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Bronchoscopic Removal of Impacted Foreign Body in an Obese Patient: A Case Report

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Abstract: ***Objective: To describe the anaesthetic management of a young obese patient undergoing bronchoscopic removal of an impacted foreign body under Non-Operating Room Anaesthesia (NORA). Case Report: A 17-year-old obese female (BMI 32.3 kg/m²) presented with hemoptysis following scarf pin ingestion. The pin was impacted in the left posterior basal bronchus. Airway assessment revealed Mallampati class III, heavy jaw, and snoring history. Anaesthesia was induced with propofol and maintained with spontaneous ventilation via a rigid bronchoscope barrel connected to Bain's circuit. Dexmedetomidine infusion and oxygen–air–sevoflurane were used. Succinylcholine boluses facilitated retrieval. Rigid bronchoscopy initially failed; flexible bronchoscopy enabled successful removal. The 50-minute procedure was uneventful, and the patient recovered well. Conclusion: Airway management in obese patients undergoing bronchoscopy under NORA is challenging. A flexible–rigid hybrid approach improves success rates in foreign body retrieval. Early recognition, multidisciplinary teamwork, and patient education are essential.***

Keywords: Foreign body aspiration, Bronchoscopy, Obesity, Non-operating room anaesthesia, Airway management

1. Introduction

Foreign body aspiration is a critical emergency encountered across age groups, with scarf pins being increasingly reported in adolescents, particularly females who use them while dressing. Inhalation or ingestion of sharp metallic objects carries high risk of mucosal trauma, hemoptysis, and airway obstruction if not promptly managed.

Rigid bronchoscopy remains the gold standard for tracheobronchial foreign body retrieval, although flexible bronchoscopy has gained importance in difficult or distal airway cases. Anaesthetic management is particularly challenging in obese patients because of reduced functional residual capacity, increased oxygen consumption, and a higher risk of difficult mask ventilation and desaturation.

Non-Operating Room Anaesthesia (NORA) adds another layer of complexity, demanding careful planning, teamwork, and vigilant monitoring. This report highlights the successful management of an obese adolescent with an impacted scarf pin in the left bronchus, emphasizing the importance of hybrid bronchoscopic techniques and tailored anaesthetic strategies.

2. Case Report

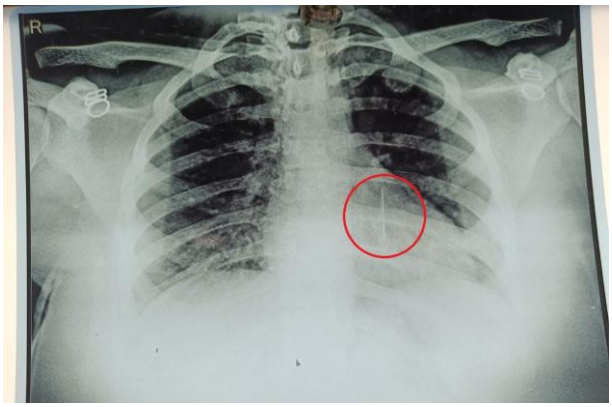

Figure 1: Chest X-ray showing scarf pin in left bronchus.

Figure 2: Bronchoscopic view during foreign body retrieval

Figure 3: Retrieved foreign body specimen (scarf pin)

A 17-year-old female, weighing 90 kg (BMI 32.3 kg/m²), presented with hemoptysis after scarf pin ingestion 7 days earlier. Chest X-ray confirmed the foreign body lodged in the left posterior basal bronchus. She had no comorbidities.

Airway assessment: Mallampati class III, heavy jaw, adequate mouth opening, history of snoring. Vital signs and systemic examination were normal.

Anaesthetic plan: Maintain spontaneous ventilation under general anaesthesia with readiness for muscle relaxant-assisted retrieval if required.

Execution:

- Pre-procedure airway preparation: Nebulisation with 4% lignocaine 20 minutes prior.
- Monitoring: Standard ASA monitors attached.
- Premedication: Glycopyrrolate 0.2 mg IV, Midazolam 1 mg IV, Fentanyl 50 µg IV.
- Induction: Propofol 100 mg IV.
- Airway: Size 8 rigid bronchoscope barrel inserted under direct laryngoscopy, Bain's circuit connected.
- Maintenance: Dexmedetomidine infusion (2 µg/ml at 20 ml/h), oxygen–air–sevoflurane.
- Muscle relaxation: Succinylcholine 50 mg IV, followed by intermittent boluses (Atropine 0.6 mg + Succinylcholine 5 mg/ml).
- Analgesia: IV Paracetamol.
- Procedure: Rigid bronchoscopy revealed the pin but attempts at removal failed due to impaction. Fibreoptic guidance through the rigid barrel was attempted without success. Flexible bronchoscopy was then performed, successfully retrieving the pin. Total procedure duration: 50 minutes.
- Outcome: The patient was extubated awake, remained stable, and shifted to recovery. Post-procedure, hemoptysis resolved, and symptoms improved. She was advised nebulisation and check bronchoscopy after 7 days.

3. Discussion

Sharp metallic foreign bodies like scarf pins can migrate distally and become impacted, making retrieval challenging. Rigid bronchoscopy offers better airway control and suctioning but may fail in cases of distal or impacted objects. Flexible bronchoscopy provides better access to peripheral bronchi and, when used as an adjunct, increases success rates.

In obese patients, anaesthetic challenges include rapid desaturation, decreased functional residual capacity, and difficult airway anatomy. In this case, dexmedetomidine infusion facilitated sedation and stable haemodynamics while preserving spontaneous respiration, minimizing the risk of hypoxemia. Succinylcholine boluses allowed transient relaxation for precise manoeuvres during difficult extraction.

This case reinforces that hybrid bronchoscopy (rigid + flexible) is effective for impacted distal airway foreign bodies. Teamwork between anaesthesiologist and bronchoscopist is paramount for safety and success.

4. Conclusion

- Airway management for foreign body retrieval in obese patients under NORA requires meticulous preparation.
- A flexible–rigid hybrid bronchoscopic approach enhances retrieval success in impacted cases.
- Dexmedetomidine provides effective sedation with preserved spontaneous respiration.
- Early intervention, multidisciplinary teamwork, and patient education are essential for optimal outcomes.

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