

Delayed Presentation Injury of Descending Aorta and Bronchus Due to Sewing Needle Penetration: A Case Report

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ABSTRACT

We report a case of a tracheal foreign body caused by a sewing needle. After about four months, the patient showed delayed dry cough and hemoptysis. The sewing needle that pierced the tracheal wall damaged the aorta, and we performed endovascular stenting to prevent arterial bleeding and removed it under a bronchoscope. The patient smoothly recovered after the operation. This case proves that treatment strategies for patients with foreign bodies in the trachea can be individualized.

INTRODUCTION

Tracheal foreign bodies are common airway emergencies, often manifested as asphyxia and coughing, requiring urgent treatment due to their life-threatening nature. Most are caused by aspiration in children, while adult cases are common in patients with tracheotomy [Bajaj 2021; Huankang 2012]. Foreign bodies that damage the chest wall or back may migrate into the trachea, and their symptoms often appear delayed [Dogon 1999]. We report the case of a tracheal foreign body caused by a sewing needle that punctured a man's back. After about four months, a foreign body was found in the left main bronchus. Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

CASE REPORT

A 54-year-old male patient suffered from recurrent slight dry cough for more than half a month without proper attention. The patient was transferred to the emergency room in our hospital because of bloody sputum when he coughed. Vital signs were stable, and no obvious trauma was found. Chest enhanced computed tomography (CT) showed a foreign body was in the lumen of the left main bronchus, and it

looked like a metallic needle. Its tip was closely adjacent to the wall of the descending aorta, where hematomas had formed. (Figure 1) Transthoracic echocardiography was normal, and blood test results were normal except for hypersensitivity C reactive protein (14mg/L). The patient developed sudden massive hemoptysis one hour after entering the emergency room. Considering the urgency of the disease, we immediately decided to perform endovascular stenting in the hybrid operating room to prevent arterial bleeding and remove the foreign body under bronchoscope. The operation was performed under general anesthesia and endotracheal intubation. Endo-aortic angiography showed that a needle was located near the descending aorta, and the tip of the needle was close to the vascular wall. A 28 * 150 mm Medtronic stent was implanted into the descending aorta via the right femoral artery. The distance from the distal end of the stent to the acupuncture site was about 7 cm. (Figure 2) Bronchoscopy was then performed by respiratory physicians. The metal needle was cut off by holmium laser and taken out in sections. It was a sewing needle with an entire length of about 36 millimeters. (Figure 3) After the sewing needle was taken out to family members, his family recalled that the patient's back was injured by a needle four months prior, but the pain was relieved for a short time. So, the patient did not go further into the whereabouts of the needle. The patient was discharged one week after surgery without infection.

DISCUSSION

Tracheal foreign body is a common respiratory emergency in pediatrics, and it occurs less frequently in adults. The clinical manifestations often are asphyxiation, cough, and hemoptysis that urgently appear, and it generally requires emergency treatment [Huankang 2012; Chen 2021]. There also are a few reports that showed asymptomatic or delayed appearance of symptoms [Gentili 2005; Saquib 2005]. In this case, the sewing needle entered the body four months prior without the patient realizing it. There was no obvious discomfort until a recent and slight cough.

For the treatment of foreign bodies in the trachea, bronchoscopy routinely is used for diagnosis and treatment [Bajaj 2021; Farrell 2004; Athanassiadi 2000]. But in this case, the foreign body that pierced the bronchus partially penetrated the aorta, and chest-enhanced CT showed the formation of hematomas around the aorta. Removal of foreign bodies under bronchoscopy may cause hemorrhage and even

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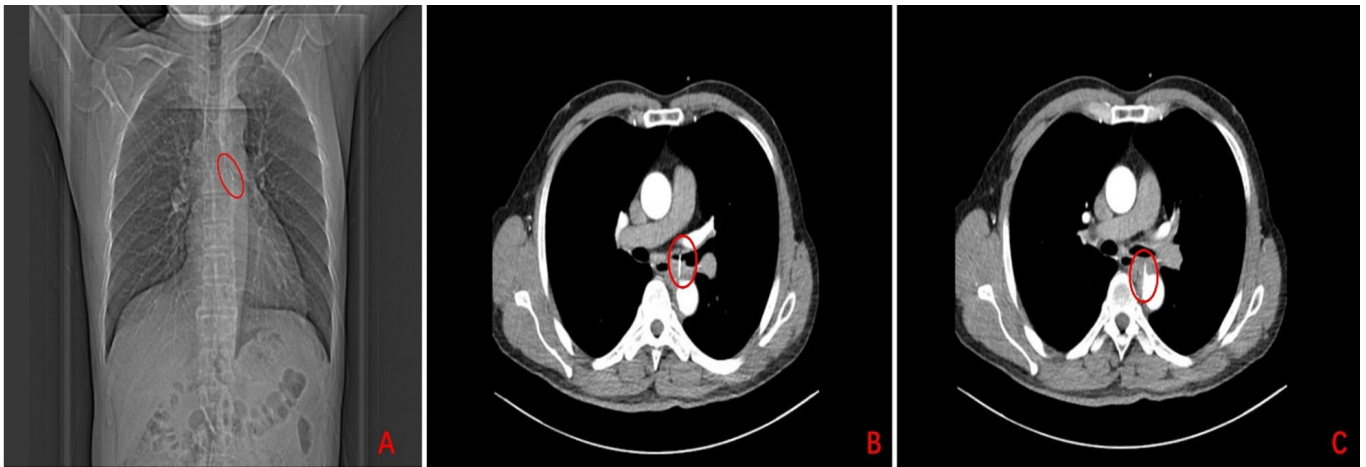


