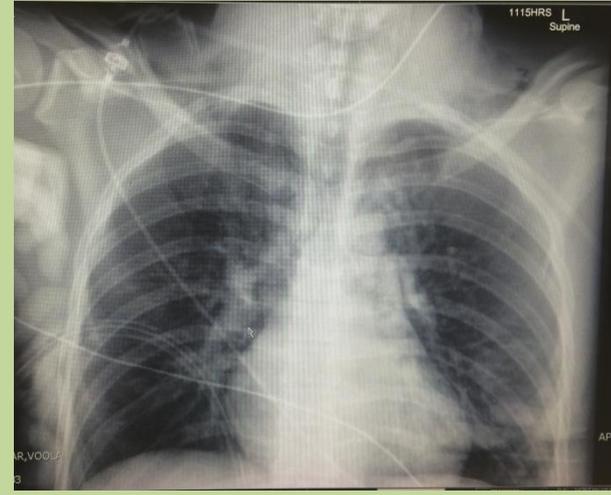
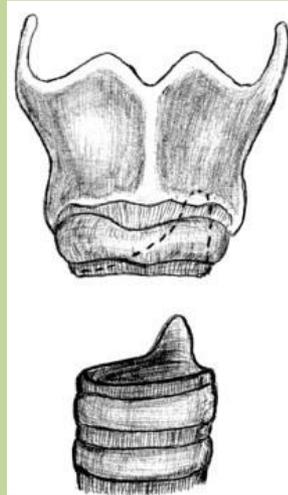


# Case Report: An Airway Challenge

## Laryngotracheal transection

**Dr Orla Lyons** *FACEM*

**Dr Ash Mukherjee** *FACEM*



The purpose of this report is to bring the diagnosis to the attention of people involved in the immediate care of patients after major accidents. To improve the dismal outcome of these patients, practitioners must focus on early diagnosis, appropriate management of the airway, identification and treatment of associated trauma, and prompt repair of the injury.



Government of **Western Australia**  
Department of **Health**  
**Armadale Health Service**

**smacc**  
**G O L D**



**ARMADALE**  
HEALTH SERVICE

## At Scene assessment

# A<sub>x</sub>

At risk / unprotected  
Blood in airway  
Stridor  
Hoarse voice  
Resisted C<sub>x</sub> collar

# B<sub>x</sub>

Rhonchi  
Bilaterally decreased AE  
Shallow/Rapid/laboured  
SpO<sub>2</sub>- 84%

**24 ♂ had 1 ton  
glass pallet fall  
on his chest.**

# C<sub>x</sub>

Palpable radial pulse  
No external neck wounds  
No external haemorrhage

# D<sub>x</sub>

GCS 15 at scene

Time to scene  
6.5 min

At scene  
5 min

Time to ED  
12 min



## Out of Hospital

Deterioration  
en route

Attempted intubation failed

BVM- no chest rise, but  
swelling of neck

LMA inserted but  
unable to ventilate

↑surgical emphysema  
↓Consciousness  
↓SpO<sub>2</sub>

Bradycardic PEA  
prior to arrival in ED

## In the Emergency Department

RSI performed and the larynx  
was intubated uneventfully  
Transient ROSC

SpO<sub>2</sub> ↑ 92%  
Difficult to ventilate  
↑ Surgical emphysema

Rt ICC- no blood  
Lt Thoracotomy

Slight hiss on thoracotomy  
No evidence of tension pneumothorax  
No cardiac contractility

Suprasternal neck incision  
Unable to locate distal end of  
trachea.

RIP



# Background - Laryngotracheal Trauma

Tracheobronchial rupture occurs in 0.3% of closed chest injuries

In 80% of cases the injury is within 2.5 cm of the carina

The cervical trachea is injured less commonly than the thoracic trachea following blunt trauma.

