Section: Anaesthesia

Case Report

ANESTHETIC MANAGEMENT FOR EMERGENCY THORACOTOMY IN A CASE OF RIGHT BRONCHIAL INJURY AND BRONCHOPLEURAL FISTULA WITH DELAYED PRESENTATION: A CASE REPORT

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Received : 08/02/2023
Received in revised form : 14/03/2023
Accepted : 29/03/2023

Keywords:
Emergency thoracotomy, Bronchial Injury, Bronchopleural Fistula.

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DOI: 10.47009/jamp.2023.5.2.317

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (2); 1518-1520

Abstract

A 18 year old male who presented late with a bull gore injury 2 days back over right side of chest with unknown neurological status status was taken for emergency thoracotomy. Anesthetic management of this patient is discussed here

INTRODUCTION

Emergency thoracotomy is a lifesaving resuscitative procedure that is performed to manage life-threatening conditions of the chest, such as chest trauma or massive haemothorax. Emergency thoracotomy is described by various terms including emergency department thoracotomy, emergent thoracotomy and resuscitative thoracotomy. Outcomes following emergency thoracotomy for thoracic trauma are generally poor, with survival rates around 9%–12% for penetrating trauma and only 1%–2% after blunt trauma[1]. Penetrating injuries can cause tension pneumothorax and cardiac tamponade, which lead to reduced venous return to the heart and end-diastolic volume. The resulting decrease in cardiac output can result in shock and may precipitate cardiac dysrhythmias[2].Anesthetic management of emergency thoracotomy requires careful planning, and in some cases, it may pose significant challenges to the anesthesiologist. In this case report, we describe the anesthetic management of emergency thoracotomy in a case of delayed presentation with right bronchial injury and bronchopleural fistula.

CASE REPORT

A 18-year-old male patient was admitted to the emergency department with a history of chest trauma sustained in a bull gore injury 2 days ago. The patient had initially presented to a local hospital, where a chest tube was inserted for a right-sided pneumothorax. He was also intubated electively and paralyzed as he was very tachypneic. However as the patient continued to have persistent air leak, he was referred to our hospital for further management. He had been paralyzed with inj. vecuronium and was sedated with an ongoing fentanyl infusion at 50mcg/hr. The patient had two chest tubes (both right and left) with severe air leak in the right side. Chest X-ray showed a huge right-sided pneumothorax with completely collapsed right lung [Figure 1]. Computed tomography (CT) scan revealed a right bronchial injury with bronchopleural fistula [Figure 2]. Saturation was 85% with a Fio2 of 100% and a quick blood gas revealed the Po2 to be 54 mmHg of mercury. Hemodynamically he was stable with no inotrope requirement. The patient was scheduled for emergency thoracotomy under general anesthesia.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

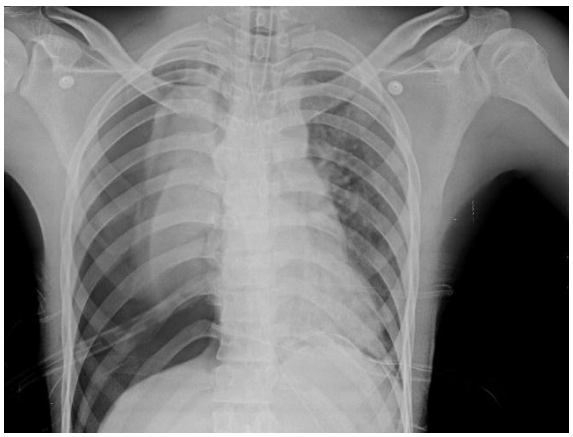

Fig: 1

Anesthetic management:

As the patient was already intubated with a single lumen endotracheal tube,he was induced with midazolam 2 mg i.v, fentanyl 100mcg i.v and propofol 100mg i.v. The patient's single lumen endotracheal tube was exchanged with a left-sided double-lumen endotracheal tube (DLT) 37F into the left lung to isolate the left lung from the right lung and mainstem bronchus. Tube position was confirmed using a fiberoptic bronchoscope.