Figure 1. (A) Chest-enhanced CT showed the location of the foreign body. (B) The foreign body was in the lumen of the left main bronchus, and it looked like a metallic needle. (C) Its tip was closely adjacent to the wall of the descending aorta, where hematomas had formed.



Figure 2. Endoaortic angiography showed that a needle was located near the descending aorta, and the end of the needle was close to the vessel. A 28 * 150 mm Medtronic stent was implanted into the descending aorta.

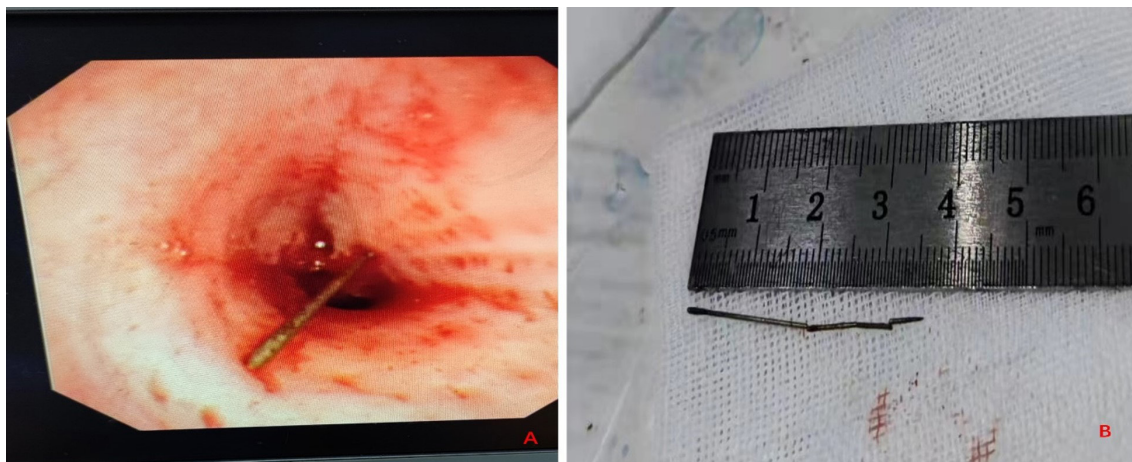


Figure 3. (A) Intratracheal foreign body was a metal needle after removing the blood clot in bronchoscopy. (B) The sewing needle was removed in sections with total length of about 36 millimeters.

life-threatening risk. Usually in this situation, the relatively conservative treatment option is thoracotomy or surgical removal with the assistance of thoracoscopy, but the surgical trauma is relatively larger [Huankang 2012; Athanassiadi 2000]. After multidisciplinary consultation, we judged that the foreign body in the descending aorta was close to the inner wall of the aorta, and the application of endovascular stenting could prevent hemorrhage during removal of the foreign body under bronchoscopy without affecting the pull-out process.

Tracheal foreign bodies often are inhaled through the airway [Huankang 2012]. In this case, we initially concluded that the patient inhaled a metal needle into the bronchus and then pierced the adjacent descending aorta. After removing the foreign body in the bronchus and finding it was a sewing needle, we got a statement from family members. Four months prior, the patient did not pay attention to the whereabouts of sewing needle after his back had been penetrated. It was inserted through the dorsal paraspinal muscles, then migrated within the organization. After passing through the blood vessel, the needle continued to migrate to deep tissue, piercing the left main bronchus and getting stuck there. This case demonstrates that foreign bodies enter the body in a variety of ways and can migrate within tissue.

CONCLUSION

For puncture needle injury, the symptoms may vary. Most articles recommend removal as soon as possible [Perrotta 2010]. It can be removed under the bronchus in most of the cases, while thoracotomy is needed for cases with difficulty or high risk of extraction [Huankang 2012]. Each case should provide the appropriate management and individualized treatment. This case shows that for patients with tracheal foreign

bodies that damage the descending aorta, bronchoscope removal of foreign bodies after endovascular stent placement can provide a rapid and minimally invasive treatment.

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