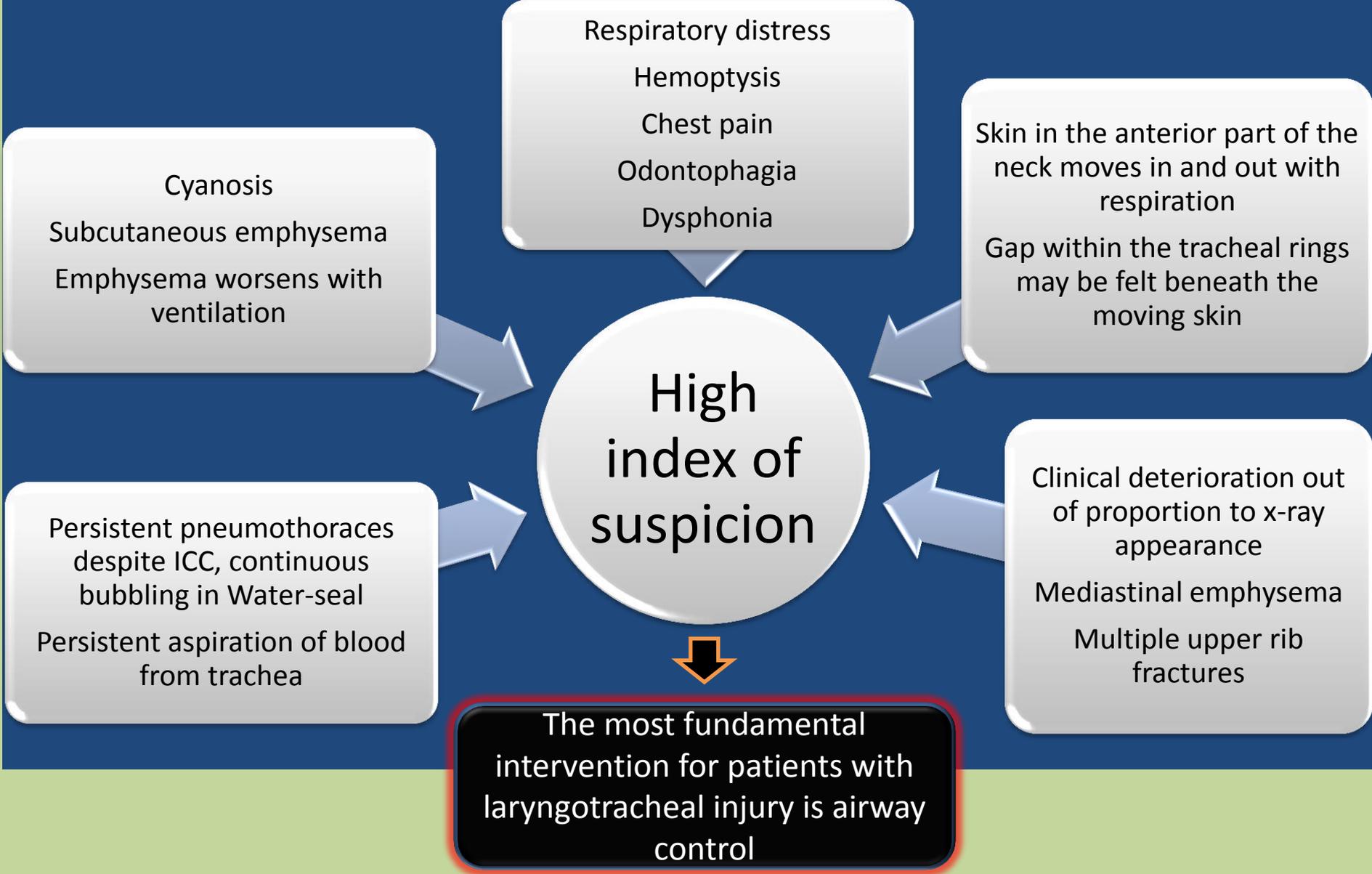
Blind intubations often fail to achieve an adequate airway, necessitating emergency tracheostomy.

Patients with partial tracheal disruption have a normally positioned trachea and may form a false passage through the traumatized soft tissues, thereby maintaining a low level of ventilation.

Tracheobronchial rupture may present acutely or after a considerable delay. This arbitrary division emphasises that such an injury is *not always* immediately fatal.

