

CASE REPORT

Natural expulsion of a sharp iron nail: Right main bronchus to the alimentary tract: A case report

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Abstract

A young girl inhaled a pointed iron nail into the right main bronchus. However, both rigid bronchoscopy and oesophagoscopy failed to locate the nail. Surprisingly, it was detected in the abdomen by C-arm and was expelled uneventfully while defecating two days later.

KEYWORDS

alimentary tract, bronchus, foreign body, nail, rigid bronchoscopy

1 | INTRODUCTION

Foreign body (FB) aspiration is a universal problem in the pediatric population and the most common cause of airway accidents leading to significant morbidity and mortality.^{1,2} FB is more common in the right main bronchus as reported by Sersar et al³ This is explained by the anatomical features of the right main bronchus, like wider in diameter, shorter in length, and having the more direct extension of the trachea than the left bronchus.⁴ Spontaneous expulsion of a tracheobronchial foreign body is one of nature's protective reflexes. Its incidence has been reported in about one percent of all tracheobronchial foreign bodies.⁵ Clinical presentation of airway foreign bodies is variable, ranging from a clinically asymptomatic state to a dire state of respiratory failure needing urgent attention and intervention. The gold standard for management is rigid bronchoscopy (RB) under general

anesthesia. The right decision to perform RB is based on clinical findings and radiological support.⁶

2 | CASE REPORT

The parents of a 15-month-old girl brought her to the pediatric emergency room, Tribhuvan University Teaching Hospital, with a history of accidental inhalation of an iron nail 6 hours before presentation. According to her parents, she had a history of recurrent attacks of cough for 2 hours after the incident. On chest examination, there was bilateral conducted sound. Vital parameters were within normal limits. The X-ray imaging of posteroanterior and lateral views of the chest was done with suspected foreign body bronchus, which showed a pointed long radiopaque shadow consistent with a sharp-pointed nail in the right main bronchus (Figure 1A, B).

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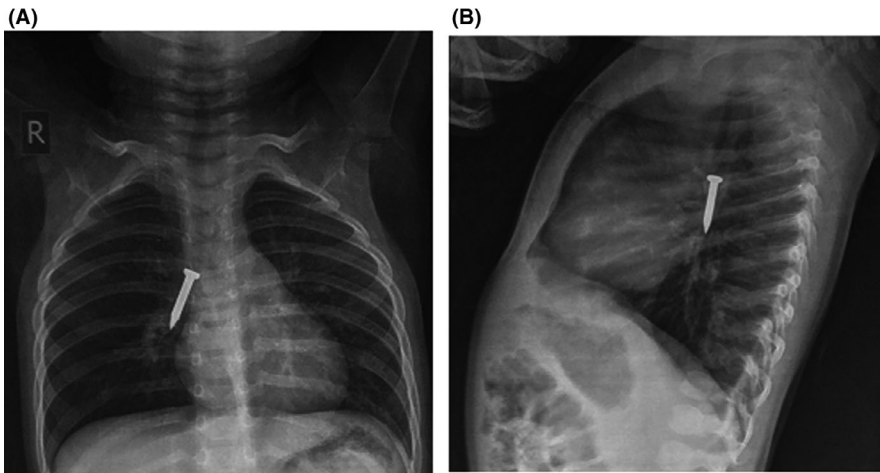


FIGURE 1 Anteroposterior (A) and lateral (B) plain film X-rays images of the chest showed a radio-opaque foreign body in the right main bronchus

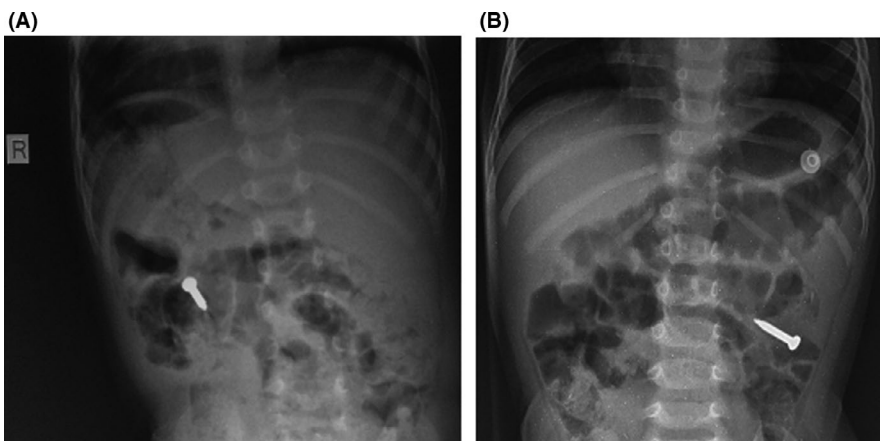


FIGURE 2 X-ray image of abdomen supine view showed a radio-opaque foreign body in (A) the small intestine and (B) the sigmoid colon immediate postoperative and 24 h postoperative period. R on X-ray images denotes the right side of the patient

