Minimal Occluding Volume (MOV)

Purpose

To standardize the method of minimal volume of air in the endotracheal/tracheal cuff that will allow optimal sealing of the airway.

Scope

- All patients intubated will be assessed for proper volume/pressure in endotracheal cuffs on a routine basis.
- All tracheostomy patients not utilizing a foam-filled (bivona type) cuff volume/pressures monitored on a routine basis.
- The acceptable intra-cuff pressure is less than 25 mmHg.

Audience

Respiratory Care Practitioners employed by the Respiratory Care Services Department with the understanding of age specific requirements of the patient population.

Equipment

- 10cc syringe
- Stethoscope
- Cuff pressure manometer
- Three-way stop cock
- OR Cufflator cuff inflation device
- Manual resuscitator and mask

Procedure

Step	Action
1	Technique for MOV • Suction the patient airway and oral pharynx to prevent possible aspiration of retained secretions. • Place your stethoscope diaphragm over the laryngeal area and inflate cuff until all air leak is gone. • <u>For Positive Pressure Ventilation</u>, remove small increments (0.25-0.50cc) of air from the cuff until a small leak is heard at the point of peak inspiratory pressure (PIP). Check tidal volume to insure adequate ventilation and inflate cuff until all air leak is gone. • <u>For spontaneous ventilation or CPAP</u>, remove small increments of air (0.25-0.50cc) from cuff until a small expiratory leak is heard (usually in early or mid exhalation). Inflate until all air leakage is gone.

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Procedure Continued

Step	Action
Note	Once the MOV is established, the cuff volume should not be manipulated until either the leak becomes too great to maintain appropriate airway pressure therapy or PIP has significantly diminished or been reduced.
2	Technique for measuring Intra-cuff pressure with pressure manometer without the syringe check valve: • Follow technique outline above for MOV. • Collect equipment (cuff manometer with stop cock and 10cc syringe or cufflator). • Explain to the patient, in the degree of detail he/she can comprehend. • The stopcock is inserted into the inflating tube (pilot line) in the closed position so that no air can escape from the cuff. • The tubing from the manometer is attached to the second stopcock port and a syringe attached to the third. • The stopcock is next rotated to allow the pressure in the cuff to be read on the manometer. Note reading. (The pressure reading will be low due to the loss of air in manometer tubing). • Rotate stopcock position that allows aspiration of the air from the cuff into the syringe. • Additional air is then added to the cuff to compensate for the volume lost (MOV technique). • The stopcock position is again rotated to the position where pressure can be read on manometer. This will be the correct pressure.
3	Technique for measuring Intra-cuff pressure with the pressure manometer with the syringe check valve: • Follow technique outline above for MOV. Collect equipment (cuff manometer and 10cc syringe or cufflator)

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Procedure Continued

Step	Action
3 Continued	• Explain to the patient, in the degree of detail he/she can comprehend. • Insert the small end of the pressure manometer adapter into the pilot balloon. • Insert the 10cc syringe (holding 2-3cc air) into the syringe, check valve (large end). • Additional air is then added to the cuff to compensate for the volume lost (MOV technique). • OR if using cufflator attach pressure-measuring port to endotracheal tube cuff and observe pressure on cufflator manometer and record on the patient record. If pressure is low, squeeze the bulb to increase pressure; press the red button to decrease the cuff pressure. • Explain to the patient, in the degree of detail he/she can comprehend. • Insert the small end of the pressure manometer adapter into the pilot balloon. • Insert the 10cc syringe (holding 2-3cc air) into the syringe, check valve (large end). • Additional air is then added to the cuff to compensate for the volume lost (MOV technique). • OR if using cufflator attach pressure-measuring port to endotracheal tube cuff and observe pressure on cufflator manometer and record on the patient record. If pressure is low, squeeze the bulb to increase pressure; press the red button to decrease the cuff pressure.

Adverse Reactions

Cuff Leaks

- Ventilation must be maintained while preparation is being made for replacement of a tube with a faulty cuff.
- In the case of a tracheostomy tube, it may be necessary to support ventilation by bag and mask from above.

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Adverse Reactions Continued

- Inadvertent Extubation
- Replacement of the endotracheal tube or tracheostomy tube should be attempted, but if it cannot be accomplished immediately the tube should be completely removed. Confirm positive CO_2/ETT placement as per CO_2 detector.
- Ventilation must be established by any means available. Simply bag mask ventilation with occlusion of the tracheostomy stoma.

Infection Control

Follow procedures outlined in Healthcare Epidemiology Policies and Procedures #2.24; Respiratory Care Services.
http://www.utmb.edu/policy/hcepidem/search/02-24.pdf

References

Boulain T. Unplanned Extubations in the Adult Intensive Care Unit: a Prospective Multicenter Study. American Journal Respiratory Critical Care Medicine 1998; 157:1131-1137.

Plevak DJ, Ward JJ; Airway Management. In: Burton GG, Hodgkin JE, Ward JJ, Eds. Respiratory Care: A Guide to Clinical Practice. 4 ed. Philadelphia: JB Lippincott; 1997.

Guyton DC, Besselievre TR, Devidas M, DeLima LG, Eichhorn JH.J; A Comparison of Two Different Bronchial Cuff Designs and Four Different Bronchial Cuff Inflation Methods. Cardiothoracic Vascular Anesthesia. 1997 Aug; 11(5): 599-603.