

Is the effect of Early vs Late tracheotomy on patient mortality and ICU length of stay overrated? A Qualitative Narrative Review of Randomized Controlled Trials

JESUS A CARDENAS

JESUS.CARDENAS@CUANSCHUTZ.EDU

909-641-9187

MSA Mentor: Meghan Prin, MD

Assistant Professor of Anesthesiology

Meghan.Prin@cuanschultz.edu

ABSTRACT

BACKGROUND: Prolonged intubation is considered 14-21 or more days of mechanical ventilation (MV). It is associated with poor outcomes such as a high mortality rate at one year. Tracheotomy creates a trans-laryngeal airway most commonly indicated in patients who are difficult to wean from the ventilator or in those requiring prolonged mechanical ventilation. This procedure provides long term airway access and is associated with benefits on mortality and intensive care unit (ICU) length of stay (LOS). There is interest in identifying causal benefits that the timing of tracheotomy, early vs. late, could provide on patient outcomes such as mortality, ICU LOS and time on mechanical ventilation (MV).

OBJECTIVES: The aim of this review is to evaluate the benefits of early tracheotomy on patient mortality and ICU LOS.

METHODS: Two databases were searched (PubMed and Embase) through November 25, 2020 according to the 2009 PRISMA Guidelines. Studies eligible for inclusion were randomized controlled trials (RCT) involving adult populations in which the primary intervention was early vs. late tracheotomy, reported mortality, and ICU LOS. Secondary data regarding time on MV, and Hospital LOS and geographic location were collected when available. All ICU populations meeting these criteria were eligible for inclusion.

RESULTS: The two databases searched resulted in 1,566 articles and yielded a total of 86 articles to undergo title and abstract review. Of these, 16 studies met criteria for inclusion and 12 underwent full manuscript review. 2 articles were unavailable, and 2 others were published protocols without results available.

LIMITATIONS: No statistical analyses were attempted.

CONCLUSIONS: There is significant heterogeneity in defining the timing of early vs late tracheotomy and the ICU population of study that makes comparison difficult. There is significant confounding due to selection bias and physician preference. With two exceptions, the RCTs reviewed here unanimously reported no significant effect on mortality. Greater consensus on defining early tracheotomy vs prolonged orotracheal intubation vs late tracheotomy could support improved comparison of the study results.

REGISTRATION: This review was not registered.

KEYWORDS: Early Tracheotomy, Late Tracheotomy, Mortality, Length of Stay, Tracheotomy Safety