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The safety of tracheostomy speaking valve use during sleep in children: A pilot study

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Purpose: One of the disadvantages of having a tracheostomy tube is not being able to vocalize. Speaking valves connected to a tracheostomy tube allow patients to vocalize. Some studies have shown that tracheostomy-speaking valve can improve swallowing, respiratory secretion management, and expedite decannulation. There is scant research about its use during sleep. The aim of this study is to evaluate the safety of tracheostomy-speaking valve overnight, during sleep.

Materials and Methods: Children, ages 1 to 18 years, with tracheostomy tubes who were using a tracheostomy-speaking valve during daytime/awake periods, were included in this study. The subjects had baseline monitoring of their heart rate, respiratory rate, oxygen saturation, and end tidal carbon dioxide measurement the night prior to the intervention, throughout the night at scheduled intervals. The tracheostomy-speaking valve was placed the following night and the same parameters were monitored and recorded throughout the study night.

Results: A total of 9 patients were recruited. In all subjects, the mean values of the overnight parameters showed no significant clinical variations between the baseline night and the study night. Repeated measure ANOVA analysis revealed no significant changes in the parameters over the 8 hours of recorded time. No major adverse events were recorded during the study night.

Conclusion: This pilot study reveals that extended use of a tracheostomy-speaking valve, while the children were asleep, was not associated with adverse cardiopulmonary events. This is the first study to show that a tracheostomy-speaking valve might be safely used during sleep, in children.

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