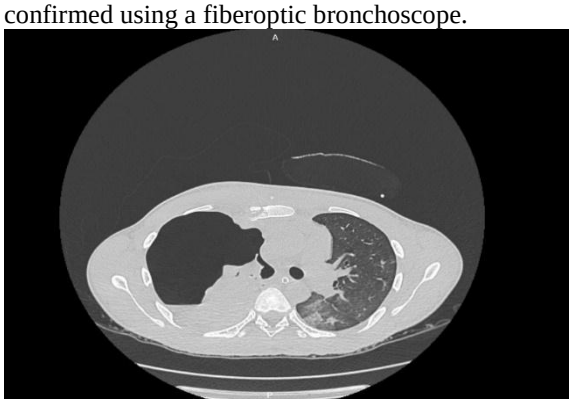

Fig: 2

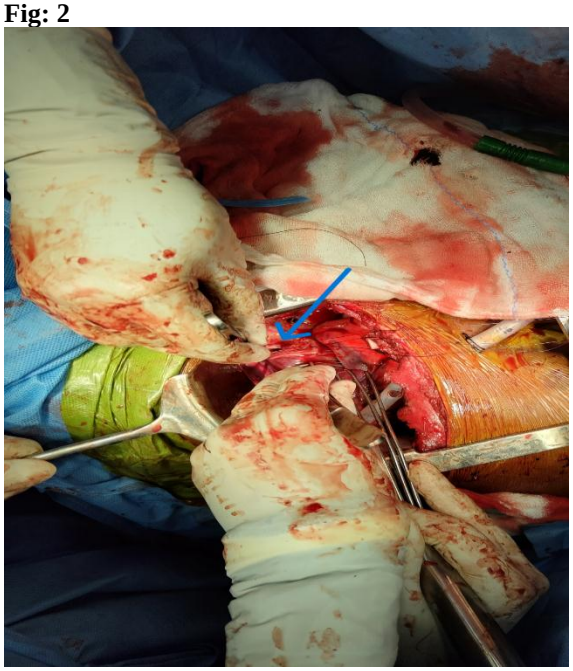

Fig: 3

General anesthesia was maintained with isoflurane (1-1.5%) and propofol infusion. After a bolus of Atracurium 25mg i.v, a infusion of 15mg/hr was started for muscle relaxation.Arterial line and central venous catheter were inserted for continuous hemodynamic monitoring. Eventhough we performed pressure controlled ventilation (PCV) aiming for tidal volumes of just below 6ml/kg for most part, the patient also required intermittent volume controlled ventilation(VCV) with hand as he was desaturating intermittently during the bronchial repair. Arterial blood gases was performed intermittently to confirm adequate gas exchange and rule out hypoxemia.The thoracic surgeon performed a right posterolateral thoracotomy through the 4th intercostal space, and the bronchial injury [Figure 3] was repaired with interrupted absorbable sutures. Blood loss was moderate and the surgery lasted for 4 hours. Two units of packed cell was transfused during the procedure.At the end of the surgery, the DLT was removed and exchanged with a single lumen ET tube. The patient was extubated in the ICU only after confirming no further air leak, adequate lung expansion, spontaneous ventilation and also adequate neurological recovery as we didn't get a chance to analyze him neurologically pre-op. The post-op chest x-ray showed a fully expanded right lung with no air leak(Figure 4). Postoperatively, the patient had an uneventful recovery, and the chest tube was removed after 4 days. The patient was discharged after 10 days of hospitalization.

Fig: 4

CONCLUSION

Anesthetic management of emergency bronchial injuries require careful planning and execution. The use of a left-sided double-lumen endotracheal tube for lung isolation to maintain oxygenation is a useful technique in such cases. This becomes challenging in

ISSN (O): 2687-5365; ISSN (P): 2753-6556

view of the obvious inadequacy of gas exchange, unstable hemodynamics and anatomical difficulty in repair of the lesion that are encountered in this situation. Conventional ventilation with an endotracheal tube and intermittent positive pressure ventilation will result in an air leak causing inadequate ventilation or a total loss of tidal volume including anaesthetic gases through the ruptured airway. Close intraoperative monitoring of hemodynamics, ventilation, and oxygenation is essential to ensure successful management of the patient. The early referral of such cases to a tertiary care center is crucial for optimal management and better outcomes.

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ISSN (O): 2687-5365; ISSN (P): 2753-6556