

CASE REPORT

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# Surgical retrieval and successful bronchial repair for impacted foreign body: a case report

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## Abstract

In the current era, surgical intervention such as bronchotomy should be the last resort, only to be chosen for a chronic, symptomatic, and impacted foreign body that is not retrievable bronchoscopically. This case tells us that this unusual approach is still required to remove the neglected and impacted foreign body in the right bronchus, which is not retrievable by the bronchoscope.

**Keywords:** Airway foreign body, Intercostal muscle flap, Bronchotomy, Bronchoscopy

## Background

In the current era, surgical intervention such as bronchotomy is the last option, and only to be chosen for the deeply impacted foreign body that is not retrievable bronchoscopically.

## Case presentation

A 24-year-old healthy male presented with complaints of recurrent hemoptysis of fresh blood 10–20 ml. per day for two and a half months. The patient also had a chronic cough with sputum. The patient had a clear history of foreign body (whistle) aspiration around 3 years ago. But at that time, he did not take this seriously. Now patient had decreased air entry on the right basal area. Right-sided rhonchi were also auscultated, suggesting minor airway obstruction. Chest X-ray did not show any radiopaque shadow (Fig. 1). High-resolution computed tomography of the thorax from another center mentioned an intra-bronchial focal lesion of a suspected foreign body in the right bronchus intermedius causing distal multi-segmental collapse. Fiberoptic bronchoscopy confirmed the finding of chronic, impacted foreign body (Additional file 1: Video 1) in the right bronchus intermedius; subsequently, multiple retrieval attempts failed.

## Treatment

We have to proceed with surgery after failing foreign body retrieval attempts with flexible and rigid bronchoscopes. We did this operative procedure via a right posterolateral thoracotomy approach with single lung ventilation by a left-sided double-lumen tube. The foreign body (Figs. 2 and 3) was retrieved from the right intermediate bronchus after bronchotomy. Afterwards, the bronchial repair was done by interrupted polypropylene 4-0 interrupted sutures with pedicled intercostal muscle flap reinforcement. The right middle lobectomy was required as the lung was severely damaged and had retained secretion and pus. Later saline immersion test was also done to confirm any residual air leaks. The patient had an uneventful postoperative course. The chest drains were removed on the fourth postoperative day. Ultrasound thorax and repeat chest X-ray after 72 h were done to ensure no air or fluid collection in the pleural cavity, and the patient was discharged on the 8th postoperative day. The patient is in regular follow-up with no haemoptysis afterwards, and serial chest X-ray showed proper right pulmonary expansion without any residual air leak or collection. Histopathology report of the resected middle lobe was suggestive of diffuse severe chronic inflammatory pathology with interstitial fibrosis and chronic inflammation.

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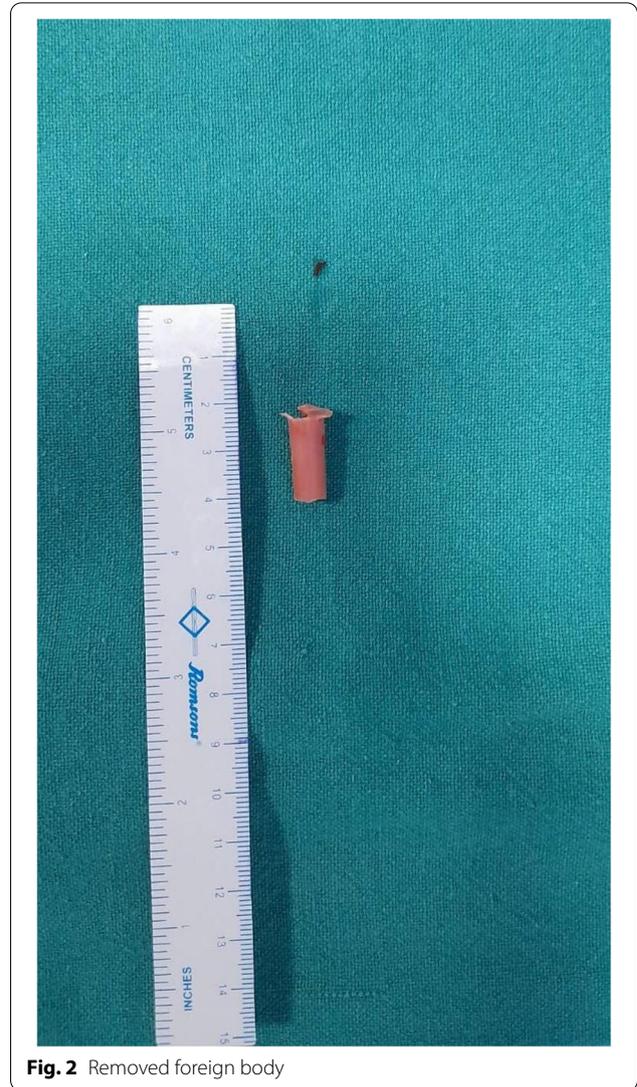
**Fig. 1** Pre-operative chest X-ray of patient

### Discussion

The earliest reported case of bronchotomy for the removal of an aspirated foreign body was made by Louis in 1759. In his presentation at the Paris Academy of Surgeons, he discussed his 28 cases; this dates back to when anesthesia was unavailable, and strategies such as selective lung ventilation were not used [1].

Elaziz, M.A., et al. [2] have also performed bronchotomy, but their experience was limited to pediatric cases only. Aihole JS et al. [3] reported their experience, but it was also limited to pediatric cases only. So far, the experience of surgical retrieval of impacted foreign bodies in adults is limited. Our management was on the same principles but applied to an adult case. We also emphasize that bronchotomy should be performed in foreign body retrieval only after failed bronchoscopy. This will avoid chronic complications of airway occlusion ranging from collapse and consolidation to fibrosis and bronchiectasis [4].

Another indication for attempting thoracotomy rather than bronchoscopy is a firmly impacted foreign body, which is also in our case. Surgery should be aimed at preserving lung parenchyma. Still, when chronic complications of airway occlusion have been settled, lung resection in the form of segmentectomy or lobectomy may be required, as required in our case [5, 6]. Bronchial anastomosis or repair shall be reinforced with pleural and intercostal muscle flap to prevent air leaks in the post-op period and thus ensure a successful repair outcome.



**Fig. 2** Removed foreign body



**Fig. 3** Removed foreign body

## Conclusion

Bronchotomy for removing foreign bodies is rarely required, used only for failed bronchoscopically retrieval attempts. This procedure can avoid chronic complications of airway occlusion ranging from collapse, consolidation, fibrosis, and bronchiectasis. Bronchial repair shall be reinforced with pleural and intercostal muscle flap to prevent air leaks in the post-op period and thus ensure a successful repair outcome.

## Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s43168-022-00173-3>.

**Additional file 1:** Video 1.

## Acknowledgements

None

## Authors' contributions

The case was initially managed by MM and later operated by AD and PK. IJ and AD did scientific content development, writing, and literature research. All authors did editing and proofreading. We all believe it is an honest work. All authors read and approved the final manuscript.

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## Availability of data and materials

The case file and diagnostic reports with relevant details are available in the medical record section of our institute.

## Declarations

### Ethics approval and consent to participate

Not required

### Consent for publication

Patients and relatives are well informed, and signed consent has been taken regarding publishing data and photographs. Anonymity during reporting is also taken care of.

### Competing interests

The authors declare that they have no competing interests.

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