

# Removal Of A Fractured Tracheostomy Tube From A Child With Japanese Encephalitis

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## Citation

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## Abstract

Methods of opening the airways like tracheostomy are used to provide appropriate ventilation for patients with upper airway problems. Tracheostomy may be accompanied by some complications. In the present study, we reported a 6 year old boy with progressive dyspnoea and cyanosis induced by fracture of a tracheostomy tube. A chest x-ray was obtained showed fracture of the tracheostomy tube within the trachea. He underwent bronchoscopy and the fractured tracheostomy tube was removed. Conclusion: Fracture and aspiration of tracheostomy tube is a rare complication which requires a prompt and precise management. Patient education and care taker's education regarding the maintenance of tracheostomy tube for prevention of this complication is highly recommended.<sup>1</sup>

## INTRODUCTION

Tracheostomy is a common airway procedure for life support. Across the United States of America the tracheostomy rate ranges from 150 to 300 per 100,000 patients discharged from hospital; the pediatric tracheostomy rate is 7.5 per 100,000.<sup>2,4</sup> The early complications are hemorrhage, pneumothorax, obstruction of the tracheostomy tube and wound infection. The late complications are granulation formation, airway scarring, erosion of the innominate artery and tracheoesophageal fistula. Fracture of a metallic tracheostomy tube is a rare complication.<sup>3</sup>

## CASE REPORT

A 6 year old boy diagnosed with Japanese encephalitis was admitted in the paediatric intensive care unit of NEIGRIHMS hospital in June 2010 with a Glasgow Coma Scale of 6/15. He was intubated with an endotracheal tube immediately and kept under ventilator support. Two weeks after he was intubated a surgical tracheostomy was done as he needed additional days of ventilation. The patient was slowly weaned off from the ventilator after four weeks and was able to maintain normal SpO<sub>2</sub> on room air. One week after he was weaned off from the ventilator, the patient was found developing respiratory distress. When the patient was examined, it was found that the tracheostomy collar was lying over the skin, on his neck, but detached

away from the tracheostomy tube. Chest X-ray was taken to confirm the location of the tracheal tube. X-ray showed the fractured tracheal tube in the trachea.

## Figure 1

The neck with the tracheostomy collar over the skin



**Figure 2**

Chest X-ray showing a fractured tracheostomy tube in the trachea



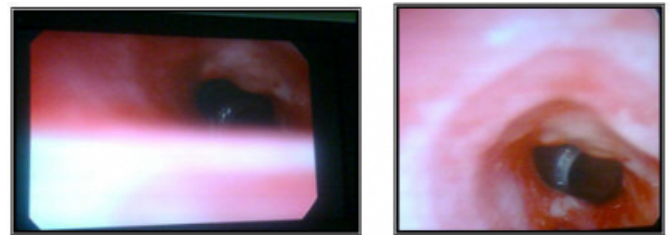
**Management:**

The patient was taken to the Operation Theatre with O<sub>2</sub> by nasal cannula. Inj. Glycopyrrolate 0.1mg was given intravenously and Inj. Fentanyl 10µg was given, with ventilation by facemask using O<sub>2</sub>+Isoflurane. As the surgeon wanted to explore the tracheostomy wound, Inj. Ketamine 10mg was given before the skin was retracted with a forceps. As the tracheostomy tube was not visible even after retracting the wound, the surgeon decided to do a bronchoscopy. Inj. Ketamine 5mg was given again and bronchoscopy was attempted. The tracheostomy tube was visible but the patient developed bronchospasm. Inj. Suxamethonium 20mg was given and ventilation was maintained by O<sub>2</sub>+Isoflurane using a facemask. When SpO<sub>2</sub> rose up to 98%, laryngoscopy was done with the laryngeal muscles relaxed. During laryngoscopy, the bronchoscope was introduced and the fractured tracheostomy tube became visible. With slight extension of the patient's neck by an assistant, the fractured tracheostomy tube was removed with a bronchoscopy forceps. Immediately the SpO<sub>2</sub> rose to 100% when ventilated with a facemask. Inj. Hydrocortisone 50mg stat was given intravenously to overcome the oedema

around the trachea.

**Figure 3**

Bronchoscopic view of the tracheostomy tube in the trachea



Checked laryngoscopy and bronchoscopy was done to rule out any other foreign body or injury. The trachea appeared normal and no injury or foreign body was found. Oral suctioning was done to clear the airway. Isoflurane was stopped and the effects of Ketamine and that of Suxamethonium weaned off. The patient started taking respirations. Oral suctioning was done again to clear the airway. The patient was given O<sub>2</sub> by mask @3litres/min. SpO<sub>2</sub> showed 100% and pulse rate of 128/min.

**Figure 4**

The fractured tracheostomy tube and the tracheostomy collar



**Figure 5**

The patient after removal of the fractured tracheostomy tube



The patient was transferred back to the paediatric intensive care unit where a checked chest x-ray was done. The chest x-ray appeared normal and the patient did not have any respiratory distress later. The next day the patient was shifted to the paediatric general ward.

### DISCUSSION

The presence of foreign material within the airways of children continues to be a significant cause of morbidity and mortality. In some countries foreign bodies are even the most common cause of accidental death among children less than one year old.<sup>5</sup> Soon after inspiration of the foreign material, the child may present intense coughing, wheezing, vomiting, pallor, cyanosis or brief episodes of apnea. After these initial dramatic manifestations, the clinical status generally attenuates or even disappears completely. This short interval during which the child does not present overt symptoms can give an observer the false impression that the foreign body may have been expelled by the cough or even swallowed. This is why it is important that doctors are always alert to this diagnostic possibility.<sup>6</sup> If displacement of tracheostomy tube is accompanied by trauma to the airways, it may cause potentially dangerous complications including trauma to the trachea and rupturing it, partial or complete obstruction of airways and choking in patients. Rapid management of these patients is critical and some principal roles in anaesthesia established for many years should be considered. Sufficient pre-oxygenation before induction of anaesthesia, mild induction of anaesthesia by inhalation of gases which can be used confidently nowadays, and presence of experienced, personnel within anaesthesia and surgery team with good cooperation can be responsible

for uncomplicated removal of a fractured tracheostomy tube. Foreign body removal post-op care is important in these patients. Administration of anti-inflammatory drugs and corticosteroids can be useful. Antibiotic administration is recommended if there is any risk of contamination or infection.<sup>1</sup>

### CONCLUSION

A fractured tracheostomy tube is a rare complication. Patients are usually misdiagnosed as having asthma, chronic bronchitis or pneumonia before the definite diagnosis is made. Patorn Piromchai<sup>1</sup> et al<sup>3</sup> reviewed 20 cases from 18 published reports. The most common dislodged sites were the trachea and the right main bronchus. The most common fracture was at the junction between the tube and the neck plate.<sup>3</sup>

Fracture and aspiration of a tracheostomy tube is a rare complication which requires a precise and prompt management. A careful monitoring of ventilation, prompt intervention for extraction of the foreign body, ventilation support and post tracheostomy tube removal care are important in treatment of these patients. Patient education and the care taker education in maintenance of tracheostomy tube for prevention of this complication is highly recommended.<sup>7</sup>

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