Anesthetic Management and Outcomes in Patients with Truncus Arteriosus Who Underwent Non-Cardiac Surgery

Author(s): R Christensen, A Gholami, P Reynolds, S Malviya

Affiliation(s): University of Michigan Health System, Ann Arbor, MI

Introduction: Truncus arteriosus (TA), a rare cardiac anomaly characterized by a single arterial trunk, arising from the heart and providing blood flow to the systemic, pulmonary and coronary circulations, affects 2% to 4% of individuals with congenital heart disease. Major advances in the repair of TA in neonates and infants have resulted in increased short-term and long-term survival of these patients leading to a growing number presenting for non-cardiac procedures. (1) Although the mortality rate among the children with TA after cardiac repair is well documented, such data evaluating non-cardiac surgical procedures are limited to case reports. (2,3) The purpose of this study is to review the anesthetic care and outcomes of TA patients undergoing non-cardiac, non-obstetric surgery at the University of Michigan.

Methods: After institutional review board approval, records for patients with truncus arteriosus receiving anesthesia for non-cardiac surgery between July 2002 and October 2009 were reviewed. The anesthesia records, operative notes, admission history and physical examination records, operative notes and discharge summaries of these patients were reviewed and the following data collected: patient demographics, comorbidities, surgical procedure, anesthetic and monitoring techniques, intraoperative and postoperative complications, and admission status.

Results: 25 anesthetics, including 18 in the pediatric setting and 7 in the adult setting, performed in 13 patients, comprised the final sample. They were 36% male with a mean age 13.26 years ranging from 1.5 to 28.9 years. All patients had been repaired via right ventricle to pulmonary artery conduits. 3 procedures were done under sedation with the remainder under general anesthesia. The majority of procedures were non-invasive diagnostic or superficial surgeries with minimal blood loss. 16 cases had an inhalational induction while 3 received etomidate for induction and 3 propofol. Arterial lines were used in 2 cases. 16% of the cases were done on inpatients, while an additional 24% were admitted after operation. 8% of the cases were admitted to a moderate care setting while 24% were admitted to general care and 8% were admitted to the pediatric intensive care unit. All had one or more comorbid illnesses including most commonly right bundle branch block, reflux, asthma, and DiGeorge syndrome. 8% experienced adverse events including one case in which an interventional radiology angioplasty balloon ruptured without consequence for the patient. In another case there was epistaxis secondary to an unspecified bleeding disorder during anesthesia for tympanoplasty. This was controlled surgically and the patient was uneventfully extubated at the end of the case and discharged home the next day.

Discussion: This study represents the largest of its kind. While significant data have been published on the perioperative course of these patients for cardiac surgery, data regarding non-cardiac surgery and its anesthesia are limited to two case reports, both of which describe unrepaired patients. (2,3) In our sample, none of the documented complications could be directly attributed to the congenital heart disease itself or to the anesthetic care. In fact, several of our patients underwent their procedures on an ambulatory basis with a variety of routine anesthetic techniques and no complications. However, our study is limited by its small sample size and the fact that these procedures were performed at a center with extensive experience in the care of patients with congenital heart disease for both cardiac and non cardiac surgery. These data therefore may not be extrapolated to other settings. It therefore remains prudent to individualize the care of each patient based on their preoperative condition and co-morbidities.

Refs: