

A home brewed low cost cuff inflator and pressure monitor

Sir,

Endotracheal tube (ETT) cuff pressure management is an essential part of airway management in intubated and mechanically ventilated patients.

Cuff pressures in the intubated patients in hospitals and Intensive Care Units are often too high. Acceptable cuff pressures are best achieved when a cuff pressure manometer has been used. Obstruction to mucosal blood flow occurs at pressures above 30 cm H₂O, with total occlusion of flow at 50 cm H₂O.^[1] Commercially available cuff inflators are costly. The use of this crucial equipment is neglected and is often not available in many hospitals or hospital areas of economically poor countries.

We have devised a cuff inflator and cuff pressure measuring device with readily available materials

[Figure 1]. These include an airway low pressure manometer detached from an old unused Bird ventilator with a reading up to 100 cm H₂O pressure. As an alternative, low cost commercially available low pressure monitor can also be made use of. Other spares include cuff inflating one-way valve cut from Foley's catheter, a 3-way connector and other easily available connectors. All the parts were bonded with the help of quick fix sealant and tested for air leak in a bowl of water. We tested the accuracy of the device by connecting it to mercury manometer and also commercially available Portex[®] cuff inflator which matched with the readings with an error as low as 2–3 cm H₂O in the clinical range of 20–35 cm H₂O. Keeping this small error into account we are practically using the device regularly both for ETT cuff and laryngeal mask airway (LMA) cuff. We have already used it in 80 cases to check the ETT cuff pressure and for inflating cuff of pro-seal LMA to the required pressure in 60 patients.

The incidence and severity of tracheal mucosal lesions increase with cuff pressure >30 cm H₂O. It is revealed that the majority of cuff pressures exceeded safe pressure and required correction.^[2] The pressure exerted on the trachea must be maintained within a range (25–30 cm H₂O or 18–22 mmHg) to ensure perfusion to the tracheal capillaries without causing injury.^[3] Only 27% of pressures were within 20–30 cm H₂O; 27% exceeded 40 cm H₂O. Hence, it is recommended that endotracheal cuff pressure be set and monitored with a manometer.^[4] It is important to perform cuff pressure measurements at 6–12 hourly intervals and to use the correct method.

At the time of periodic pressure check while connecting any cuff inflator to the ETT valve, loss of cuff pressure of about 6.6 cm H₂O can occur on an average needing reinflation to adjust for pressure loss.^[5] However, our device has the advantage that it can be pre-pressurized with the help of 3-way connector of the assembly before pressure check which can prevent cuff pressure loss and deflation.

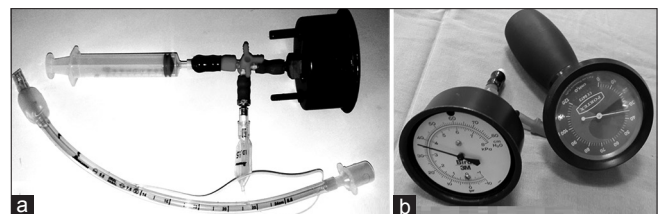


Figure 1: The assembled cuff inflator and cuff pressure monitor connected to endotracheal tube (a) and its calibration (b)

Our low cost cuff pressure inflator can be easily constructed and can be practically used. Innovative practice and translational research is an important aspect of higher education and postgraduate curriculum. It can be a useful as an aid in innovative teaching methodology to teach basic foundations in anaesthesiology by giving such projects to postgraduate students to imbibe spirit of creativity.

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Announcement

CALENDAR OF EVENTS OF ISA - 2015

Certain important dates are given here for the members. All the applications should be sent by registered post (with Acknowledgement Due)

Date	Name of the Award/Post	Application has to be sent to
30 th June 2015	Bhopal Award for Academic Excellence	Hony. Secretary, ISA
15 th August 2015	Prof. A. P. Singhal Life Time Achievement Award	Hony. Secretary, ISA
31 st October 2015	Dr. (Mrs.) Rukmini Pandit Award - Publication format along with Conference Presentation Certificate	Hony. Secretary, ISA
31 st October 2015	Y. G. Bhoj Raj Award - Best Review Article in IJA	Hony. Secretary, ISA
31 st October 2015	Dr. Kop's Award	Chairman Scientific committee of ISACON with a copy to Hony Secretary ISA
27 th November 2015	Dr. TN Jha Memorial & Dr. KP Chansoriya Travel grant	Hony. Secretary, ISA
27 th November 2015	Late Dr. Venkata Rao Memorial Oration	Hony. Secretary, ISA
27 th November 2015	Ish Narani Best Poster Award	Chairman Scientific Committee ISACON
28 th November 2015	ISA GOLDCON QUIZ Competition	Chairman Scientific Committee ISACON
28 th November 2015	Awards for	Hony. Secretary, ISA
	1. Best City Branch	
	2. Best State Branch	
	3. Best Metro Branch	
	4. Public Awareness Individual	
	5. Public Awareness City	
	6. Public Awareness State	
	7. Ether Day State	
	8. Ether Day City	
	9. Membership Drive % (State)	
	10. Membership Drive No.s (State)	
	11. Individual Drive	

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