(IMV), with reduced complications and high success rate.^[1-4] However, these NIV trials were only given after the extubation of patient's trachea. We report successful weaning of a chronic obstructive pulmonary disease (COPD) patient with a tracheostomy tube *in situ* using the novel approach of dual mode ventilation by applying both NIV and IMV alternatively.

A 50-year-old male patient (body mass index = 38.89 kg/m^2), presented with acute respiratory distress in the emergency room. He was febrile, tachypneoic, irritable, and had bilateral rhonchi and basal crepitations in lung zones. His arterial blood gas (ABG) analysis showed severe respiratory acidosis with hypoxemia. He was a known case of COPD and had a history of obstructive sleep apnea for past 10 years and was on domiciliary oxygen therapy and inhaled bronchodilators.

Considering the clinical condition and the ABG findings, patient's trachea was intubated and he was shifted to Intensive Care Unit (ICU) and was kept on synchronized intermittent mandatory ventilation mode on ventilator, chest radiograph revealed bilateral pulmonary infiltrates and opacities in right middle and lower zones. Quantitative culture of the endotracheal aspirate revealed a growth of Acinetobacter baumannii (>10⁶ CFU/ml). Suspecting, A. baumannii induced pneumonia; intravenous colistin (2 million units q8h) and tobramycin nebulization (300 mg q12h) were started. On day 5, bronchoscope assisted percutaneous dilatational tracheostomy was done in anticipation of prolonged ventilator support. Over the next 5 days in ICU, patient's general condition improved. On day 11 in ICU, he was weaned to continuous positive airway pressure/assisted spontaneous breathing mode resulting in improved ABG parameters. Subsequently, spontaneous breath trials were started but failed.

On day 19 in ICU, we planned for dual mode ventilation that alternates NIV and IMV, as a weaning strategy. A NIV trial with biphasic positive airway pressure mode was initiated using dedicated facemask (ResMed S9TM, ResMed Ltd, 1 Elizabeth Macarthur Drive, Bella Vista, NSW 2153, Australia). The tracheostomy tube was kept *in situ* with the deflation of the cuff, and its proximal end plugged during the trials of NIV. We observed that NIV trials were better tolerated. In subsequent days, gradually NIV support was decreased and duration was increased, according to the ABG parameters and clinical symptoms. On day 29 in ICU, his trachea was de-cannulated and was shifted to step down unit and subsequently discharged from hospital uneventfully.

We tried a novel approach by applying alternate NIV and IMV as a weaning strategy in this patient. A plugged

Dual mode ventilation: Winning strategy in difficult-to-wean

Sir,

Noninvasive ventilation (NIV) has been frequently employed as weaning strategy for patients on invasive mechanical ventilation tracheostomy tube with a deflated cuff is kept in situ during the period of NIV trials. This strategy has additional benefits of pulmonary clearance of accumulated secretions, and a patent channel for mechanical ventilation, in situations where the NIV fails, hence avoiding the need of re-intubation. Recently, a feasibility study was done using alike dual-mode strategy in difficult-to-wean tracheotomized patients with successful and promising outcomes when compared to conventional weaning strategy.^[5] In this weaning strategy, during the NIV trials, the upper airway remains functional due to deflated cuff and plugged tracheostomy tube. This restores the defensive function of the upper airway, improves the ability for coughing out secretions and reduces the chances of secretions accumulation above the cuff, hence effectively reducing the likelihood of pulmonary infection.^[5] The patient triggered and cycled breaths during the NIV trials of dual mode ventilation, further improves the strength of the respiratory muscles, and the ability to cough out secretions, therefore expediting the weaning process effectively.^[5] Psychologically, the patient is more confident with enhanced communication and hence improving the quality of life while making the weaning process seamless.^[5]

This novel dual mode weaning strategy may be useful in patients suffering from COPD, neuromuscular diseases, and cervical spine injury, who are otherwise difficult-to-wean using conventional weaning modes. However, replication and establishment of this dual mode ventilation as a weaning strategy in this subset of patients further requires robust clinical trials in critical care settings.

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Conflict of interest

There are no conflicts of interest.

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