

## Transection of cervical trachea following blunt trauma

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### Abstract

Laryngotracheal injuries are relatively rare but their mortality rate is fairly high. Complete disruption of the trachea is extremely rare and a systematic approach is needed for early diagnosis and favourable outcome. The patient's symptoms and physical signs do not necessarily correlate with the severity of the injury as this case report highlights. X-rays, CT scans, barium swallows and endoscopies are recommended for evaluation of such injuries. However, direct laryngoscopy and fibre optic bronchoscopy are the most accurate.

**Key words:** Wounds and injuries; Trachea; Accidents, traffic

### Case report

A 23-year-old man was admitted with a history of blunt injury to his neck one hour prior to presentation. He was driving a motorcycle at the speed of 40 mph when he injured his neck by a rope tied down between two pillars. He complained of neck discomfort and hoarse voice. He spat out mucous tinged with blood, which cleared up within a few hours. There was no history of difficulty in breathing or swallowing. Examination showed well defined rope marks on the chest and encircling the neck. There was mild surgical emphysema. Fibre optic nasopharyngoscopy showed congestion over both vocal folds, but mobility could not be assessed properly as the patient was uncooperative. However, there was no sign of active bleeding or haematoma in the larynx.

Lateral neck X-ray revealed evidence of surgical emphysema, and that the cartilaginous framework of the larynx and cervical vertebrae were normal. Chest X-ray and barium swallow were normal. The patient was kept under observation and started on intravenous steroids and antibiotics. Forty-eight hours after admission he discharged himself from hospital despite medical advice.

He returned to the ward the next morning with an inability to swallow. Examination revealed extensive increase in the surgical emphysema as seen by lateral neck X-ray (Figure 1). A repeat barium swallow did not reveal any pharyngeal or oesophageal perforation. A few hours later the patient developed marked stridor and he was taken to theatre in order to perform a tracheostomy. The anaesthetist had no difficulty in passing the endotracheal tube, but during the procedure complete disruption of the trachea immediately below the thyroid isthmus was discovered. The endotracheal tube was seen bridging a gap of 4 cm between the two ends. The thyroid isthmus was divided, the two ends of the trachea were mobilized and anastomosed together. The wound was closed in layers and a redivac drain inserted.

The patient was kept intubated and was admitted to the Intensive Care Unit. Post-operative chest X-ray showed collapse of the left lung. Fibre optic bronchoscopy was performed and a mucous plug was removed and following this the left lung re-inflated satisfactorily. The patient improved and was extubated 72 hours later. He discharged himself two days later but prior to discharge fibre optic nasopharyngoscopy had revealed left vocal fold paralysis.

Three weeks later he was seen in the ENT clinic and his voice had improved. Indirect laryngoscopy showed persistence of the left vocal fold paralysis. At a follow-up four months later bronchoscopy showed no evidence of stenosis at the anastomotic site.

### Discussion

Laryngotracheal injuries constitute only a small fraction of admissions in a major trauma centre. The frequency has been reported to be as low as 0.03 per cent (Gussack *et al.*, 1986). However, mortality is reported to be as high as 24 per cent (Cicala *et al.*, 1991). Complete disruption of the trachea is among the rarest injury with only a few cases reported in literature (Major *et al.*, 1992).



FIG. 1

Lateral soft tissue of the neck showing extensive surgical emphysema displacing the trachea anteriorly.

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Flexion and extension injuries are more likely to cause tracheal tear or laryngotracheal separation compared to direct blows which are more likely to be associated with fracture of the cartilaginous framework (Mathisen and Grillo, 1987). The signs and symptoms are often subtle even in complete transection of the trachea. The two ends may be held in close proximity by peritracheal connective tissue and soft tissues of the neck. Clinical features described in the literature include subcutaneous emphysema, mediastinal emphysema, pneumothorax, respiratory distress, hoarseness, cough, haemoptysis, stridor, haematoma and loss of palpable landmarks (Trone *et al.*, 1980; Kelly *et al.*, 1985; Mace, 1986; Flynn *et al.*, 1989). All these symptoms and signs are relatively nonspecific and correlate poorly with the severity of underlying injury. This necessitates a higher degree of suspicion and more aggressive approach towards diagnosis and further management.

Chest and neck radiographs though essential for initial evaluation are not completely reliable. Even a CT scan can fail to demonstrate an underlying laryngotracheal injury (Minard *et al.*, 1992). Direct laryngoscopy has been the traditional examination for the definitive diagnosis of laryngeal injury, but flexible bronchoscopy may now be the investigation of choice for complete evaluation of the airway (Ecker *et al.*, 1971). In one series (Reddin *et al.*, 1987) the reliability of fibre optic bronchoscopy has been reported to be as high as 100 per cent. Early diagnosis is essential in injuries of the upper airway as delay is detrimental to repair (Mathisen and Grillo, 1987).

This case report highlights the fact that even minor symptoms can have serious underlying injury in patients receiving a blunt laryngotracheal trauma.

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