

End-tidal CO₂ monitoring: A way to relocate and confirm the lost tracheostomy tract!

Sir,

A 63-year-old female, weighing 84 kg, was operated for left temporo-parietal glioma. In the postoperative period, she developed infarction in the left temporo-parietal region and had poor Glasgow Coma Score (E₂V_{ET}M₃). Since the patient required prolonged mechanical ventilation, the decision for tracheostomy was taken. However, as the patient had a short neck along with large submandibular fatty tissues, an elective surgical tracheostomy in the operating room was planned.

The procedure was carried out under local anaesthesia with continuous monitoring of heart rate, blood pressure, oxygen saturation and end-tidal carbon dioxide (ETCO₂). Following skin incision, retractors were applied, and dissection of soft tissue was completed. The trachea was identified, and an opening was made on the tracheal wall. After suctioning of the oral cavity and oropharynx, the endotracheal (ET) tube cuff was deflated and ET tube was withdrawn slowly (while watching the ET tube through the opening made in the tracheal wall), till its lower end passed just proximal to the opening made in the tracheal wall. However, before passing the tracheostomy tube into the trachea through the tracheal wall opening, the retractors slipped and got displaced and thus the tracheostomy tract was lost. In spite of repeated efforts, the tracheal opening could not be relocated. Meanwhile, sliding of the ET tube back to its position into the trachea was attempted but was unsuccessful though ventilation of the patient through the ET tube with circuit and reservoir bag was possible (though not satisfactory). While ventilating the patient with 100% oxygen using bag and circuit, we observed visible gas leak through the dissected neck tissue. Suctioning was done through the probable tracheostomy tract and to locate the trachea we attempted to pass a 4.0 mm size ET tube through the point of the gas leak and succeeded. The ET tube was then connected to the ETCO₂ monitor, and the CO₂ trace confirmed the placement of ET tube in the trachea. Then, a well lubricated 7.5 mm tracheostomy tube was railroaded over the 4.0 mm ET tube into the trachea after removing the tube connector. Finally, the ET tube was removed, and the tracheostomy tube was connected to the ETCO₂ monitor. A sustained ETCO₂ curve and visible chest rise confirmed the correct position of the tracheostomy tube and the tracheostomy tube was secured.

Loss of tracheostomy tract can occur while performing tracheostomy and sometimes may be difficult to relocate especially in patients with short neck and a large amount of submandibular fat. Coleman *et al.*,^[1] has demonstrated the usefulness of ETCO₂ during percutaneous dilatational tracheostomy. In this case, we could locate the lost tracheal opening by using 4.0 mm ET tube and confirmed it with ETCO₂ trace. In addition to detection of the tracheal opening the ET tube helped us to railroad the tracheostomy tube. Our case highlights how a simple technique using ET tube and ETCO₂ monitor could be used to avert a catastrophe.

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Conflicts of interest
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