Commentary: Risk prediction model on adult congenital heart surgery. And more...

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Disclosures: Authors have nothing to disclose with regard to commercial support.

Received for publication Aug 13, 2019; revisions received Aug 13, 2019; accepted for publication Aug 14, 2019; available ahead of print Oct 25, 2019.

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J Thorac Cardiovasc Surg 2020;159:2416-7

0022-5223/\$36.00

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<https://doi.org/10.1016/j.jtcvs.2019.08.111>

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Central Message

A risk prediction model for adult CHD surgery has significant impact on decision making in management of these patients and sheds light on initial surgeries at childhood as well as current surgical planning.

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Perioperative risk assessment in adults with congenital heart disease (CHD) remains challenging as this population ages. Multiple noncardiac complications have contributed to the morbidity and mortality of adults with CHD as they undergo cardiac and noncardiac surgery.¹ Combined with the heterogeneous anatomy of CHD, the risk profiles for these patients are different from adults with acquired heart disease undergoing cardiac surgery. Lei Lei and colleagues² studied 784 consecutive adults with CHD and concluded that risk factors for postoperative adverse outcomes included MELD-XI score, cognitive impairment, number of chest wall incisions, body mass index, and cardiac anatomic category. In addition, 1-year mortality was predicted by need for anticoagulation, MELD-XI score, and cardiac anatomic category.

This risk model sheds light on the importance of preoperative management planning. Congenital heart surgeons should be aware of these risks and the importance of a multidisciplinary team in the comprehensive evaluation of adults with CHD undergoing cardiac surgery. Furthermore, it is recommended that adults with CHD be evaluated and cared for in regional adult CHD programs, where specialized care has been associated with improved survival.³

Liver disease is highly prevalent following surgical repair in adults with CHD. Residual lesions such as tricuspid or pulmonary regurgitation, atrial shunts, or Fontan obstruction, which can result in high hepatic venous pressure, should be intervened on early because patients with Child–Pugh B class liver cirrhosis have a 66% 1-year mortality in the setting of cardiac surgery.⁴ In patients with cirrhosis of the liver, combined heart and liver transplant may be an acceptable alternative rather than conventional surgery in adults with CHD.⁵

Although anticoagulation is mandatory in some patients, such as those with a Fontan circulation, any condition such as arrhythmia or mechanical valve that requires

anticoagulation should be carefully prevented. Body mass index has a nonlinear, U-shaped curve where efforts to improve malnutrition or weight loss should be corrected before surgery. In terms of the number of chest wall incisions, advanced imaging including assessment of peripheral vasculature may aid the surgeon in re-entry. Restricted lung function from chest wall deformities, difficulty opening due to scar tissue, or multiple blood product use due to bleeding are potential associations. If restricted lung function is the primary cause, avoiding thoracotomy that causes chest deformity or minimally invasive surgery should be considered. Likewise, instead of the use of multiple blood products, perhaps bloodless surgery can improve outcomes.

Finally, the authors concluded that cardiac anatomy other than biventricular subaortic left ventricle is adversely related to outcome. This is intuitively understandable, but we lack a detailed risk prediction model for specific CHD and surgical repair. In addition, it is imperative these types of risk scores be validated in multicenter, prospective, outcomes-based cohorts of patients with adult CHD. The need for risk prediction models in cardiac surgery that include not only the anatomy and previous interventions but also comorbidities and clinical characteristics of adults with CHD is clear, and this study provides early insight into some of these unique features.

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