In patients with partial tracheal rupture, orotracheal intubation may aggravate the damage and lead to massive haemorrhage, causing worsening of dyspnoea.





# Controversy regarding a secure airway

Schaefer et al avoided intubation in these patients and recommended a tracheostomy

Dong et al advocate not using either tracheotomy or blind oral or nasal intubation if the diagnosis has not been confirmed.

Gussack et al argued that endotracheal intubation can safely manage the airway if performed by experienced personnel under direct visualisation with a small endotracheal tube

Fuhrman et al reported that a tracheostomy should be the only method of airway control used in laryngotracheal trauma [LTT]

Application of cricoid pressure may lead to its dislocation or total airway occlusion in patients with undiagnosed cricoid fracture

Alfille et al suggest Rapid-sequence induction may theoretically result in airway collapse and distortion from profound muscle relaxation.



# CricCon

Cricothyrotomy Alert Posture

5	Discuss/Feel/See Kit
4	Mark/Kit Bedside
3	Inject/Prep/Open & Set Kit/Scalpel in Hand
2	Make skin cut/Find Membrane
1	Perform Cric

A relatively stable situation can deteriorate suddenly to respiratory arrest

Intubating the larynx doesn't always mean a secure airway

Dr Weingart's CricCon 3/2 preparedness!! for RSI

**Points to Ponder**

Ideal initial emergency management is to cautiously pass a bronchoscope into the trachea under direct vision rather than to attempt blind intubation failing which cervical incision for tracheostomy.

Blind oral or nasal intubation in patients with tracheal injury can lead to false extratracheal intubation and irreversible damage to the airway and the distal end of the disrupted trachea may retract into the thoracic cavity, causing airway obstruction and death.

# References

**Gussack et al.** Laryngotracheal trauma: A protocol approach to a rare injury. *Laryngoscope* 1986; 96 : 660-5.

**Reece et al.** Blunt injuries of the cervical trachea: review of 51 patients. *South Med J* 1988; 81:1542-1548.

**Lee et al.** Acute external laryngotracheal trauma: Diagnosis and management. *Ear, Nose & Throat Journal*; Mar 2006; 85, 3; 179-184

**Chow et al.** ACUTE COMPLETE TRACHEAL TRANSECTION. *Journal of Cardiothoracic and Vascular Anesthesia, Vol 18, No 4 (August), 2004: pp 475-478*

**Bowley et al.** INTUBATED, VENTILATING PATIENTS WITH COMPLETE TRACHEAL TRANSECTION. *Ann R Coll Surg Engl* 2003; 85: 245–247

**Schaefer SD.** Laryngeal and esophageal trauma. *Otolaryngology Head and Neck Surgery. 3rd ed.* St. Louis, MO: Mosby; 1998:2001–2012

**Atkins et al.** Current Management of Laryngotracheal Trauma. *J Trauma.* 2004;56:185–190

**Fuhrman et al .** Blunt laryngeal trauma: classification and management protocol. *J Trauma.* 1990;30:87-92.

**Table 1. Classification of laryngotracheal trauma according to the degree of the injury**

Type	Degree	Symptoms	Signs (in order of their incidence)
1	Mild	Mild voice change, mild dyspnea, cough	Minor hematomas, small lacerations, no fractures or dislocations
2	Moderate	Compromised airway, hemoptysis	Obstructing hematoma, edema, minor mucosal disruption, nondisplaced fractures
3	Severe	Severe airway compromise, stridor	Massive edema and hematoma, deep mucosal tears, exposed cartilage, aspiration, displaced fractures, unilateral vocal fold immobility
4	Profound	Impending airway obstruction	Massive edema, mucosal avulsion, fragmented cartilage, aspiration, displaced arytenoids, bilateral vocal fold immobility
5	Critical	Complete airway obstruction	Skeletal collapse, structural disruption and breakdown, complete laryngotracheal separation

## Post-mortem:

- Complete transection of trachea & oesophagus.
- Fractures of C7, T1 with haemorrhage and disruption of the spinal cord at T6.

