


# Inhaled open safety pin: a challenging case

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## Abstract

Foreign body aspiration in children, specifically sharp and metallic type, imposes a serious morbidity and mortality risk if intervention is delayed. The bronchoscopic removal of sharp metallic foreign bodies is technically challenging for the operating surgeon. We present a case of an 8-year-old girl who presented with an alleged history of aspiration of metallic, sharp and open safety pin 8 hours prior to presentation following which she developed throat pain and painful swallowing. X-ray of soft tissue neck showed a radio-opaque foreign body being lodged in the supraglottic area. She underwent emergency direct laryngoscopy-guided foreign body removal under general anesthesia. There was an open metallic sharp safety pin hinged over the inter-arytenoid region with its one end reaching sub-glottis and other end toward the hypopharynx. No post-operative complications occurred and patient was discharged on the third post-operative day.

## INTRODUCTION

A foreign body aspirated in the airway is a life-threatening condition, having a variable medical history, symptoms, peri-operative morbidities and prognosis. [1] Although foreign bodies in the tracheobronchial tree are most frequent in children aged 1–3 years, they can occur at any age. Commonly aspirated foreign bodies include food, beads and metallic objects. [2] Sometimes, unusual foreign bodies may get aspirated like broken tracheostomy tubes [3], hypodermic needles, metallic nail [4] and scarf pins [2, 5, 6]. The clinical symptomatology may begin as soon as the foreign body is aspirated, which includes coughing, choking, stridor, excessive sputum production, cyanosis or shortness of breathing [2]. It is not uncommon for patients to remain asymptomatic, who are at increased risk of developing dreadful complications, including death, due to delayed intervention. [2, 6–8].

Rigid bronchoscopy is the procedure of choice in management of pediatric airway foreign bodies. [1] The airway is shared by the surgeon and the anesthesiologist, and hence, an excellent coordination between the two is of paramount importance. As the airway in children is of very small caliber, it warrants some degree of skill and composure to negotiate rigid bronchoscope and proceed with the manipulation and removal of foreign body. [9] Utmost care is to be depicted when the surgeon is dealing with a sharp metallic foreign body in the airway as its removal can be tedious with significant post-operative complications. Herein, we present a case



**Figure 1.** Clinical condition of an 8-year-old girl at the time of presentation.

of a female child with sharp metallic foreign body in the airway who underwent an uncomplicated direct laryngoscopy-guided foreign body removal within hours of aspiration.

Received: February 15, 2022. Revised: March 21, 2022. Accepted: March 25, 2022

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**Figure 2.** X-ray soft tissue neck: anteroposterior and lateral view showing the foreign body (open safety pin).

## CASE REPORT

An 8-year-old female child from a remote village in the eastern Nepal presented to pediatric emergency unit of our institute with alleged history of aspiration of safety pin 8 hours back. She accidentally aspirated the safety pin while she kept the pin in between her lips when she was getting dressed. Immediately following aspiration, she developed a cough and one episode of blood-mixed vomiting. She also developed pain on swallowing but there was no cyanosis, stridor, shortness of breath and excessive sputum production. Her mother rushed her to a regional tertiary center where she was assessed and an X-ray soft tissue neck was ordered, which showed a radio-opaque foreign body in the upper airway. She was then referred to our center.

On clinical examination, the child was comfortable with no cyanosis, labored breathing or stridor. On



**Figure 3.** Foreign body (safety pin) removed in toto.



**Figure 4.** Post-operative X-ray soft tissue neck anteroposterior and lateral view showing no residual foreign body.

examination of neck, anterior neck tenderness could be elicited at the level of cricoid cartilage. On auscultation of chest, there was bilateral normal vesicular breath sounds with no added sounds. Her vitals, including oxygen saturation, were within normal limits (Fig. 1). We repeated her X-ray soft tissue neck which showed a radio-opaque foreign body (open safety pin) with its blunt end superiorly and its two open ends directed inferiorly (Fig. 2).

After detailed preoperative evaluation, emergency rigid bronchoscopy and foreign body removal under general anesthesia was planned. Careful planning and anticipation of untoward events were discussed by the ear, nose, throat consultant and anesthesiologist. The anesthesiologist proceeded with induction of anesthesia followed by jet ventilation. Direct laryngoscopy using optical laryngoscope was performed initially. The foreign body was visualized and it was an open, sharp metallic safety pin that was hinged over the inter-arytenoid region with its blunt end and its other two ends lying at hypopharynx and sub-glottis. Under direct laryngoscopy guidance, foreign body removal forceps was inserted and the foreign body was removed (Fig. 3). Following its removal, check bronchoscopy was done that revealed mild sub-glottic edema and minimal laceration in hypopharynx at the site of impingement of foreign body's sharp end. No intraoperative complication was noted and the child was shifted to the ward after 4 hours of observation in the post-operative recovery room. A post-operative X-ray soft tissue neck was obtained, which was normal (Fig. 4).

## DISCUSSION

Accidental inhalation of sharp metallic foreign bodies in children can present with variable symptomatology or no symptoms at all [2, 5, 6, 10]. Our patient presented with throat pain, dysphagia and anterior neck tenderness

owing to the unusual lodgment of open metallic safety pin with its open sharp end toward the sub-glottis and hypopharynx. She had no alarming symptoms due to minimal obstruction of the airway by the foreign body itself and insignificant airway edema.

Although positive predictive accuracy of clinical diagnosis is 74.2% [8], X-ray soft tissue neck is a valuable tool to diagnose radio-opaque airway foreign body like metallic safety pins [7]. Therefore, clinico-radiological diagnosis was made in our patient. Rigid bronchoscopy is a widely used modality of removal of airway foreign bodies in children owing to its safety, excellent visualization and provision for continuous ventilation of the patient [5]. We also planned for rigid bronchoscopy in our patient, but the passage of rigid bronchoscope was restricted by the size of the airway of the patient and unusual location of the foreign body. Hence, an optical direct laryngoscopy was used to visualize the foreign body, and its removal was done by grasping with forceps. Rigid bronchoscopy was performed to check for any remaining part of the foreign body and injuries caused by the lodgment of foreign body. Hence, it is imperative to have a detailed discussion of procedural plan between the surgeon and anesthesiologist for a satisfactory outcome of the procedure [9]. Our patient had an uneventful post-operative outcome, which highlights the importance of early presentation and prompt surgical intervention in the management of airway foreign bodies in children.

## ACKNOWLEDGEMENTS

We would like to thank the Department of ENT Head and Neck Surgery and the Department of Anesthesiology for helping to publish this article.

## CONFLICT OF INTEREST STATEMENT

None declared.

## FUNDING

There is no source of funding for this report.

## ETHICAL APPROVAL

Ethical approval is waived for this study.

## CONSENT

Written consent has been obtained from the patient's legal guardian (mother).

## GUARANTOR

Dr Milan Sedhai MBBS (corresponding author).

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