Case report

Bullet in tracheobronchial tree without lung contusion removed by fibreoptic bronchoscopy in two parts

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ABSTRACT

A person presented with multiple gunshot injury. Chest x-ray & CT whole body trauma protocol was done which showed multiples pellets of bullet in abdomen and one bullet in elbow according to entry wound. There was an entry wound without any bullet in left maxillofacial region however there was no exit wound. A bullet was noticed in tracheobronchial tree. There was no pneumothorax any signs of chest trauma or any pneumomediastinum. It is assumed that the bullet first hit the left cheek (maxilla) and lost its momentum. As the patient lost consciousness and had a fall leading to inhalation (aspiration) of bullet in the airway. As per ballistic experts it was basically a jacketed metallic bullet. As bullet moved in airway, the outer metallic core reached the trachea near carina and the soft metallic core slipped more distally to right main bronchus and bronchus intermedius. While inspection the outer metallic capsule was seen in trachea just above carina which was hollow and was gently removed with the help of foreign body forceps. The core was removed with dormia basket without any mucosal tear. The favorable outcome can be attributed as patient had no lung contusion or chest trauma and bullet was inhaled which was not very old. The evolution of bronchoscopy started with rigid one but the fibreoptic bronchoscopy (FOB) has revolutionized the pulmonary interventions. The FOB can be used with minimal traumas under local anesthesia resulting in markedly reduced morbidity and mortality.

1. Introduction

A person presented with multiple gunshot injury and an inhaled bullet in tracheobronchial tree after a primary faciomaxillary hit. The bullet was removed with the help of foreign body grasping forceps and dormia basket through fibreoptic bronchoscopy (FOB). The favorable outcome can be attributed as patient had no lung contusion or chest trauma and bullet was inhaled which was not very old. The evolution of bronchoscopy started with rigid one but the fibreoptic bronchoscopy (FOB) has revolutionized the pulmonary interventions [1,2]. This FOB can be used with minimal trauma as under local anesthesia resulting in markedly reduced morbidity and mortality. Our patients with great team effort not only survived with no disability but also with minimal hospital stay because of least invasive procedure. Today is era of interventional pulmonology and this article is growing to prove worth of it.

2. Case

A 45 year old male has presented with multiple bullet injuries. One in abdomen, one in elbow and one was thought to be in jaw with a big wound in jaw. At time of admission, he was conscious oriented, PR- 64/min, BP- 180/86 mm of Hg, SP02- 100% on O2 supplement. He had three wound on examination one at left elbow one at left cheek with periorbital swelling and in abdomen. His blood reports were within normal limits. Chest x-ray (Fig. 1) & CT whole body trauma protocol was done which showed multiples pellets of bullet in abdomen and one bullet in elbow according to entry wound (Fig. 2). There was an entry wound without any bullet in left maxillofacial region (Fig. 3a&b) however there was no exit wound. A bullet was noticed in tracheobronchial tree (Fig. 4a, b, c). There was no pneumothorax any signs of chest trauma or any pneumomediastinum. Gastro/ENT & plastic surgery opinion were taken & advice followed. As rigid bronchoscopy was anticipated to be difficult, first fibreoptic bronchoscopy was planned.

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FOB was undertaken in operation theatre with back up of thoracic and ENT surgeon. Patient was intubated with premedication through endotracheal tube size 8 and FOB was passed. We removed the bullet in two parts. First outer hard metal capsule (Fig. 5a) was removed by foreign body forceps (Fig. 7a&b) & Inner soft metal core (Fig. 5b) was removed by dormia basket (Fig. 8a&b). Patients discharged home after faciomaxillary repair.

3. Discussion

It is assumed that the bullet first hit the left cheek (maxilla) and lost its momentum. As the patient lost consciousness and had a fall leading to inhalation (aspiration) of bullet in the airway. As per ballistic experts it was basically a jacketed metallic bullet. As bullet moved in airway, the outer metallic core reached the trachea near carina and the soft metallic core slipped more distally to right main bronchus and bronchus intermedius (Fig. 6).

The best approach of airway foreign body removal is through rigid bronchoscopy [3–6]. The same was difficult here because of extensive facial trauma. Patient had widespread facial injury so it was very difficult to do full neck extension and put rigid bronchoscope. FOB was planned in OT to inspect the airway with backup of ENT and thoracic surgeon. There is a case with removal of bullet by FOB with the help of dormia basket [7]. We were prepared with all our foreign body removal (FB) armamentarium - like FB grasping forceps, magnet forceps and dormia basket. While inspection the outer metallic capsule was seen in trachea just above carina which was hollow and was gently removed with the help of foreign body forceps. The problem not ended here as during check bronchoscopy another metallic element was found. It was the metallic core that had slipped more distally to right main bronchus and bronchus intermedius. The core was removed with dormia basket without any mucosal tear. During the whole procedure the patient was intubated and extubated with endotracheal (ET) tube thrice as every time while removing the foreign body the whole system was removed in total (ET tube, bronchoscope, forceps and foreign body). Finally with the help excellent anesthesia team and thoracic and ENT surgeon backup, this rare of the rarest work was completed.

4. Conclusion

The person with multiple gunshot injury is always anticipated to have high mortality and morbidity. Our patients with great team effort not only survived with no disability but also with minimal hospital stay because of least invasive procedure. Fibreoptic Bronchoscopy is minimally invasive procedure which can easily be used to remove small foreign bodies in airways. As bullet was lying freely and, inhaled in tracheobronchial tree could be removed. Team work is very important to do such a challenging case.
Fig. 3. CT Showing maxillofacial trauma.

Fig. 4. CT showing bullet in Tracheobronchial tree without lung injury.

Fig. 5. Bullet removed left one is outer part and right one is inner part.
Fig. 6. Diagram depicting bullet traversing the tracheobronchial tree.

Fig. 7. Snapshot of video of bronchoscopy while bullet being removed: the outer part with foreign body forceps.

Fig. 8. Snapshot of video of bronchoscopy while bullet being removed: the inner part with Dormia basket.
Conflicts of interest

The authors have declared that no competing interests exist.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.rmcr.2019.02.003.

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