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LETTER TO THE EDITOR Open Access

Micro leak of the cuff inflation system of an armored endotracheal tube: an unreported site

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To the Editor,

A 44-year-old male posted for lumbar (L4–5) microdiscectomy was intubated with 7.5-mm internal diameter cuffed armored endotracheal tube (cAETT) for general anesthesia after routine preoperative check of the cuff inflation system. Anesthesia was maintained with O_2, air, and sevoflurane and was positioned prone. He was ventilated in volume control mode with tidal volume 450 ml with cuff pressure of 25 cmH_2O. His airway pressure was 22 cmH_2O. His expired tidal volume (Vte) decreased to 350 ml, and cuff pressure was only 15 cmH_2O, 1.5 h after intubation and 1 h after prone positioning. The cuff was reinflated to 25 cmH_2O, and the set tidal volume (450 ml) got delivered for the rest of the surgery (1 h) and extubation was uneventful. Post extubation, the methylene blue injected through the cuff inflation system revealed a micro leak, where the cuff is attached to the outer wall of the cAETT. The other parts of the inflation system were perfectly sealed, and there was no leak (Fig. 1). Though many sites for leak of ETT cuff system were reported (El-Orbany and Salem 2013; Malhotra and Singhal 2006), this defect at the sealing of cuff to the ETT had not been reported. Though it was a manufacturing defect, it had been easily missed in the preoperative checking of the cAETT because of very slow leakage of air. Decrease in Vte with decrease in cuff pressure after 1.5 h of intubation in an undisturbed head and neck position suggests that it could be a micro leak from the cuff, when all other causes are ruled out. Such concealed micro leaks can be managed by reinflation of the cAETT and continuous monitoring of cuff pressure (Mariappan et al. 2015), instead of changing the ETT especially in prone position in the middle of surgery.

Informed written consent has been obtained from the patient for publication.

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Abbreviations
cAETT: Cuffed armored endotracheal tube; L: Lumbar; Vte: Expired tidal volume

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Authors' contributions
VV was involved in the clinical care of the patient, identifying the cuff leak, troubleshooting the leak, further safe management of the patient, identifying the cause for the leak, reviewing the literature, and drafting the manuscript. GA was involved in troubleshooting the leak, safe management of the patient, identifying the cause for the leak, reviewing the literature and drafting the manuscript. Both authors read and approved the final manuscript.

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Ethics approval and consent to participate
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Consent for publication
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Competing interests
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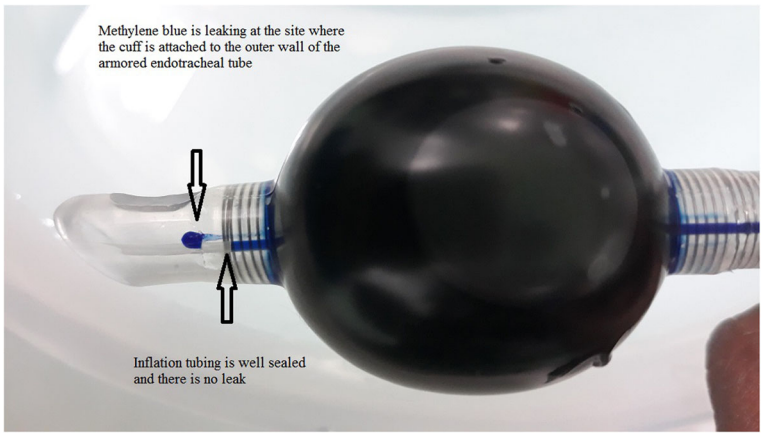

Fig. 1 Micro leak of the cuff inflation system of an armored endotracheal tube: an unreported site. The methylene blue injected through the cuff inflation system revealed a micro leak, where the cuff is attached to the outer wall of the cAETT. The other parts of the inflation system were perfectly sealed and there was no leak