

Difficult airway management made more difficult by a defective jet ventilation catheter

A Walunj, J Lowe, V Sidhu

Citation

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Abstract

Sir,

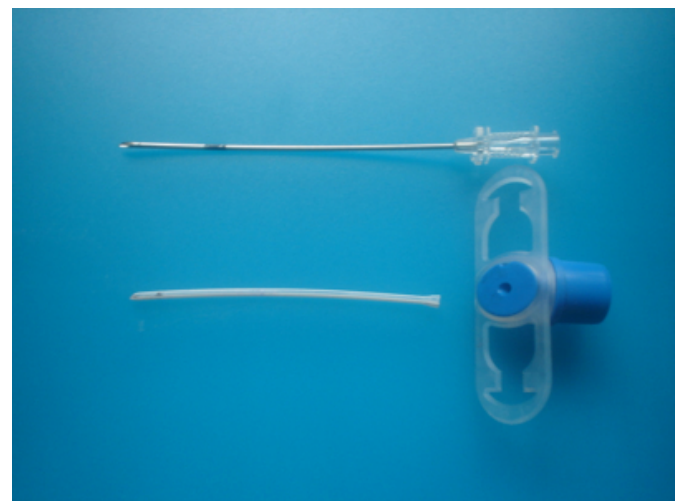
Transtacheal jet ventilation is a recognised airway rescue technique [1, 2]. It also a technique that can be used prophylactically in the management of patients anticipated to have difficult airways [3, 4]. We report an unusual and previously unreported defect in the Ravussin Jet Ventilation Catheter [5] (VBM Medizintechnik GmbH, Sulz, Germany) when used in a patient with an obstructed airway.

An elderly male presented to our emergency department with severe supraglottic and sub-glottic airway obstruction. On admission he was stridulous, tachypnoeic, sitting upright and was barely able to speak. A CT scan done 3 months earlier showed a carcinoma of the larynx with erosion of the cricoid cartilage extending to the first tracheal ring. The subglottic airway was narrowed to 7mm. The patient requested treatment of his breathing difficulty but the use of added oxygen, continuous positive airway pressure, adrenaline nebulisers, intravenous and nebulised steroids, and a helium/oxygen mixture all failed to improve his clinical condition. The patient nasal-endoscopy showed supraglottic oedema with anatomical distortion and visible but oedematous vocal cords. The initial plan was to place a jet ventilation catheter through the cricothyroid membrane before proceeding to fibreoptic assessment of the infraglottic airway with fibreoptic intubation in mind. An awake surgical tracheostomy under local anaesthetic was not considered a safer option because of distorted neck anatomy and an inability to position the patient appropriately.

After infiltration of local anaesthetic, a 13G Ravussin Jet Ventilation Catheter was inserted through the cricothyroid membrane with its position confirmed by aspiration of air into syringe partly filled with saline. However, before connection to a Manujet III (VBM), it was noted that that the

catheter had become detached at its junction with the 15-mm connector hub (Fig.1).

Figure 1



The device was well within its printed expiry date, had come from a packet that had not been tampered with and the needle had not been removed and re-inserted before its use on the patient. The plastic catheter was immediately removed and a second jet ventilation catheter was inserted and the correct position confirmed. Cautious jet ventilation was performed but, this was rapidly abandoned when it was noted that the patient had developed subcutaneous emphysema in his neck and chest which coincided with loss of consciousness (a subsequent post-operative chest X-ray confirmed a pneumothorax). Control of the patient's airway was rapidly regained with marked jaw thrust whereupon he underwent inhalational anaesthesia with sevoflurane. He subsequently developed complete airway obstruction however, a senior consultant anaesthetist was able to intubate the trachea with size 5 mm ID microlaryngoscopy tube with the help of a gum elastic bougie. The minimum

SpO₂ was 85 % through out the procedure. A tracheostomy was subsequently performed (with difficulty) and the patient transferred to the intensive care unit.

From this potentially critical incident, we concluded that all equipment should be checked before use, particularly those that are infrequently used and a second device should be available in potential 'difficult airway' scenarios.

We reported the incident to Medicines and Healthcare products Regulatory Agency (MHRA). In the final report submitted to the MHRA, the manufacturer commented that it was an isolated, unexplained failure of the equipment and has since then implemented an additional quality testing in the assembly process to ensure correct connection between the cannula and the 15 mm leuc lock connector socket of the hub.

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Author Information

A Walunj, FRCA

Specialist Registrar Anaesthetics, Hammersmith Hospital

J Lowe, BSc, FANZCA

Consultant Anaesthetist, St Mary's Hospital

V Sidhu, FRCP, FRCA

Consultant Anaesthetist, St Mary's Hospital