




Congenital

Outcomes and Quality: Big Data in Congenital Cardiac Surgery

Outcomes in Neonatal Cardiac Surgery in Europe During the Past Decade: Analysis of 22,668 Neonatal Index Cardiac Operations from The European Congenital Heart Surgeons Association Congenital Database

 Sunday, January 28, 2024  2:49 PM – 3:01 PM CT

 Location: Stars at Night Ballroom 4

C. Cattapan¹, V. Vida¹, M. S. Bleiweis², G. Sarris³, Z. Tobota⁴, A. Guariento¹, B. Maruszewski⁵, J. P. Jacobs²

¹Pediatric and Congenital Cardiac Surgery Unit, Department of Cardiac, Thoracic, Vascular Sciences and Public Health, University of Padua, Padua, Italy, Padua, Veneto ²University of Florida, Gainesville, Florida ³Athens Heart Surgery Institute, Athens, Attica ⁴Pediatric Cardiothoracic Surgery, Children's Memorial Health Institute, Warsaw, Poland, Warsaw, Warminsko-Mazurskie ⁵Children's Memorial Health Institute, Warsaw, Warminsko-Mazurskie

Presenting Author(s)



Claudia Cattapan

Pediatric and Congenital Cardiac Surgery Unit, Department of Cardiac, Thoracic, Vascular Sciences and Public Health, University of Padua, Padua, Italy Padua, Veneto, Italy

Disclosure(s): No financial relationships to disclose

Purpose: Cardiac surgery in neonates continues to evolve. The present study is aims to evaluate the epidemiology and outcomes of cardiac surgery in neonates during the past 10 years in countries affiliated to the European Congenital Heart Surgeons Association (ECHSA).

Methods: All patients undergoing a cardiac surgical procedure during the first 30 days of life, between January 2013 and December 2022, were selected from the ECHSA Congenital Database (ECHSA-CD). Reoperations during the same hospitalization, percutaneous procedures, and noncardiac surgical procedures were excluded. A total of 9 benchmark procedures were evaluated: Norwood (Stage 1) Operation, Hybrid (Stage 1) Operation, isolated arterial switch operation (ASO), complex ASO, coarctation of aorta repair, aortic arch repair, truncus arteriosus repair, systemic-to-pulmonary artery shunt procedure, and total anomalous pulmonary venous connection (TAPVC) repair. An evaluation of incidence of each operation and the Operative Mortality of each operation (defined as death in the first 30 days after the operation or during the same hospitalization) during the 10 years was performed, and the prevalence and Operative Mortality were compared between the first 5 years and the second 5 years.

Results: The overall number of neonatal procedures in ECHSA-CD (2013-2022) was 30,931, of which 22,668 met the inclusion criteria of the study. Thirty-five countries contributed to the dataset and 18 of these countries had 2 or more centers submitting data. (19,575/22,668=86.4% of these operations were performed in these 18 countries with more than 2 centers submitting data).

The five most common procedures were: coarctation of aorta correction (3,693/22,668=16.3%), isolated ASO (3524/22,668=15.6%), shunts (2,372/22,668=10.5%), aortic arch repair (2,105/22,668=9.3%), Norwood procedure (2,099/22,668=9.26%). A decrease in the percentage of isolated ASO and shunts over time was found ($p=0.015$ and $p=0.001$), while the incidence of aortic arch repair and Hybrid (Stage 1) Operation increased ($p=0.001$ and $p=0.003$).

Overall Operative Mortality was 2,091/22,668=9.2%. Operative Mortality in the five most common benchmark procedures: coarctation=96/3,693=2.6%, isolated ASO=149/3,524=4.2%, shunts=245/2,372=10.3%, aortic arch repair=158/2,105=7.5%, and Norwood (Stage 1) Operation=524/2,099=25.0%. Operative Mortality in other neonatal cardiac operations included Hybrid (Stage 1) Operation=192/638=30.1%, truncus arteriosus repair (67/402=16.7%) and TAPVC repair (147/1,210=12.1%). Operative Mortality related to coarctation of aorta correction decreased in the second 5 year of the study ($p=0.041$); no significant difference in Operative Mortality were observed in the other operations.

Conclusion: Neonatal cardiac surgery still represents an important challenge in congenital heart surgery and is associated with notable mortality, especially in neonates with functionally univentricular physiology. These data can provide important benchmarks across Europe and can also be used to identify opportunities for improvement in the future.

Identify the source of the funding for this research project: No fundings received.

