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JAMA Clinical Challenge:

Foreign Body in Right Side of Chest

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Introduction

A man presented to the emergency department after being shot in the face. On primary and secondary survey, he had a patent airway, was hemodynamically stable, and had a single entrance wound over the right mandible. No exit wound was visible. The appearance of his oropharynx was unremarkable. The trachea was in midline and breath sounds were clear and equal in all lung fields. The patient had a persistent, dry cough. Radiography of the chest showed a foreign body in the right side of the chest (Figure A). After this initial imaging, the patient was log-rolled onto his left side, and computed tomography (CT) scan of the chest was obtained (Figure B).

What would you do next?

- A. Locally explore the mandibular wound
- B. Perform angiography
- C. Perform a thoracotomy to remove the foreign body
- D. Perform flexible bronchoscopy

Diagnosis

Bullet Aspiration into the Left Main Bronchus

What to do next

D. Perform flexible bronchoscopy: The key clinical finding in this case was the CT demonstrating the bullet in the vicinity of the left main bronchus. Coupled with the cough, these findings suggest a bullet aspiration that should initially be evaluated with flexible bronchoscopy.

Discussion

A CT scan of the head revealed non-displaced fractures of the right mandibular coronoid process and right pterygoid bone. CT angiography of the neck and chest revealed no

vascular injury; a CT scan of the chest showed lodgment of the bullet within a bronchus of the left lower lobe (Figure B). Cervical spine injury was ruled out clinically and radiographically prior to any intervention.

With the patient under general anesthesia, flexible bronchoscopy was used to identify and attempt retrieval of the bullet. No exit wound was visualized within the oropharynx on either intubation or passage of the bronchoscope. After multiple unsuccessful attempts to retrieve the bullet, rigid bronchoscopy was performed, facilitating direct visualization and retrieval of the bullet with a long grasping instrument from a second-order bronchus of the left lower lobe.

Bullet aspiration into the tracheobronchial tree is a rare phenomenon and associated with direct, penetrating injury to the trachea or bronchus.^{1–3} In contrast, intravascular bullet embolism is more frequently seen with penetrating injury to the head, neck, or chest.⁴ Foreign body aspiration is rare in the conscious adult, even following traumatic injury.⁵ Most cases of traumatic aspiration are associated with loss of consciousness, which our patient did not experience.³

Urgent bronchoscopy is necessary to evaluate the tracheobronchial tree for injury and to retrieve any foreign bodies. Delay in examination can lead to distal migration of the foreign body and further injury. A flexible bronchoscope is perfectly suited for examining the airway of a patient who requires immobilization of the cervical spine. If bronchoscopy is attempted in a patient with a clear cervical spine, a rigid bronchoscope should also be available in case flexible bronchoscopy fails.⁶

Patient Outcome

After retrieval of the bullet, bronchoscopic examination revealed mild hemorrhage and mucosal edema at the lodgment site. The patient was subsequently discharged.

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Figure.

Figure A. Anteroposterior chest radiograph taken in the trauma bay on arrival.

Figure B. Computed tomography scan of the chest: coronal slice with intravenous contrast, revealing the location of a foreign body.