


# Decannulation in Chronic Critically Ill Patients: A Multidimensional Challenge

*La decanulación en pacientes críticos-crónicos: Un desafío multidimensional*

Previgliano, Ignacio<sup>1,2</sup> 

The tracheostomy is an essential procedure in intensive care for patients who require prolonged mechanical ventilation. However, as described in the study of Bellon<sup>1</sup>, the decannulation process is still a significant challenge for many mechanical ventilation weaning and rehabilitation centers. This article provides an in-depth look at the factors that prevent decannulation in chronic critically ill patients, underscoring the complexity of their management.

One of the most relevant aspects emerging from the study is the diversity of causes that can prevent a successful decannulation, ranging from prolonged dependence on mechanical ventilation to the presence of severe upper airway injuries. Data presented by the authors indicate that the presence of an upper airway injury affecting more than 50% of the diameter of the trachea is associated with prolonged stays in rehabilitation units and higher mortality rates. This underscores the need for early and rigorous evaluation of the airways in these patients in order to avoid serious complications that could delay or prevent decannulation.

Additionally, failure to wean from mechanical ventilation emerges as a prominent cause of non-decannulation associated with the presence of respiratory history and low values of maximum inspiratory and expiratory pressures. This finding highlights the importance of intensive respiratory rehabilitation in these patients, as suggested by other studies that have associated prolonged mechanical ventilation with severe complications such as infections and tracheal injuries.

From a clinical perspective, this work reinforces the need to establish clear and multidisciplinary protocols to address decannulation. As suggested by Sansone<sup>2</sup>, the review process should include both continuous monitoring of the respiratory function and periodic evaluation of airway injuries. Additionally, the article emphasizes the importance of secretion management strategies and functional tests of the airways, such as the blue dye test, that help identify any dysfunction in swallowing and secretion management, which are both key factors in the decision to remove the tracheostomy.

The impact of non-decannulation extends beyond immediate clinical outcomes. As has been shown, failure to decannulate prolongs hospital stays, increases healthcare costs, and affects the patients' quality of life. This reinforces the need for a comprehensive approach in these patients, including not only medical care but also psychological support and appropriate rehabilitation.

Finally, the study highlights the fact that patients over 70 years old and those with prolonged hospital stays are the most vulnerable to non-decannulation, with a significant increase in mortality. This suggests that the tracheostomy is not merely a medical intervention, but also a marker of the severity of the critical condition of these patients, thus requiring constant reevaluation of the treatment plan.

It is important to note that this work is closely related to Singh's systematic review<sup>3</sup>. Both studies agree that decannulation is a crucial step in the

<sup>1</sup> Head of Neurology IADT

<sup>2</sup> Prof. Chair of Neurology CSEMC - Maimónide University

recovery of tracheostomized patients who have depended on prolonged mechanical ventilation. Both Bellon's article<sup>1</sup> and the systematic review emphasize the idea that a successful decannulation process improves the patient's quality of life and reduces mortality. Both documents underline the importance of clinical criteria, such as the presence of an adequate cough reflex, the ability to swallow, and airway permeability. The systematic review stresses the need to coordinate the swallowing reflex and the ability to cough to ensure a successful decannulation, while Bellon's article<sup>1</sup> mentions the use of the blue dye test as a key criterion in assessing the patient's capacity for decannulation. There are also similarities regarding the factors that prevent decannulation: upper airway injury, failure to wean from mechanical ventilation, and poor secretion management. Bellon et al identified a significant group of patients who were unable to decannulate due to these conditions. This is also a recurring topic in the systematic review, which underscores how excessive secretions and tracheal injuries can complicate this process. Similarly, patients over the age of 70 and those with longer hospital stays are associated with higher mortality rates in cases where decannulation is not achieved.

An important point in Bellon's study<sup>1</sup> is the presentation of a well-specified protocol, something that most reviewed studies don't provide with the same level of clarity.

It would be interesting for future prospective studies to identify whether the percutaneous tracheostomy has the same long-term complications as surgical tracheostomy, given the discrepancies in the literature. In a systematic

review of COVID patients, Ferro<sup>4</sup> suggests that the tracheostomy is not a factor influencing prognosis, while Ramakrishnan's study<sup>5</sup> shows better outcomes and fewer complications with the surgical approach.

In conclusion, the work of Bellon<sup>1</sup> offers a comprehensive view of the factors influencing the non-decannulation of tracheostomized patients, providing valuable data to improve management protocols in mechanical ventilation weaning centers. This article should serve as a call to action to continue optimizing interdisciplinary care in these patients, always striving to improve functional outcomes and quality of life.

## REFERENCES

1. Bellon PA, Moltti MV, Carnero Echegaray J, Larocca F, Bossio MJ. Reasons for Not Decannulating Adult Tracheostomized Patients in a Mechanical Ventilation Weaning and Rehabilitation Center *Rev Am Med Resp* 2024;24:147-59. <https://doi.org/10.56538/ramr.wxwr-cedx>
2. Sansone GR, Frengley JD, Vecchione JJ, Manogaram MG, Kaner RJ. Relationship of the duration of ventilator support to successful weaning and other clinical outcomes in 437 prolonged mechanical ventilation patients. *J Intensive Care Med*. 2017;32:283-91. <https://doi.org/10.1177/0885066615626897>.
3. Singh RK, Saran S, Baronia AK. The practice of tracheostomy decannulation-a systematic review. *J Intensive Care*. 2017;5:38. <https://doi.org/10.1186/s40560-017-0234-z>.
4. Ferro A, Kotecha S, Auzinger G, Yeung E, Fan K. Systematic review and meta-analysis of tracheostomy outcomes in COVID-19 patients. *Br J Oral Maxillofac Surg*. 2021;59:1013-23. <https://doi.org/10.1016/j.bjoms.2021.05.011>.
5. Ramakrishnan N, Singh JK, Gupta SK, et al. Tracheostomy: Open Surgical or Percutaneous? An Effort to Solve the Continued Dilemma. *Indian J Otolaryngol Head Neck Surg*. 2019;71:320-6. <https://doi.org/10.1007/s12070-019-01684-0>.