

1003 - ABSTRACT

EPIDEMIOLOGY AND SHORT-TERM OUTCOMES OF AIRWAY RECONSTRUCTION IN CHILDREN

John Kotula¹, Michael Leoncio¹, Brian Ho¹, Balagangadhar Totapally¹

Introduction/Hypothesis: In recent decades, advances in airway reconstruction have improved the care of patients with airway anomalies. The goal of this study is to describe national demographics and short-term outcomes of hospitalized children who underwent airway reconstruction surgery.

Methods: A retrospective analysis of the Healthcare Cost and Utilization Project (HCUP) 2012 Kids' Inpatient Database (KID) was performed. Patients with airway reconstruction were identified using the ICD-9 codes 31.75 and 31.79 (reconstruction of trachea and construction of artificial larynx; other repair and plastic operations on trachea for all children). Cardiopulmonary bypass (CPB) use in the operating room was identified by the ICD-9 code 39.61. Patients were compared with all hospitalizations in the database. Sample weighting was employed to produce national estimates.

Results: Of 6,675,222 weighted discharges, 527 subjects were identified (0.79/10,000 discharges). The highest regional repair prevalence was in the Midwest (1.41/10,000 discharges). The cohort was mostly male (62%), white (42.6%), admitted electively (74.2%), and had at least one congenital anomaly (59.8%). Repair was most frequent in patients 1-5 years of age (36.4%) followed by 1 month to 1 year (23.9%), <1 month (13.5%), 6-12 years (13.5%), and 13-20 years (12.7%). "Stenosis of larynx" was the most common primary diagnosis (38.6%). Repair was performed on the day of admission in 71.7% of cases. Both the total and post-operative median length of stay was 11 days. CPB was required for 36 (6.8%) cases on day of repair. Compared to all discharges, children with airway reconstruction had a higher rate of mortality (1.9 vs. 0.3% [OR: 5.61]), congenital heart disease (27.1 vs. 2.9% [OR: 12.30]), chronic pulmonary disease (19.7 vs. 3.7% [OR: 6.38]), neurologic anomalies (2.5 vs. 0.8% [OR: 3.23]), and mechanical ventilation (40.2 vs. 3.3% [OR: 19.64]).

Conclusions: Compared to the general hospitalized pediatric population, patients requiring airway reconstruction are more medically complex, which may lead to higher mortality. These patients also have higher rates of congenital cardiac anomalies, potentially leading to a requirement for cardiopulmonary bypass.

1004 - CASE REPORT

RELIEF IN A VACUUM: A PALLIATIVE TREATMENT OF SUBCUTANEOUS EMPHYSEMA

Kameron Rogers¹, Felipe Pedrosa², Clint Cappiello², Meghan Bernier¹

Introduction: Massive subcutaneous emphysema (SE) from pneumomediastinum can be disfiguring and uncomfortable, especially with persistent air leak in acute respiratory distress syndrome (ARDS). Consensus is lacking on safe and efficacious methods to decompress SE as it is typically managed conservatively unless airway or cardiovascular compromise occurs. Treatment in children is less well described, especially at the end of life.

Description: A 6 year-old male with multiply relapsed leukemia was admitted with ARDS requiring intubation secondary to polymicrobial gram-negative sepsis and adenoviral pneumonia. Despite lung-protective ventilator strategies and adequate analgesia and sedation, he had an episode of coughing resulting in small bilateral pneumothoraces and pneumomediastinum with subsequent development of SE. Initially limited to the neck and chest, it spread to the scalp, face, arms, abdomen, groin, and thighs despite ventilator adjustments and changes in delivery modes to limit intrathoracic pressure. He required escalating sedation and analgesia due to discomfort from continual expansion of the SE. Given his active multiply relapsed cancer, extracorporeal support was not offered, and he was redirected to comfort care. His parents' only desire was to alleviate his extreme disfigurement and hold him without causing further discomfort or trauma. He underwent palliative bedside placement of bilateral infraclavicular subcutaneous drains with vacuum-assisted closure (VAC) to continuous suction accompanied by manual expression of the accumulated air. There was immediate and nearly complete resolution of the SE with improvement in the patient's agitation and appearance, allowing the family to comfortably interact with him. Though the air leak persisted, the SE did not reaccumulate. He developed a large right pneumothorax two days after with avoidance of tension physiology and imminent death due to drainage via the VAC permitting a compassionate terminal extubation the following day once extended family gathered at the bedside.

Discussion: Massive SE can be physically and psychologically distressing. Evacuation of SE is safe at the bedside using subcutaneous VAC therapy with rapid symptom improvement. Our experience describes the first use as a pediatric palliative end-of-life procedure.

¹Nicklaus Children's Hospital, Miami, FL¹Johns Hopkins Hospital, Baltimore, MD, ²Johns Hopkins, Baltimore, MD