

Traumatic Tracheal Transection: Surgical Challenges and Management

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Abstract

Complete tracheal transection is relatively rare. Also most of the patient of tracheal injury does not survive long enough to refer to trauma centre. Timely intervention and airway management is lifesaving. This is a case report of 32-year-old man injured in a motor vehicular accident at high speed sustained a crush injury of the neck and face with complete transection of the cervical trachea. He was aphonic, severely dyspnoeic with wound over neck on anterior aspect with bleeding and visualised tracheal transection. There was associated multiple injuries. The patient was taken to emergency surgery. Small tracheostomy tube was directly inserted into open tracheal wound after suctioning. Treatment was by primary closure of the tracheal wound with tracheostomy. These potentially lethal injuries are saved with early initiation of the advanced trauma life support protocol. Such patient requires urgent ventilatory support.

Keywords: Intubation, Neck Injuries, Tracheostomy

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Introduction

Complete tracheal transections in neck are rare usually associated with severe violence or trauma. It is seen in only 0.34% to 1.5% of blunt neck trauma and around 14% of penetrating neck injuries ^[1]. Diagnosis is

usually obscure as the symptoms may not be directed towards the disease. Tracheal transections are usually associated with injuries to surrounding structures such as esophagus, vessels and recurrent laryngeal nerves. Primary exploration with the repair of transected trachea is crucial.

Case history

A 32-year-old man with a high speed motor vehicular accident was brought to casualty section with injuries over face and anterior aspect of the neck (Figure1).



Figure 1

On neck examination patient had lacerated wound exposing the entire anterior part of the neck and oesophagus. The trachea was transected at the fourth ring and the upper cut end of trachea, thyroid and larynx was lacerated. Patient was breathing from the lower cut end of the transected trachea at the upper border of the sternum. Associated injuries of laceration to the tongue and comminuted compound fracture mandible were also present.

Patient was aphonic with respiratory rate of 40 per minutes but other vitals were stable. Patient was immediately

taken for surgery and a small number 5 portex tracheostomy tube was passed in the lower end of the lacerated trachea as oral intubation was ineffective. Wound exploration was done under general anaesthesia and haemostasis was achieved. Through examination of the vascular and oesophageal injuries was done. The tracheal wound was closed by interrupted proline sutures. Neck wound was debrided and closed with a suction drain (Figure 2).



Figure 2

A tracheostomy tube was placed for postoperative management and ventilatory support. Patient developed aspiration pneumonia in surgical intensive care unit was treated. Tracheostomy was kept in situ and was closed later on once the patient recovered.

On follow up indirect laryngoscopy showed right recurrent laryngeal nerve paralysis but voice recovered gradually after speech therapy.

Discussion

Complete tracheal transection in blunt cervical trauma is uncommon occurrence. Laryngo-tracheal injuries are life threatening with mortality rate of 40% [2]. Timely and proper airway management is lifesaving as done in our case. Complete

laryngotracheal or tracheal separation is as grade 5 injury by Furhman et al. [3].

Usually blunt neck injuries leads to posterior tracheal tear due to lack of tracheal cartilage posteriorly [4]. The signs and symptoms of tracheal transection due to blunt trauma are usually not so obvious as two transected ends are held by peritracheal soft tissues. However, in our case trachea was transected anteriorly and patient was severely breathless.

Clinical features are surgical emphysema, pneumothorax, haemoptysis and respiratory distress. There is associated swelling in neck which makes surgical landmarks difficult [5]. Diagnosis of Tracheal injuries especially intrathoracic

following blunt chest trauma requires high degree of suspicion [6].

Computerised tomography (CT) of neck and thorax or Magnetic Resonance Imaging (MRI) can be used when the diagnosis is not clear and patient is stable [5]. Bronchoscopy or direct laryngoscopy can be used [7]. But this are not the substitute for primary surgical exploration and delay in treatment is associated in poor prognosis. Our patient had undergone emergency exploration without any investigation as diagnosis was straightforward.

Associated injuries like cervical vertebral fractures and dislocations, perforations of the pharynx and oesophagus and vascular injuries must be excluded and evaluation for recurrent laryngeal paralysis is of great important.

Principles of management includes early mobilisation of the patient to the nearest hospital, prompt airway establishment, immediate exploration of the wound with appropriate investigation. Surgical repair is the treatment for tracheal transection and there is no alternative to it. Best treatment includes complete repair of trachea with end to end anastomosis by non-absorbable suture material. This avoids tracheostomy. But in our patient trachea was lacerated and complete

anastomosis was not possible. Hence trachea was sutured along with tracheostomy. Removal of tracheostomy tube along with reconstruction was performed later on.

The overall mortality in operative management of tracheobronchial injuries is around 15% [8]. This mortality is dependent on anatomic location, associated oesophageal and vascular injuries and delay in early recognition of the tracheobronchial injuries.

Associated oesophageal and vascular injuries should be identified at the time of surgery and should be repaired. Sternocleidomastoid muscle flap can be used for the repair of oesophagus [9]. There were no such injuries in our patient.

Long term complication mainly includes dysphonia and tracheal stenosis. Dysphonia is usually due to recurrent laryngeal nerve injury as seen in this patient which requires speech therapy. Tracheal stenosis can be managed by surgical reconstruction and recently by using interventional bronchoscopy [7].

Conclusion

Immediate surgical exploration is the treatment for complete tracheal transection and delay in such cases have poor prognosis.

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