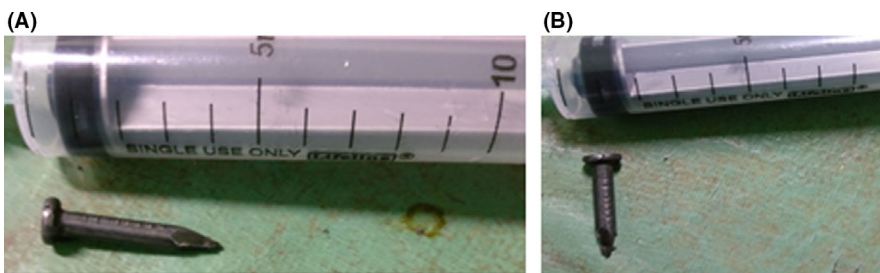


FIGURE 3 The expelled foreign body, nail, (A) length 2 cm (B) diameter 5 mm approximately

She was admitted with the diagnosis of a foreign body right bronchus (iron nail) and planned for emergency rigid bronchoscopy under general anesthesia. She was kept on broad-spectrum antibiotics (IV ceftriaxone) with corticosteroid (IV hydrocortisone) as required. She underwent emergency rigid bronchoscopy under general anesthesia after 10 hours of the incident, which showed secretion in the right main bronchus; however, the foreign body was not visualized.

Rigid oesophagoscopy was done to rule out the foreign body in the esophagus, but the foreign body was not visualized. With suspicion of the wandering foreign body, imaging was done under C-arm guidance, which showed a foreign

body in the alimentary tract at the region of right iliac fossa that was again reconfirmed with X-ray imaging of abdominal supine and erect views (Figure 2A). The patient was admitted to pediatric ICU (intensive care unit) immediately postoperation for observation and later transferred toward the next day after normal findings. The next postoperative day X-ray imaging of abdominal supine and erect views showed the foreign body (iron nail) in the sigmoid colon (Figure 2B). The foreign body was passed in the stool on the second postoperative day without any clinical deterioration (Figure 3A, B). The patient was discharged after pediatric surgeon consultation to rule out any intestinal complications.

3 | DISCUSSION

Foreign body bronchus is an emergency condition that mainly affects children between one and three years of age with male predominance.^{7,8} Most of the time, parents or caretakers of children are not aware of inhalation and hence present late to the physician with recurrent long-standing respiratory symptoms or foreign bodies detected accidentally during routine investigations.⁸ Symptoms with bronchial foreign body aspiration can range from acute asphyxiation with or without complete airway obstruction to cough, dyspnea, choking, or fever. In adults, many other medical conditions mimic breathing abnormalities similar to those associated with tracheobronchial aspiration.⁹ If the history is not definitive, then only a high degree of suspicion can lead to the diagnosis and prompt removal of the foreign body. Bronchoscopic removal of the foreign body is necessary to avoid long-term sequelae.¹⁰ "Nature cures by its ways." It is well known that nature has developed its reflex protective mechanisms, which are strong enough, but they seldom come into action up to the level of complete cure. Spontaneous expulsion of intrabronchial foreign bodies has been reported previously.^{9,11,12} However, spontaneous migration of foreign bodies in the trachea and bronchus to the gastrointestinal tract is extremely rare. In our case, the patient must have expectorated the foreign body and immediately swallowed it. During a cough, the exhaled air can travel at a speed of 100 miles per hour, blowing a stream of air along the airway to push away foreign objects.⁸ In our case, the antibiotics and steroid might have relieved the mucosal edema and the foreign body was disimpacted due to cough. Then, the movement within the bronchus stimulated a more severe bout of coughing strong enough to expel the iron nail from the right bronchus back to the food pipe and passage through the alimentary tract. Awareness about this situation is helpful when one does not find an expected airway foreign body during bronchoscopy. Intra-operative imaging will help in the diagnosis and guiding further management.

Since the subglottis is the narrowest part of the upper respiratory tract in children, there is always an obvious danger when foreign bodies are spontaneously expelled from the tracheobronchial tree. Foreign bodies may infiltrate the subglottis and may be life-threatening, requiring urgent intervention. It is unwise and dangerous to wait for spontaneous expulsion of the foreign body present in the bronchus. However, when preparing for endoscopy, the patient should be kept under constant observation, and spontaneous expulsion should be suspected every time the patient coughs. The danger of foreign body lodgement into subglottis during such rare, but possible occurrence should be kept in mind.⁸

4 | CONCLUSION

A sharp-pointed metallic object in the bronchus is a medical emergency because of the high risk of asphyxia, respiratory arrest, and penetration. Prompt diagnostic and therapeutic bronchoscopy should be done to avoid complications. X-ray imaging of anteroposterior and lateral views of chest is useful for identifying the location. Our case depicts the protective reflexes that can play role in the protection of the airway and variable course for the foreign body passage.

ACKNOWLEDGMENTS

Published with written consent of the patient.

CONFLICT OF INTEREST

None declared.

ETHICAL APPROVAL

The patient consents to the use of his anonymous data.

DATA AVAILABILITY STATEMENT

No data were generated while writing this case report.

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