

# Airway Management of a Child with Penetrating Neck Injury: A Case Report

Ashish Yadav<sup>1</sup>, Aman Kaur Saini<sup>2</sup>, Komal<sup>2</sup>, Dhruv Raheja<sup>2</sup>

<sup>1</sup>Senior Resident, Department of Anaesthesiology, PGIMS, Rohtak, Haryana, India, <sup>2</sup>Junior Resident, Department of Anaesthesiology, PGIMS, Rohtak, Haryana, India.

## Abstract

Injuries of upper airway can lead to hazardous consequences. After penetrating trauma these injuries may lead to hoarseness of the voice which can be managed conservatively or it can also lead to respiratory distress for which emergency tracheostomy is required. 18 Year old female child suffered from penetrating neck injury while playing with chain of cart. In presence of respiratory distress and hemodynamic instability immediate surgical exploration and securing airway may be required. Managing the airway can be a nightmare for any anaesthesiologist. Fiberoptic bronchoscopy aids to assess the airway injuries and is the safest possible option but cannot be used in uncooperative patients and children. Securing the airway in awake patients is although the safest option in such situations.

**Keywords:** Tracheostomy, Penetrating trauma, Fiberoptic bronchoscopy.

**Corresponding Author:** Ashish Yadav, Senior Resident, Department of Anaesthesiology, PGIMS, Rohtak, Haryana, India .  
E-mail: [ashish.yadav318@gmail.com](mailto:ashish.yadav318@gmail.com)

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## Introduction

Upper Airway injuries after penetrating trauma of neck can have dire consequences. Patient may present as dyspnea, hoarseness of voice, pain or subcutaneous emphysema.<sup>[1,2]</sup> These are usually managed conservatively or tracheostomy is done.<sup>[3]</sup> Other option is endotracheal intubation under general anaesthesia using direct laryngoscopy (DL) or fiberoptic bronchoscopy (FOB). Fiberoptic bronchoscopy can be used for assessment of airway injury as well as for securing the airway. Endotracheal intubation under DL has risk of further damaging the upper airway injury. So tracheostomy under local anaesthesia is the safest option but in child and uncooperative patients general anaesthesia has to be given.<sup>[4]</sup> We report a case of a child with penetrating trauma of neck, which was taken up for emergency tracheostomy in view of respiratory distress.

## Case Report

An eight year old female child, weighing 30kgs sustained penetrating neck injury while playing with the chain of a cart. Patient came in emergency department with complain of respiratory distress, stridor and subcutaneous emphysema from eyes to upper chest region. Surgeons decided to do emergency tracheostomy immediately, in view of suspected

tracheal injury without waiting for any investigations. On examination, patient was tachypnoeic with respiratory rate of 30/min, heart rate 140/min, bilateral crepts were present in the chest with decreased air entry, subcutaneous emphysema was present from eyes upto upper chest region. All routine monitors were attached. Induction was done using 40mgs of inj. propofol and 40mgs of inj. ketamine to maintain spontaneous respiration. No muscle relaxant was used. Maintenance of anaesthesia was done using oxygen and sevoflurane. Tracheostomy was performed under general anaesthesia, while patient breathing spontaneously on mask. Pediatric tracheostomy tube was not available in emergency operation theatre, so endotracheal tube of internal diameter 5.5mm introduced and distal end was cut short [Figure 2]. After procedure, sevoflurane was discontinued. Patient became conscious and oriented. She was sent in the ward while breathing spontaneously on tracheostomy tube. Later NCCT of neck and thorax of patient was done, which showed mild right sided pneumothorax, pneumomediastinum, subcutaneous emphysema in the bilateral lateral wall of the chest and tracheostomy tube in situ in the trachea [Figure 3,4]. Pediatrician advised conservative management of the pneumothorax. Patient was discharged home after a week in stable condition after removing endotracheal tube by fenestration and plugging.



Figure 1: Picture of Patient showing injury.



Figure 2: Endotracheal tube insitu.

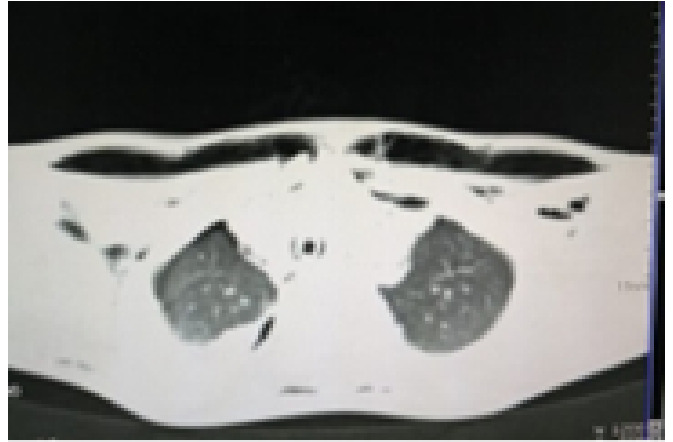


Figure 3:

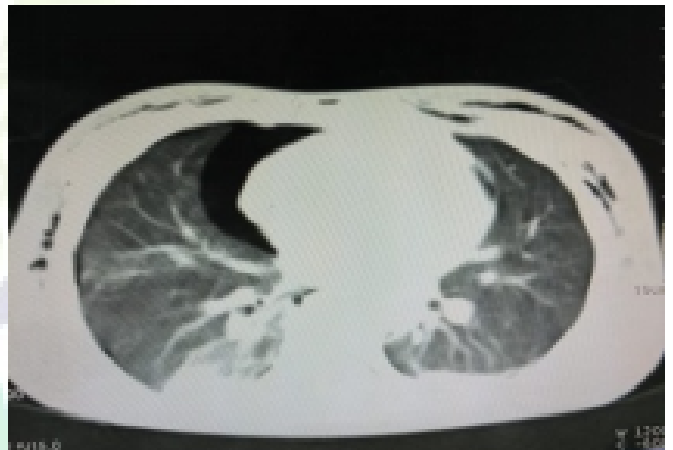


Figure 4: NCCT Neck and thorax: showing pneumothorax, pneumomediastinum, subcutaneous emphysema and endotracheal tube insitu.

## Discussion

Penetrating injury to the neck can be fatal due to presence of larynx, trachea, major blood vessels, nerves and pleura.<sup>[5]</sup> If patient is hemodynamically unstable or respiratory distress is present, immediate surgical exploration and securing of airway is needed. Endotracheal intubation can also lead to complete disruption of trachea. Awake fiberoptic intubation is safer but it requires patient co-operation, time and usually not available in emergency operation theatre.<sup>[6]</sup> Also our patient was in respiratory distress, requiring immediate intervention. We planned general anesthesia without endotracheal intubation while the patient breathing spontaneously on mask. Muscle relaxant was not given to avoid collapse of injured airway

and further spreading of emphysema. Patient improved after tracheostomy. However postoperative computed tomography scan showed no airway injury, with mild right sided pneumothorax and tracheostomy tube in situ. Pneumothorax was missed on clinical examination probably due to presence of subcutaneous emphysema. Conservative management of pneumothorax was done as advised by pediatrician. Fortunately positive pressure ventilation was not done which might have lead to tension pneumothorax. Patient was discharged home after a week in stable condition after removing endotracheal tube by fenestration and plugging.

## Conclusion

Managing traumatised airway is quite challenging for anaesthetists. Mild pneumothorax in presence of subcutaneous emphysema, without chest x-ray or computed tomography may go unnoticed. So securing airway, while patient is breathing spontaneously is the safest technique.

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