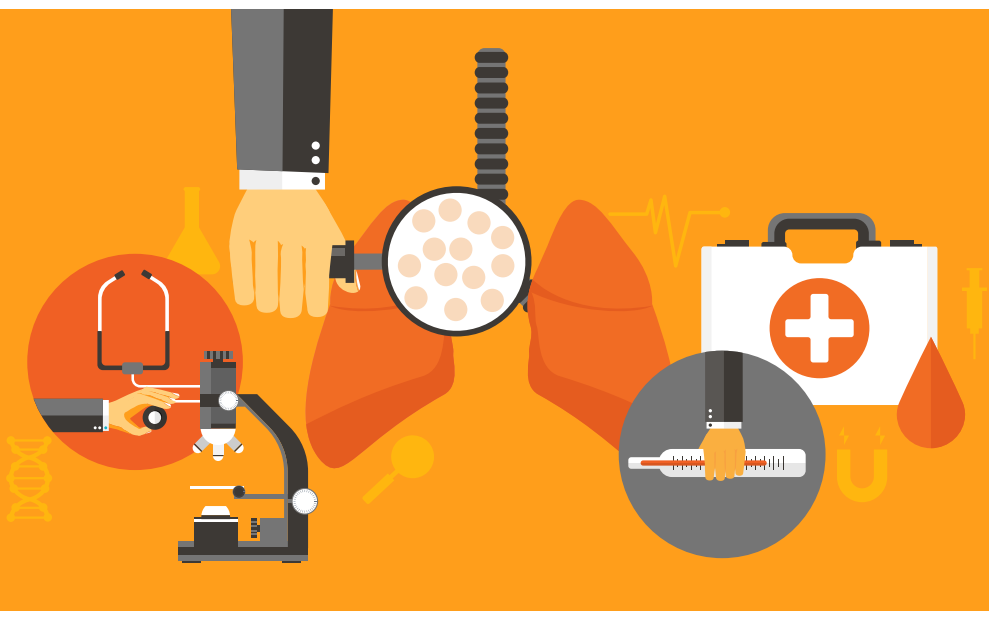
AVANOS

TRACHEAL TRAUMA: A CRITICAL ISSUE FOR AIRWAY MANAGEMENT



An aspect of airway management is the maintenance of an adequate pressure in the endotracheal (ETT) cuff.[1]

Too low cuff pressures result in decreased ventilation due to **leakage and risk of aspiration.**[2]

Variations in the cuff pressure may also occur as a result of the changes in patient positions and routine manual cuff pressure control manoeuvres.[3, 4]

Cuff pressures >30 cmH_2O **compress mucosal capillaries** and **impair blood flow,** with total occlusion occurring at 50 cmH_2O.[5]

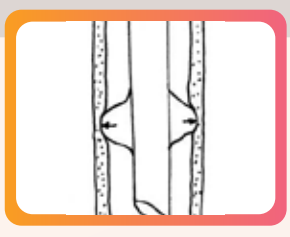
A cuff pressure between 20 and 30 cmH_2O is recommended to provide an adequate seal and reduce the risk of complications.[1]

cmH_2O= cm water pressure

Depending on the pressures needed for cuff inflation, cuff types include:[6]

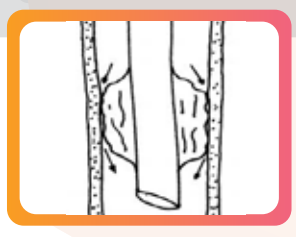
High Pressure, Low Volume cuff

- Achieves enough contact with the tracheal wall and good seal
- Provides small area of contact with the tracheal wall, distending and deforming the trachea



High Volume, Low Pressure cuff

- Cuff wall seals the trachea by adapting itself to the tracheal surface
- Large area of contact due to large resting volume and diameter



Adapted from: UCSF. Endotracheal tubes [Internet]. [2013; cited 2019 Aug 21]. Available from: https://aam.ucsf.edu/endotracheal-tubes

COMPLICATIONS DUE TO EXCESSIVE CUFF PRESSURE

An overinflated ETT cuff may press against the internal tissues of the trachea over time and cause tracheal trauma[7]

- Pneumothorax
- Airway obstruction due to hematoma or edema
- Delayed airway stenosis
- Vocal cord dysfunction from scar tissue formation
- Recurrent laryngeal nerve injury
- Pulmonary and wound infections

DID YOU KNOW

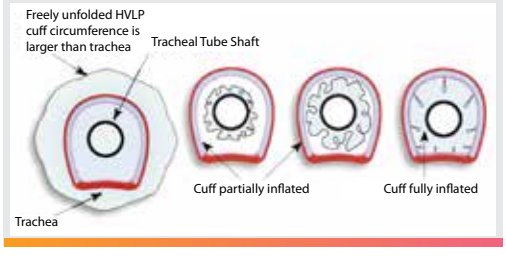
Pneumothorax (collapsed lung) occurs when air escapes from the lung. It then fills the space outside of the lung, between the lung and chest wall, exerting pressure on the lung and hampering normal breathing.[8]

OUR SOLUTION

The Avanos Adult MICROCUFF* Tube requires lower cuff pressures than conventional tracheal tubes, due to ultra-thin polyurethane cuff membrane[9]

15 cmH_2O

Microcuff can seal the airway at pressures **as low as 15 cmH_2O**, thus reduces the risk of tracheal trauma.



High volume low pressure cuff (HVLP) **provides an effective seal**

References:
1. Sole ML, Su X, Talbert S, Penoyer DA, Kalita S, Jimenez E, et al. Evaluation of an intervention to maintain endotracheal tube cuff pressure within therapeutic range. Am J Crit Care. 2011; 20(2): 109-118. 2. Michell WL. Endotracheal tube cuff pressures-still a problem!. SAJCC. 2014; 30(2):34. 3. Alcan AO, van Giersbergen MY, Dincarslan G, Hepcivici Z, Kaya E, Uyar M. Effect of patient position on endotracheal cuff pressure in mechanically ventilated critically ill patients. Aust Crit Care. 2017; 30(5):267-72. 4. Aeppli N, Lindauer B, Steurer MP, Weiss M, Dullenkopf A. Endotracheal tube cuff pressure changes during manual cuff pressure control manoeuvres: An in-vitro assessment. Acta Anaesthesiol Scand. 2019; 63(1):55-60. 5. Hameed AA, Mohamed H, Al-Mansoori M. Acquired tracheoesophageal fistula due to high intracuff pressure. Ann Thorac Med. 2008; 3(1):23. 6. Baheti DK. Understanding Anesthetic Equipment & Procedures: A Practical Approach [Internet]. New Delhi: JP Medical Ltd; 2014. Section 5, Airway Equipment 7. Santiago-Rosado L, Lewison CS. Tracheal trauma. [last updated 2019 Jan 26; cited 2019 Jun 27]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK500015/. 8. Medline.gov. Collapsed lung (pneumothorax). [last updated 2019 Jul 31; cited 2019 Aug 02]. Available from: https://medlineplus.gov/ency/article/000087.htm 9. Dullenkopf A, Schmitz A, Frei M, Gerber AC, Weiss M. Air leakage around endotracheal tube cuffs. Eur J Anaesthesiol. 2004; 21(6):448-53.