OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference on
Surgery and Anesthesia
September 16-18, 2013 Hampton Inn Tropicana, Las Vegas, NV, USA

Sedation-related outcomes in postoperative management of pediatric laryngotracheal reconstruction

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Objective: Examine outcomes of varied postoperative sedation management in pediatric patients recovering from single stage laryngotracheal reconstruction.

Study Design: Retrospective chart review.

Methods: A retrospective review of 34 consecutive patients who underwent single stage laryngotracheal reconstruction was conducted. Patients were divided into 2 groups: those managed postoperatively with sedation, with or without paralysis (group 1), and those managed awake with narcotic pain medication as needed for primary management (group 2). Outcomes were measured as a function of sedation management. Outcomes investigated focused broadly on those related to the success of the airway reconstruction, and those related to sedation management.

Results: Out of 68 cases of laryngotracheal reconstruction reviewed from 2001-2011, 34 were single stage reconstructions. Nineteen patients were sedated postoperatively (group 1) and fifteen patients were left awake (group 2). There were no significant differences between groups in airway-related outcomes, including risk of accidental decannulation, revision rates, and need for secondary airway procedures such as balloon dilation. Sedation-related outcomes, specifically focusing on differences in medical management, showed significant increases in rates of withdrawal (OR 52.5, $p<0.0001$), nursing concerns of withdrawal ($p<0.0001$) and sedation level (OR 34.7, $p<0.0001$), pulmonary complications (OR 7.7, $p=0.008$), and prolonged hospital stay due to withdrawal ($p=0.0005$) in patients managed with sedation with or without paralysis (group 2). Multivariate regression analysis revealed that duration of sedation was the primary risk factor for increased postoperative morbidity, while younger age, lower weight, and use of a posterior graft were also significant variables assessed.

Conclusion: Avoiding sedation as the standard for postoperative management of single stage laryngotracheal reconstruction airway patients leads to an overall decreased risk of morbidity without increasing risk of airway-specific morbidity. This is specifically as related to withdrawal, pulmonary complications, and prolonged hospital course, each of which increase significantly with increased level and duration of sedation.

Biography

Matthew A. Powers is a fifth year MD/MBA student at the University of Colorado School of Medicine. Originally from Connecticut, he received a Bachelor of Arts in Biology from Boston University, and then he worked at Dana-Farber Cancer Institute as a laboratory technician before heading west for medical school. He plans to pursue a residency in a surgical subspecialty, and would like to focus his career on research and development of surgical technology.