

Intensive care unit management of a posttraumatic pneumonectomy case

Sir,

Tracheobronchial rupture following blunt chest trauma is rare and life-threatening. Surgical repair is done in most cases and pneumonectomy is avoided whenever possible as emergency pneumonectomy carries high mortality rate of 50-70%.^[1] This is due to contributory effects of hypotension, hypoxia and abrupt rise in pulmonary vascular resistance leading to right ventricular failure^[2] and so postoperative care in intensive care unit (ICU) is very important. We describe ICU management of such a case. An 18-year-old male of chest trauma presented to the emergency referred from another hospital. Vitals were pulse 113/min, blood pressure 152/82 mmHg, respiratory rate (RR) 35/min, saturation 84% with massive subcutaneous emphysema and intercostal chest drain (ICD) *in situ*. Patient was immediately intubated, and another ICD inserted on the right side. Chest X-ray (CXR) post ICD revealed massive pneumothorax on right side [Figure 1]. Computed tomography chest revealed complete transection of right main bronchus. Patient was shifted to emergency operation theatre and intubated with double lumen tube (DLT). Intraoperatively as bronchial anastomosis was

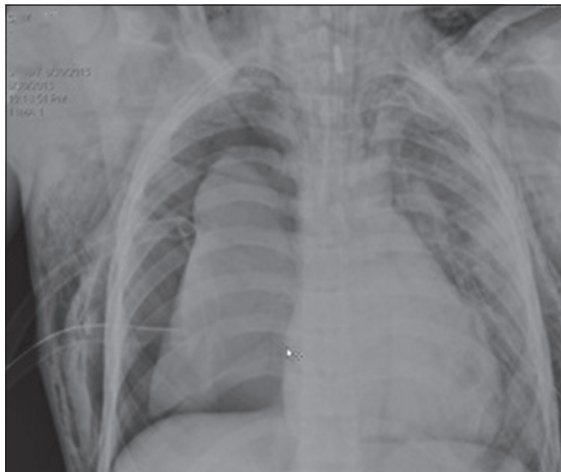


Figure 1: Preoperative chest X-ray of patient showing collapsed lung with intercostal chest drain *in situ*

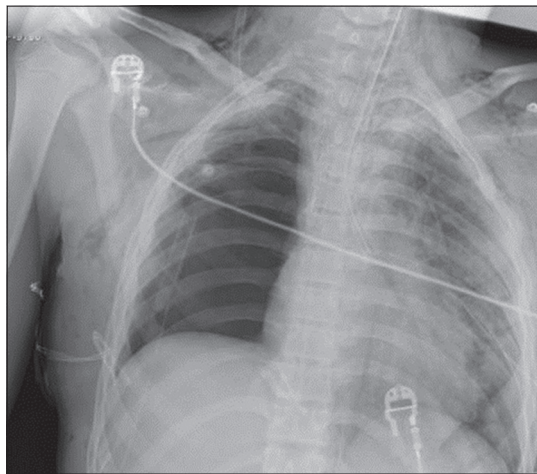


Figure 2: Postoperative chest X-ray showing left sided double lumen endotracheal tube

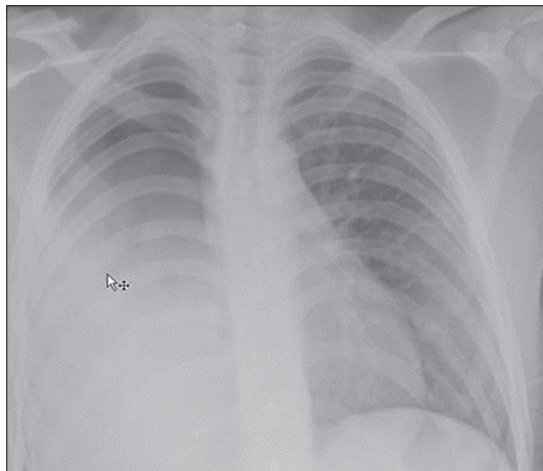


Figure 3: Chest X-ray on 8th postoperative day showing postpneumonectomy space filled with fluid

not possible, right sided pneumonectomy was done, and patient was shifted to the ICU. In the ICU, instead of changing to a single lumen tube, we ventilated the patient with DLT [Figure 2] only for 12 h as there were high chances of bronchial stump rupture. Patient was kept on volume control with a tidal volume 5 ml/kg, positive end expiratory pressure (PEEP) of 5 cm H₂O, with respiratory rate (RR) adjusted to limit plateau airway pressure to 20 cm H₂O. PaCO₂ 50-55 mmHg was accepted. Fluid intake was restricted to maintain urine output >0.5 ml/kg/h. Weaning was started after 24 h and patient extubated on the 3rd postoperative day and put on noninvasive ventilation (NIV) intermittently for the next 2 days. CXR was done daily to monitor the fluid in postpneumonectomy space (PPS). With active physiotherapy and mobilization, patient did well and was discharged from ICU on 9th postoperative day [CXR, Figure 3] and from the hospital on 14th day. At the time of discharge, he could climb two flights of stairs without dyspnea.

The common causes of early postoperative death after emergency pneumonectomy are bleeding, postpneumonectomy pulmonary edema, right ventricular failure and arrhythmias,^[2] risk factors being increased age, higher injury severity score, right sided pneumonectomy and comorbid condition.^[3] The incidence of pulmonary edema is higher for right pneumonectomy but can be avoided with judicious fluid management. We maintained a negative fluid balance of 500 ml/24 h. Radiographic monitoring of PPS is crucial. Immediately after surgery PPS fills with air.^[4] Then, fluid accumulates at a rate of two rib spaces per day and 80-90% is filled in 2 weeks. If fluid accumulates more rapidly, then possibility of hemorrhage, infection or chylothorax should be kept in mind. Arrhythmias are seen in 9-34% patients, mainly in advanced age group.^[5] After pneumonectomy work of breathing increases so patient remains tachypenic. We kept our patient on NIV intermittently and accepted an RR of 25-30/min.

In conclusion, adequate knowledge about changes postpneumonectomy and management of complications are vital for a favorable outcome.

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