

Early versus late tracheostomy for critically ill patients: A clinical evidence synopsis of a recent Cochrane Review

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A Keeping. Early versus late tracheostomy for critically ill patients: A clinical evidence synopsis of a recent Cochrane Review. *Can J Respir Ther* 2016;52(1):27-28.

The author questioned whether an early tracheostomy (within 10 days of intubation) was associated with lower mortality compared with a late tracheostomy for long-term mechanically ventilated patients.

The present brief review of eight studies revealed that individuals receiving early tracheostomies had slightly lower mortality rates compared with those who received late tracheostomies. More standardized research is needed. However, if a patient is expected to need long-term mechanical ventilation, a tracheostomy should be performed before the 10-day mark.

Key Words: *Care planning; Critical care; Tracheostomy*

Tracheostomies are used for patients who require long-term mechanical ventilation to help prevent complications from tracheal intubation including ventilator-associated pneumonia, sinusitis and tracheal stenosis. The optimal timing of a tracheostomy has not yet been determined through evidence-based practice, although it is generally performed between day 10 and day 14 of intubation (1). To address the uncertainty in the timing of tracheostomy, a recent Cochrane Review of randomized and quasi-randomized control trials (RCTs) compared early (≤ 10 days postintubation) with late (> 10 days postintubation) tracheostomies with regard to mortality, length of mechanical ventilation and other secondary outcomes (1). Table 1 provides an overview of the studies included in the review.

The review included eight RCTs with 1977 patients. Evidence of moderate quality from seven of these trials revealed that the mortality rate in the early tracheostomy patients was lower at the time of the longest follow-up compared with the late tracheostomy patients (47.1% versus 53.2%) (1). The time of longest follow-up varied from study to study and ranged from 30 days (2,3) to two years (4). This comparison demonstrated a statistically significant risk ratio of 0.83 (95% CI 0.70 to 0.98). Three studies assessed the impact of early versus late tracheostomy on patient mortality at 30 days follow-up, with one study (3) demonstrating a statistically significant difference between the groups (0.51 [95% CI 0.34 to 0.78]). The two other studies (Young et al [4] and Zheng et al [5]) showed no significant difference between mortality in the two groups at 30 days follow-up. Two of the studies assessed mortality between the two groups at 180 days. Bösel et al (6) demonstrated a lower mortality in the early tracheostomy group while Young et al (4) observed no significant difference between the two groups. A meta-analysis of the length of mechanical ventilation in the studies by Trouillet et al (7) and Zheng et al (5) reported no significant difference between the early and late tracheostomy groups. These same two studies measured ventilator-free days at 28 days follow-up, with a mean difference between groups of 1.62 days (95% CI -0.01 to 3.25). Both Rumbak et al (3) and Terragni et al (8) reported statistically significant reductions in the length of

La trachéostomie précoce ou tardive chez les patients gravement malades : le synopsis des données cliniques d'une récente analyse Cochrane

L'auteur se demande si une trachéostomie précoce (dans les dix jours suivant l'intubation) s'associe à un plus faible taux de décès qu'une trachéostomie tardive chez les patients sous ventilation mécanique prolongée.

La présente brève analyse de huit études a révélé que les personnes qui subissent une trachéostomie précoce présentent un taux de décès légèrement plus faible que celles qui subissent une trachéostomie tardive. Des recherches plus standardisées s'imposent. Cependant, si on envisage de placer un patient sous ventilation mécanique prolongée, il faut effectuer la trachéostomie avant un délai de dix jours.

TABLE 1
Summary of included studies (1–8)

Randomized control trials, n	8
Study years	1984 to 2013
Most recent literature search	October 2014
Patients, n	1977
Female sex, n (%)	731 (38.4%). Not specified in one trial
Age, years, mean \pm SD	62 \pm 4.65 (not specified in one trial)
Countries	Global
Setting	Surgical, neurosurgical and cardiology departments, shock/trauma centre, medical intensive units, intensive care units, and general and cardiothoracic critical care units
Comparison	Tracheostomies performed on or before 10 days tracheal intubation compared with after 10 days intubation
Primary outcome	Mortality and duration of mechanical ventilation
Secondary outcome	Length of intensive care unit stay, pneumonia rates and laryngotracheal lesions

mechanical ventilation in the early tracheostomy groups while no other studies found a significant difference between the groups (1).

Of the secondary outcomes measured, four studies found a significant decrease in average days spent in the intensive care unit with early tracheostomies (1). There was no evidence suggesting that either treatment led to a lower likelihood of pneumonia. Laryngotracheal lesions were more commonly observed in patients with early tracheostomies.

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The collected studies had substantial heterogeneity among them, which limited the ability to perform a meta-analysis of the data as a whole. For example, there is also a clear inability to blind participants and therapists to the procedure due to its invasive nature. The overall quality of the included studies were considered moderate by the reviewers (1).

There are currently no evidence-based guidelines in Canada on when to perform a tracheostomy for mechanically ventilated patients. The results of the present review, however, suggest that early tracheostomies may be preferential to late tracheostomies and should be performed before 10 days when a patient is expected to require long-term (>21 days) mechanical ventilation (1). The results of this Cochrane Review suggested that the number of critically ill patients necessary to treat with early tracheostomy to prevent one patient death was 11 (1).

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