

Is Early Tracheostomy Beneficial in Severe Head Injury Patients?

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ABSTRACT

The debate of early vs late tracheostomy is far from settled. This study reveals that early tracheostomy is associated with higher tracheostomy rates and better outcomes, including more ventilator-free days, shorter intensive care unit (ICU) stays, less sedation, ventilator-induced pneumonia, and reduced long-term mortality compared with late tracheostomy.

Keywords: Intensive care unit stays, Tracheostomy, Ventilator-induced pneumonia.

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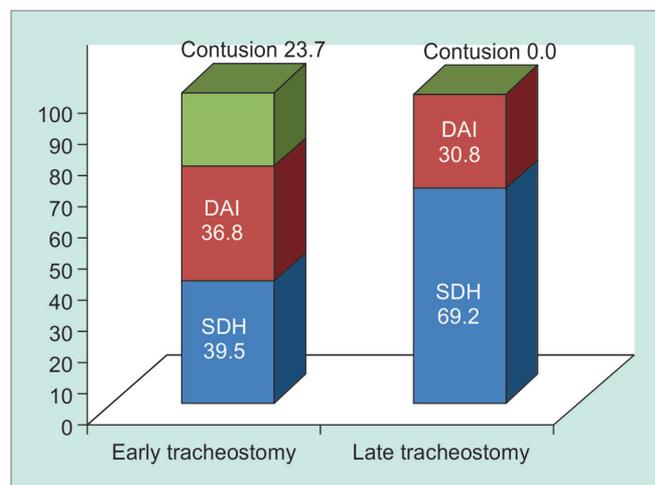
INTRODUCTION

Tracheostomy is a widely used intervention in adult critical care units. There is little evidence to guide clinicians regarding the optimal timing for this procedure. Early tracheostomy (≤ 5 days) ensures the protection of airway and allows early withdrawal of mechanical ventilation (MV), avoids exposure to its risk factors, particularly ventilator-associated pneumonia (VAP) and allowing earlier discharge from the ICU.

The MV helps in severe head injury patients by both reduction in the intracranial pressure and hypoxia. The endotracheal tube is a major risk factor for VAP, as it permits leakage of oropharyngeal secretions around the cuff and may act as a nidus for the growth of intraluminal biofilm.

MATERIALS AND METHODS

A retrospective analysis of medical charts of patients admitted to ICU in Rohilkhand Medical College & Hospital from February 2017 to May 2018 was done (Graph 1). Tracheostomized patients with severe head



Graph 1: Case distribution according to diagnosis

injury (Glasgow coma scale score < 8) and on ventilator were included in the study.

OBSERVATIONS

Table 1 shows the demographic data of patients included in the study. Table 2 comprises their ICU stay, ventilator-free days, and development of VAP.

DISCUSSION

A tracheostomy tube is less noxious for patients emerging from coma, and sedation can be more easily weaned

Table 1: Demographic data of patients

Group	Early tracheostomy	Late tracheostomy
Total number of cases: 64	38	26
Day of tracheostomy	≤ 5 days mean: 2.7 days	> 5 days mean: 7.6 days
Age (years)	16–64 years	23–62 years
Male:female	6:1	8:1

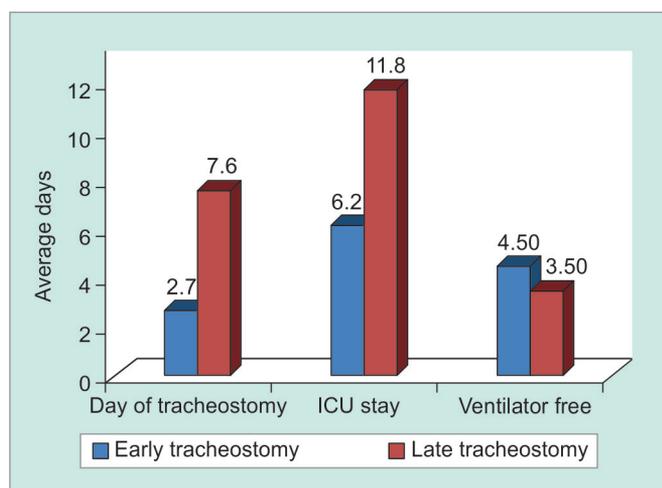
Table 2: Intensive care unit stay, ventilator-free days, and development of VAP

