

Letter to Editor

## Ventilatory failure due to improper capnography connector

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**Abstract**

Ventilatory failure due to improper or loose breathing circuit connection can occur in anaesthetic practice and may lead to significant morbidity and mortality. We report here an unusual incidence of ventilatory failure due loose capnography connector which obstructed the outer tube of Bain's circuit and presented as airway obstruction.

**Keywords:** Bain's circuit, capnography, obstruction, ventilatory failure

Sir,

Device failure and improper connections can lead to significant complications in anaesthesia practice. We describe here an incidence of ventilatory failure due to improper fitting of connections. A 25 yrs. old female was posted for laparoscopic cholecystectomy under GA. Apart from chronic cholecystitis, she did not had any other disease or comorbid condition. Inside OT, monitors were connected and she was preoxygenated with Bain's circuit. Induction was done with propofol and after ensuring proper mask ventilation vecuronium was given. After 5 minutes, an endotracheal tube (ETT) of 7.5 mm ID was placed in trachea with direct laryngoscopy under vision. After placement of ETT, capnography sampling line was connected to Bain's circuit and ETT using an angle connector and patient was ventilated. A strong resistance was encountered during ventilation and capnography showed small and narrow curve suggestive of obstruction. Inadequate chest rise was seen during ventilation. Chest auscultation was done and bilateral decreased breath sounds was found. No added sounds like rhonchi or crepts was present. We rechecked the position of ETT with laryngoscopy and checked Bain's circuit for kinking or damage. We tried to ventilate the patient with AMBU bag and did not found any resistance during ventilation. Adequate chest rise with good bilateral breath sounds was found. We rechecked the Bain's circuit and found that the angle connector of capnography sampling line was loosely fitting in bain's circuit and on pushing hard, it was obstructing the outer tubing of Bain's circuit. This was causing resistance in ventilation and inadequate chest rise. We changed the angle connector and again tried to ventilate the patient with same Bain's circuit and found no resistance this time. There was no complication due to this defective connection and further surgery was uneventfull.

Anaesthesia machine, ETT and bain's circuit were checked before induction and they were found normal. This problem aroused due to improper fitting of connections caused by wear and tear of angle connector of capnography sampling line after multiple use. Device and circuit failures have been reported in literature and had lead to severe complications. Improper connection of Bain's circuit<sup>1</sup>, inopportune breakage of an endotracheal tube T-connector<sup>2</sup>, breakage of inner coating of resterilised tube<sup>3</sup>, obliteration of the tube lumen by manufacturing defect<sup>4</sup> or a foreign body, e.g. mucous plug or chewing gum<sup>5</sup> have been noted.

This Bain's circuit was neither being reused nor was resterilised. Usually on inspection, the defects of the tubes and circuit can be discovered but the defects which are visually not very perceptible may go unnoticed. This incidence signifies the importance of systemic checking of equipment defects, so that complications can be avoided, because negligence can pose significant risk to life of the patient.

**Fig 1: Endotracheal tube**



**Fig 2: Capnography connector**



Fig 3: Monitoring Capnography

**References**

1. Maltby JR. Letter: Improper connection of the Bain circuit. *Can Anaesth Soc J.* 1975 Sep; 22(5):627.
2. Heitz JW, Franze VP. Inopportune breakage of an endotracheal tube T-connector. *Can J Anaesth.* 2007 Nov; 54(11):958.
3. Paul M, Dueck M, Kampe S, Petzke F. Failure to detect an unusual obstruction in a reinforced endotracheal tube with fiberoptic examination. *Anesth Analg.* 2003 Sep; 97(3):909-10.
4. Shamsery C., Kannaujia A.K., Gautam S. Ventilation failure due to endotracheal tube T- connector defect. *Indian J Anaesth.* 2010 Jul-Aug; 54(4): 357–358.
5. Bevacqua BK, Cleary WF. An unusual case of endotracheal tube cuff dysfunction. *J Clin Anesth.* 1993 May-Jun; 5(3):237-9.