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CLINICAL MANAGEMENT OF A PENETRATING KNIFE WOUND TO THE THORAX: CASE REPORT FROM EMERGENCY PRACTICE

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Abstract: Penetrating chest wound with the presence of a wounding object in the wound is a complicated type of wound due to the possibility of additional damage to the abdominal or thoracic cavity organs, the more dangerous are the wounds within the Grekov zone, when the surgeon has no possibility to remove the wounding object due to possible fatal bleeding, if being in the heart tissues it closes the wound channel and prevents blood flow.
In this observation from the practice of a specialised department, the approach of surgeons at the wound of the left side of the chest in the projection of the heart, with the presence of a wounding object (kitchen knife) and oscillations of the latter in time with the heartbeat is indicative.

Introduction

Traumatic injuries hold one of the leading positions in the structure of population mortality, following cardiovascular diseases, oncological pathologies, and disorders of the bronchopulmonary system. According to E.A. Wagner, thoracic injuries represent a major portion of trauma cases and are responsible for a significant proportion of fatal outcomes. Consequently, the issues related to the diagnosis and treatment of chest wounds remain highly relevant.

Compared with closed chest trauma, penetrating injuries occur less frequently; however, they are associated with life-threatening complications such as massive hemorrhage, disruption of mediastinal structures, and damage to the lung or diaphragm. The establishment of nationwide emergency medical services has made it possible to provide not only qualified but also specialized care to various categories of critically injured patients, including those with complex thoracic trauma.

Case Report

We present a case of a penetrating stab wound to the left hemithorax with the knife remaining in situ.

A 54-year-old male patient was transported by emergency medical services to the Andijan branch of the Republican Scientific Center for Emergency Medical Care (RSCEMC). Upon arrival, he was immediately transferred from the admission room to the operating theatre. The on-call anesthesiology team and thoracic surgeons were urgently summoned.

At the time of examination, the patient was sedated. In the projection of the 4th–5th intercostal space along the left midclavicular line, a kitchen knife was visibly present in the wound. The wound was actively bleeding, and synchronized movements of the knife with cardiac pulsations were clearly observed.

Under general endotracheal anesthesia, with the patient placed supine—and without removing the knife or using positioning bolsters—a left anterolateral thoracotomy was performed in the 5th intercostal space with a skin incision of approximately 20 cm. The knife was located along the wound tract, positioned medially within the incision. Careful visual and tactile exploration revealed that the knife tip was embedded in the lung parenchyma. The knife was safely removed under direct visualization.

The patient was then repositioned for standard anterolateral thoracotomy, bolsters were placed, and retractors applied. Intraoperative revision showed approximately 500 mL of blood in the pleural cavity and a defect of the lower lobe of the left lung in the projection of segment 8, measuring 2.0 × 0.3 cm, with active bleeding and air leakage. A “Z-shaped” suture was applied to repair the lung injury, followed by aspiration of hemothorax and irrigation of the pleural cavity with antiseptic solutions.

The pericardium was thin and transparent, with no signs of injury or cardiac tamponade; therefore, pericardiotomy was not performed. The left diaphragmatic dome also showed no evidence of damage. Repeated pleural cavity irrigation, careful hemostasis by electrocoagulation, and confirmation of stable aerostasis were carried out. Upon ventilation, the lung fully expanded to occupy the hemithorax. Double inferior pleural drainage was placed, and the wound was closed in layers with an aseptic dressing applied.

The postoperative period was uneventful. The pleural drains were removed on postoperative days 4 and 5, and the patient was discharged in satisfactory condition on day 7.

Discussion

This report presents a penetrating stab wound to the left hemithorax with the knife remaining in the wound tract. In such cases, the optimal tactic involves performing thoracotomy without removing the foreign object beforehand, as premature extraction may provoke fatal hemorrhage, particularly in cases of potential cardiac or great vessel injury.

The management of foreign objects retained in thoracic wounds remains a subject of ongoing debate. Some authors recommend removal at the prehospital stage followed by occlusive dressing application, whereas others strongly oppose early extraction due to the risk of uncontrollable bleeding or aspiration of the wound tract. Our experience supports the latter viewpoint, highlighting the crucial importance of maintaining the object in situ until the exact wound trajectory and associated injuries are identified under controlled surgical conditions.

Conclusion

In cases of penetrating chest injuries with a foreign object remaining in the wound, the following management principles are essential to prevent life-threatening complications: cautious transportation of the patient at the prehospital and intrahospital stages, leaving the penetrating object in place, and performing thoracotomy without the use of positioning bolsters or additional stabilizing devices typically applied during routine thoracic surgery. Adherence to these principles significantly reduces the risk of catastrophic outcomes and ensures optimal surgical control over the injury.

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