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Successful airway management using the innovative “two-table technique” in a case of penetrating back injury with projecting assault weapon: A case report

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Abstract

We present a successful airway management strategy for a case of penetrating injury to the back, with the assault weapon projecting and retained in situ. The "Two-Table Technique" was devised to secure prompt and safe intubation without displacing the weapon or causing further neurological or visceral damage. This approach involved teamwork and careful planning for ensuring a prompt and successful intubation. These cases necessitate urgent surgical exploration and management with minimal room for a full radiological workup; so, a timely airway intervention along with ensuring haemodynamic stability is emphasized. Furthermore, alternative approaches are discussed, underscoring the rationale behind our chosen method.

Keywords: Penetrating injury, airway, two-table technique

Introduction

Effective airway management in cases of penetrating injury involves consideration of various factors, such as the urgency of the situation, the patient's haemodynamic and oxygenation status, the site and type of injury, and the availability of resources. Since patients with penetrating injuries can rapidly decompensate, a low threshold is kept for securing a definitive airway. Securing the airway can facilitate necessary resuscitative measures, a thorough diagnostic workup and emergent surgical intervention [2].

A penetrating injury with a projecting, retained weapon in the back poses an anesthetic challenge not only because of the associated complications of a penetrating injury but also because of the challenges involved in positioning the patient and securing the airway. A stabbing object may penetrate any blood vessel on its way inside and there might be profuse bleeding after taking it out [3]. So, embedded objects should be taken out only in the operation theatre [4, 5]. Our case highlights the importance of safe positioning and prompt airway control.

Case Report

A 20-year-old, male patient presented in emergency with a stab injury to the left side of the back, penetrating the left pleural cavity, with a 12*4 cm serrated dagger, *in situ* and projecting from the back [Fig.1]. He had 2 more stab wounds on the back which were continuously oozing. In addition to this, he had 11th and 12th rib fractures in the back and a grade I left liver lobe laceration. He was conscious, and oriented with a GCS of 15/15, a Heart rate of 160/mt, a BP of 90/60 mmHg, a respiratory rate of 22/mt and a saturation of 95% on room air. He appeared pale and restless.

As a part of the initial resuscitation, wounds were covered with gauze pieces and pressure was applied to stop the ooze; oxygen was administered, and fluid resuscitation was initiated.



Fig 1: *In situ* and projecting from the back

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The patient had to be taken up as an emergency for surgical exploration and the challenge ahead was to secure the airway and resuscitate the patient in the complex prone to left lateral position with the retained, projecting weapon. After obtaining anaesthesia and post-operative ICU consent, we decided to intubate the patient in the supine position. We introduced the "Two-Table Technique," positioning the patient supine on two parallel tables with the weapon suspended between them. The patient was log rolled to a supine position. Care was taken to ensure that there was no movement of the weapon. The head was placed on a head ring, placed across both tables in a neutral position and stabilized firmly against the table. A rapid sequence intubation was done using 100 mg scoline, 50 mg ketamine and Propofol 120 mg I V. Anaesthesia was maintained with sevoflurane 1–2% and nitrous oxide 66% in oxygen and intermittent atracurium.

Post intubation, the dagger was removed carefully in the OT, in the left lateral position. Then, the supine position was resumed. Subsequent surgical intervention and resuscitation were carried out effectively. The operative findings were, a small left lobe liver laceration around 2*2 cm with no active bleeding and a mild haemoperitoneum. Closure of all stab wounds was done in layers and appropriate drains were placed.

There were no adverse events during the maintenance of anaesthesia. The patient was not reversed and shifted to the intensive care unit (ICU) for observation and further management. He remained stable in the ICU. The patient was weaned from ventilator and extubated a few hours later after fulfilling the extubation criteria. On the first postoperative day, he was shifted to the ward and was discharged on the fourth postoperative day.

Discussion

In challenging cases like ours, the choice of airway management technique is critical. Here, time and safety are paramount; so, choosing the most familiar and reliable approach is essential. One may need to adopt unconventional but noble and safe ideas for safe and better management with successful outcomes^[6].

Our "two-table technique" offered a safe and effective approach, ensuring successful intubation while maintaining weapon position and patient stability. It was by far the safest way to position the patient for intubation without causing any further injury to the patient^[7, 8]. When we searched the literature, we found one case report where a similar approach was used in a case of penetrating abdominal injury in a polytrauma patient^[9].

Alternative approaches were, to insert a 2nd generation supraglottic device in the prone position followed by securing an endotracheal tube through it with the help of a fiberoptic bronchoscope; though a documented approach, it would have been a more time-consuming and unfamiliar method^[10, 11].

The awake fiber-optic approach for tracheal intubation is considered the gold standard in lateral or prone positions.^[12] However, the related complications of awake fiberoptic intubation can occur in patients such as patient movement, failure, time-consuming, and hypo/hypertension. It requires the patient's cooperation and special equipment^[13, 14, 15]. In such situations, the method in which the anesthesiologist is most experienced might play a major role.

Direct laryngoscopy in the lateral/semi-lateral position is not

a regular and frequently done position for ETI and anaesthesia induction because this position can cause difficult mask ventilation and tracheal damage. Even experienced anaesthetists may be unfamiliar with tracheal intubation in the lateral or semi-lateral position. McCaul *et al.* reported that the left lateral decubitus position can be a cause of deterioration in laryngoscopic imaging conditions, difficult ETI, and an increased incidence of intubation failure^[16].

Conclusion

The "two-table technique" is a safe, time effective and simple solution for such life-threatening penetrating injury with a projecting object over the back of the chest and abdomen and can be safely adopted for effective resuscitation and airway management⁴Our experience underscores the significance of adaptive and well-considered strategies in challenging clinical scenarios.

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