suffered a laryngectomy roughly three years prior to presentation because of a larynx tumor removal in 2013. He was instructed to wear a tracheostomy cannula (which the patient refused, invoking personal reasons) and to perform the daily toilet of the tracheostomy orifice with NaCl 0.09% serum.

He was initially addressed to the Emergency Room (ER) for symptoms of arterial hypertension (headaches and drowsiness, dizziness and dyspnea). At presentation, he had a blood pressure (BP) of 210/110 mmHg, a



**Figure 1.** Chest X-ray: two irregular right supraclavicular opacities



**Figure 2.** Thoracic CT scan showing a metallic foreign body enclaved in the left main bronchus

heart rate (HR) of 112 beats per minute (bpm) and a periferic O<sub>2</sub> saturation of 97% in the ambient air. A chest X-ray was recommended in the ER, as he also declared sporadic episodes of hemoptysis. Two irregular right supraclavicular opacities were detected, so he was redirected to the pulmonology clinic for specialized investigations with the suspicion of pulmonary malignant disease.

In the Pneumology Department he was admitted with the suspicion diagnostic of pulmonary metastasis from larynx cancer (his recent history of hemoptysis sustained this diagnostic), and a complete set of blood investigations were conducted, with normal laboratory values. The chest X-ray was repeated and besides the opacities already described in the ER we were able to detect the presence of a linear oblique trajectory opacity, overlapping the aorta, in immediate vicinity of the left hilum. Also, from the anamnesis we found out that our patient had a history of tuberculosis in the early '90s, leading to a differential diagnostic of the right apical opacities with TB sequelae.

A thoracic CT scan was indicated and, surprisingly, the linear opacity detected by chest X-ray turned out to be a foreign body. The object appeared to be metallic, approximately 4 cm in length, enclaved in the left main bronchus (LMB) wall, piercing it and missing the left pulmonary vein by millimeters (Figure 2). The apical opacities were described as tuberculosis sequelae. A flexible bronchoscopy through the tracheostomy inlet was performed with the inspection of the left main bronchus LMB. We discovered a metallic needle, with foreign body granuloma surrounding it and partial bleeding while attempting to mobilize it. In order to facilitate the extraction, the patient was sedated and monitored by the Intensive Care Unit (ICU) personnel.

After multiple attempts of mobilization and traction, we extracted a syringe needle (gauge 21) probably aspirated 3 years ago during a postoperative routine tracheostoma cleansing. The patient was monitored in the ICU for two more days and received aerosols with hyaluronic acid and sodium chloride, intravenous antibiotics (cefuroxime) and dexamethasone. An otorhinolaryngology examination was also conducted and showed no signs of larynx tumor relapse, but re-stated the importance of wearing a cannula for the tracheostomy orifice. He was discharged after 5 days with no signs of hemoptysis or any respiratory symptoms. After one month, the patient was recalled for reexamination and the flexible bronchoscopy conducted showed no signs of sequelae lesions at the extraction site.

## Discussions

The consequences of sharp foreign body aspiration could have been fatal for this patient in both short-term and long-term. The proximity to the main blood vessels and the risk of puncturing during a cough episode was extremely high and with no predictable positive evolution. Although the risk of foreign body aspiration is considerably high in patients not wearing a tracheostomy cannula and performing the tracheostomy orifice toilet on their own, the literature presentation of similar cases is scarce. It appears that accidental aspiration occurs while trying to perform the cleansing of the cannula, meaning that doctors must focus more on explaining the risks and assuring the correct cleansing technique while instructing the patients on discharge.



**Figure 3.** The Foreign body extracted

## Conclusions

Every foreign body aspiration, regardless of its nature, is an emergency and needs immediate treatment. This case particularity consists in the origin of the foreign-body – a syringe needle (most probably aspirated during a routine tracheostoma cleansing) and the fact that, given its aspect, the endobronchial granuloma, and the fact that our patient had no memory of an aspiration episode and no respiratory symptoms for 3 years, it had been probably aspirated long before its discovery. The position in the immediate vicinity of the left pulmonary vein made it susceptible of a dramatic puncture that, most probably, would have led to massive internal bleeding and death.

As showed in other cases, the patients and their relatives need to be more careful and should receive better training for the tracheostomy inlets care, as a foreign body aspiration can be fatal or have unwanted consequences that can impair the patient even more<sup>(4)</sup>. ■

**Disclosure:** The authors take full responsibility in the information presented in this article and acknowledge they have the written consent of the patient to publish the medical data in this paperwork.

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