

Anesthetic Challenges in the Management of an Unusual Penetrating Neck Injury: A Case Report

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ABSTRACT

Penetrating neck injuries can be life-threatening, particularly when involving Zone I, where major vascular and airway structures are located. We present the case of a 40-year-old man with a stab wound to the anterior neck and a knife retained in situ. Despite the injury, he remained hemodynamically stable, and imaging demonstrated a small pneumothorax without evidence of vascular or aerodigestive injury. Airway management represented the main anesthetic challenge, as any manipulation of the neck could result in displacement of the blade. Point-of-care gastric ultrasound demonstrated an empty stomach, allowing induction without rapid sequence intubation. Video laryngoscopy using an Eschmann guide was performed with the neck maintained in a neutral position, followed by uneventful surgical removal of the knife under multidisciplinary supervision. The postoperative course was uncomplicated. This case highlights the importance of careful airway management, multidisciplinary coordination, and gastric ultrasound for assessing aspiration risk in trauma patients. A structured, team-based approach may facilitate safe anesthetic and surgical management of penetrating cervical injuries involving retained foreign bodies.

KEYWORDS: airway, neck injury, surgical.

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INTRODUCTION

Penetrating cervical trauma is potentially life-threatening, particularly when vascular or airway structures are involved. Zone I injuries, extending from the clavicles to the cricoid cartilage, are especially challenging because of the concentration of critical structures in this region, including the carotid arteries, subclavian vessels, trachea, esophagus, and thoracic inlet [1,2]. We describe an unusual case of a cervical stab wound with a retained knife and discuss the anesthetic considerations and multidisciplinary strategy that contributed to a favorable outcome.

CASE REPORT

A 40-year-old man was admitted to the emergency department following a stab wound to the anterior neck involving Zone I. The knife blade remained embedded in the cervical tissues. The patient was conscious, oriented, and able to speak, with no clinical evidence of airway compromise. His vital signs were stable: SpO₂ 97%, respiratory rate 18/min, blood pressure 128/75 mmHg, and heart rate 85 bpm.

Cardiopulmonary and cervical auscultation were unremarkable.

Initial management consisted of oxygen administration (4 L/min via nasal cannula), femoral central venous access, crystalloid infusion, analgesia, and tetanus prophylaxis. Cervicothoracic CT angiography demonstrated a small left pneumothorax, with no evidence of vascular or aerodigestive injury. Transport to and from the radiology department was performed by a six-member team to minimize any risk of blade displacement.

The patient was subsequently transferred to the operating room for surgical removal of the knife by the ENT and thoracic surgery teams. Several anesthetic challenges had to be considered. First, airway management required maintenance of the neck in a neutral position to prevent movement of the blade and potential injury to surrounding structures. Second, given the emergency setting, the patient was initially considered to have a full stomach, with a presumed increased risk of pulmonary aspiration.

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Bedside gastric ultrasound was therefore performed and demonstrated an empty stomach. A standard induction was subsequently performed using preoxygenation, fentanyl 250 µg, propofol 200 mg, and rocuronium 50 mg. Video-assisted tracheal intubation using an Eschmann guide was achieved with the neck maintained in a neutral position. The knife was then surgically removed without complications. Postoperatively, the patient was monitored in the intensive care unit and referred for psychological evaluation. No further complications were observed.

DISCUSSION

This case highlights several important considerations in the anesthetic management of penetrating neck trauma.

Airway Management in Zone I Injuries

Zone I injuries are particularly challenging because of the limited surgical exposure and the proximity of major vital structures. Airway compromise remains one of the major causes of mortality in penetrating neck trauma [1,5]. When a foreign body remains embedded in the neck, unnecessary manipulation should be avoided to prevent secondary injury. In our case, video laryngoscopy with in-line stabilization allowed airway control while maintaining the neck in a neutral position [6].

Gastric Ultrasound and Aspiration Risk

Trauma patients are generally considered to have a full stomach. However, rapid sequence induction (RSI) may not be necessary in every situation. Gastric ultrasound provides a rapid bedside assessment of gastric contents and can help estimate aspiration risk [3,4,7]. In this patient, identification of an empty stomach supported the decision to proceed without RSI and potentially reduced the risk of hemodynamic instability associated with a more restrictive induction strategy.

Modified Rapid Sequence Induction

When a full stomach is confirmed, RSI remains the preferred technique to minimize aspiration risk [8]. In the present case, gastric ultrasound demonstrated an empty stomach, allowing an alternative induction strategy without cricoid pressure and with gentle mask ventilation. Such an approach should be considered only by experienced anesthesiologists and in an environment where appropriate rescue strategies are immediately available.

Multidisciplinary Coordination

The successful management of this patient relied on close collaboration between emergency medicine, anesthesiology, radiology, ENT, thoracic surgery, and intensive care teams [2,9]. Careful coordination during imaging and patient transfers minimized manipulation of the retained blade, while multidisciplinary planning ensured appropriate surgical exposure and preparedness for potential airway or vascular complications.

Literature Context

Retained-knife injuries of the cervical region are uncommon. Previously reported cases emphasize the importance of

securing the airway before manipulating the retained object and maintaining careful patient positioning during induction [5,6]. Our case is consistent with these principles and additionally illustrates the potential value of gastric ultrasound in the perioperative assessment of trauma patients.

CONCLUSION

Penetrating neck injuries involving retained foreign bodies require meticulous planning and multidisciplinary management. Anesthetic care should focus on minimizing both airway-related complications and aspiration risk. In this case, gastric ultrasound, video laryngoscopy, careful patient positioning, and coordinated transport and surgical planning contributed to safe management without complications.

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