

Earlier tracheostomies result in better patient outcomes

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A tracheostomy performed within the first seven days after a severe head injury results in better overall patient outcome, according to a team of Penn State College of Medicine researchers. This is especially true for patients who have a greater chance of surviving when admitted to the hospital.

A tracheostomy is an opening created in the front of the neck directly into the [trachea](#) to allow unimpeded breathing. (A tracheotomy is the act of making that opening.)

"The CDC estimates that more than 200,000 individuals are hospitalized annually for [traumatic brain injury](#)," said Kevin M. Cockroft, M.D., associate professor, neurosurgery. "Severely head-injured patients, particularly those with additional injuries, often require tracheostomy at some point during their hospital stay."

Previous studies have shown mixed results.

"Traditionally, tracheostomy, or 'trach,' has been recommended to prevent airway complications," Cockroft said. "Early trach has been advocated as a means to improve outcome, with various studies suggesting that it may decrease the incidence of [pneumonia](#), reduce [intensive care unit](#) days and shorten overall length of stay. Some evidence also exists to suggest that early trach does not improve outcomes. As a result, the timing of trach in these critically ill patients remains controversial."

Early trach patients are defined as those who have a tracheostomy performed during the first seven hospital-stay days. Late trach patients are defined as those who have a tracheostomy performed at greater than seven days after admission.

Researchers used data collected from January 1990 through December 2005 by the Pennsylvania Trauma Society Foundation for its statewide trauma registry. Because of a lack of patients with only head injury, researchers looked at patients with injury to at least one other body system. In total, 3,104 patients were included in the study, with 1,577 in the early trach group and 1,527 in the late trach group. It is the largest study to date to report the effects of tracheostomy timing on outcome after a severe head injury.

In the study population, later trach patients were in the hospital three times longer than early trach patients and also spent an average of four times longer in the ICU. Early trach patients were 1.5 times more likely to be discharged in an independent state. However, later trach patients were twice as likely to live to be discharged from the hospital, potentially because more severe cases would receive an earlier trach.

In addition, later trach patients were about twice as likely to suffer from an adverse pulmonary occurrence such as pneumonia, about 1.5 times as likely to suffer a cardiac event such as a heart attack, and 1.5 times more likely to have an infection.

Researchers reported their results in the journal *Neurocritical Care*. The project was funded by the Departments of Neurosurgery and Public Health Sciences, Penn State Milton S. Hershey Medical Center and Penn State College of Medicine.

"These results indicate a complex relationship between tracheostomy timing and outcome, but suggest that a strategy of early tracheostomy,

particularly when performed on patients with a reasonable chance of survival, results in a better overall clinical outcome than when the tracheostomy is performed in a delayed manner," Cockroft said.

Provided by Pennsylvania State University

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