Group	Early tracheostomy	Late tracheostomy
Total ICU stay	5–8 days mean: 6.2 days	7–20 days mean: 11.8 days
Ventilator-free days during ICU stay	4–8 days mean: 4.5 days	0–6 days mean: 3.5 days
VAP during ICU stay	0 cases (38)	8 cases (26)

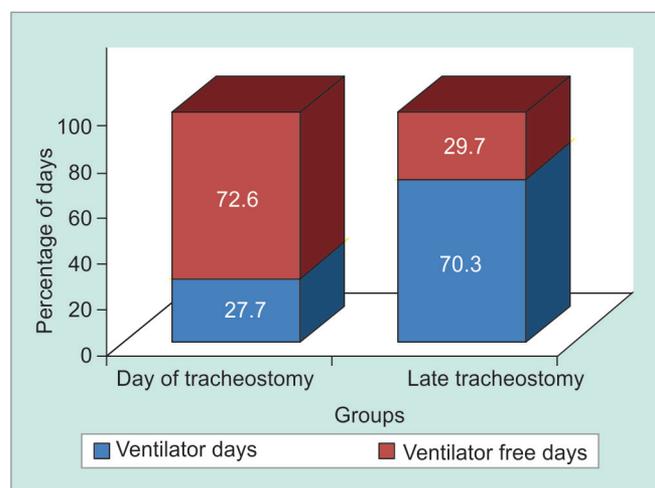
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Graph 2: Percentage of cases that developed VAP



Graph 3: Mean ratio of cases in both groups according to the day of tracheostomy, ICU stay, and ventilator-free days

off and has also shown to reduce hospital stay.¹ In our study, patients who received early tracheostomy required ventilation for around 27.4% days of their ICU stay as compared with patients of late tracheostomy group who required 70.3% days of MV. The data are statistically significant ($p < 0.05$). One study indicated that early tracheostomy reduces the time on MV by more than 9 days (9.8 days).² The other study found more days “free from the ventilator,” measured at day 28 of follow-up,³ in the early tracheostomy group. Additionally, the same study³ demonstrates that early tracheostomy is significantly associated with a higher rate of successful weaning.

We observed that 30.8% cases in the late tracheostomy group developed VAP during ICU stay, whereas no cases developed VAP in the early tracheostomy group (Graph 2). Review of literature¹⁻⁵ clearly supports the choice of early tracheostomy for reducing length of ICU stay, duration of MV, and mortality (Graph 3). In this sense, Scales et al.,⁵ in a large observational study involving more than 10,000 participants, showed that early tracheostomy is associated with significant advantages over late tracheostomy in terms of mortality for critically ill patients. In Young et al.⁶ study, of the 455 patients assigned to early tracheostomy, 91.9% [95% confidence interval (CI), 89.0–94.1%] received a tracheostomy and of 454 assigned to late tracheostomy, 44.9% (95% CI, 40.4–49.5%) received a tracheostomy. All-cause mortality 30 days after randomization was 30.8% (95% CI, 26.7–35.2%) in the early and 31.5% (95% CI, 27.3–35.9%) in the late group (absolute risk reduction for early *vs* late, 0.7%; 95% CI, –5.4 to 6.7%). Tracheostomy-related complications were reported for

6.3% (95% CI, 4.6–8.5%) of patients (5.5% in the early group, 7.8% in the late group).

CONCLUSION

We conclude that early tracheostomy is beneficial in patients with severe head injury by decreasing the need for prolonged MV and preventing the risk of VAP. It also reduces the length of ICU stay and number of ventilation required days during ICU stay.

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