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## Ventilatory weaning and multifaceted rehabilitation in the postoperative period of robotic tracheobronchoplasty with venovenous extracorporeal membrane oxygenation: a case study

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**Introduction:** Pulmonary neoplasms represent one of the most prevalent types of malignant tumors. In some cases, treatment requires complex thoracic surgeries, including the use of Venovenous Extracorporeal Membrane Oxygenation (VV ECMO), a pulmonary support technique used in patients with severe respiratory problems.<sup>(1-7)</sup> To aid in the recovery of these patients, physiotherapy plays a critical role, especially in cases of difficult ventilator weaning caused by loss of muscle strength. **Objective:** To describe the individualized physiotherapy strategies used to promote physical rehabilitation and weaning from mechanical ventilation in a patient in the postoperative period of tracheobronchoplasty with VV ECMO support. The study is a case report based on the data obtained through the electronic patient record, evaluations and daily follow-up. It was obtained the Patient Consent for Publication, following the institution regulation. **Case Report:** A 41-year-old male patient underwent robotic surgery tracheobronchoplasty due to adenoid cancer with invasion of the main carina and right stem bronchus with the need for ECMO. Periodic assessments of

strength, mobility, and diaphragmatic function using ultrasound were included in the therapeutic plan, as well as physiotherapy strategies to assist in difficult weaning from mechanical ventilation and recovery of functionality. Intensive physiotherapy treatment was carried out for 40 days, with 2 sessions of motor therapy and 4 sessions of respiratory therapy per day, lasting an average of 40 minutes, following the institution's early mobilization guideline. The following respiratory strategies were applied: bronchial hygiene maneuvers, tracheal aspiration, diaphragmatic neuromuscular electrical stimulation, fine adjustments in mechanical ventilation to correct asynchrony, and transition from assisted-controlled ventilation mode to spontaneous breathing after tracheostomy (TQT), respiratory muscle training. After clinical evolution: postural changes (sitting, standing, and periods in an armchair), aerobic exercises and resistance training of peripheral limbs (dumbbells and ankle weights with load progression). The individualized therapeutic strategies contributed to the gradual weaning from mechanical ventilation, followed by decannulation and hospital discharge after 47 days of hospitalization. The mobility assessment was performed using Perme Score scores, which were evaluated daily from admission to discharge from the Intensive Care Unit (Figure 1). **Conclusion:** This case study highlights the effectiveness of a rehabilitation program that employed individualized rehabilitation strategies and physiotherapy interventions, including respiratory and peripheral muscle training, ventilator weaning, and aerobic exercise, which significantly contributed to the patient's recovery process and discharge from the Intensive Care Unit (ICU).

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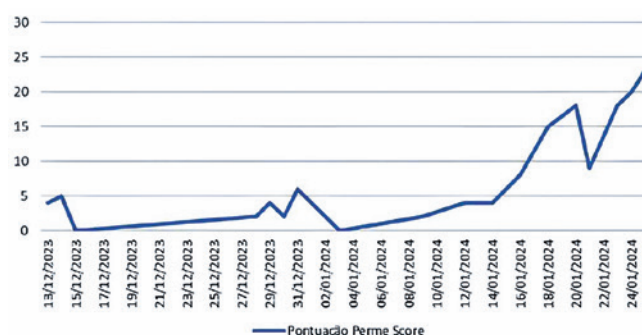


Figure 1. Perme Score Scale