Commentary: Ross for all and all for Ross?

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One wonders whether, in his wildest dreams, Donald Ross would have anticipated the benefits of his procedure being extended successfully to babies.1 Indeed, although the performance of the Ross procedure in a neonate requires considerable technical mastery, the gratification of a “living” valve that has the potential to grow over a child’s lifetime is profound. Yet, of the innumerable lessons learned over the 50 years since this initial report, one of the most salient for newborns and infants has been the high mortality associated with performing a Ross in the setting of concomitant mitral valve disease, endocardial fibroelastosis, or multilevel left-sided obstructive lesions. In this issue of the Journal, Cleveland and colleagues2 report their single-surgeon experience with the Ross procedure in neonates and infants; their results are somewhat sobering.

Although receiver operating characteristic curves in the series vilify a cut-point of 84 days of age as a predictor of mortality, examination of the nonsurvivors highlights 2 additional key observations: (1) only 2 had pure aortic stenosis, and (2) all had a Konno. While great vessel size mismatch obligates at least a “mini”-Konno incision at the time of Ross in most newborns, these nonsurvivors surely required a substantial ventriculoplasty, given their operative indications. Nevertheless, the Konno itself, despite its accepted morbidities, surely isn’t the culprit either, but rather a surrogate of multi-level disease. Moreover, for those with interrupted aortic arch (IAA), although the Konno extension into the associated septal defect seems straightforward, 2 of the 3 IAA nonsurvivors died intraoperatively and the third while on extracorporeal membrane oxygenation.

Several recent Ross series have earned well-deserved swagger for outstanding survival in neonates and infants; however, meta-analyses would suggest less-sanguine results across the board.3,4 What the data of Cleveland and colleagues2 show us is that even in the hands of a titan surgeon, the mortality rate in this population is high. Shouldn’t we then be considering alternative strategies for those with more than pure aortic stenosis—Yasui for IAA, a Norwood stage I as a bridge to decision for those with Shone complex? None of these precludes the later performance of a Ross (perhaps deferred beyond the mystical 84-day milestone) and thus arrival at the 2-ventricle promised land. What a staged approach can allow, however, is “declaration of intent” from a sometimes borderline, often dysfunctional left ventricle and not infrequently indeterminate mitral valve.

In the movie The Matrix, Morpheus offers Neo the choice of the red pill or the blue pill.5 However, the choice is not simply 2 roads diverging in a Frostian Wood: “You take the blue pill… you wake up in your bed and believe what you want to believe. You take the red pill…and I show you how deep the rabbit hole goes.” Cleveland and colleagues2 reinforce that we can no longer keep taking blue pills and assuming the Ross procedure will magically address more than aortic valvar (and occasionally subvalvar) disease. It is time for us to explore the matrices of neonatal left ventricular outflow tract obstruction; who knows what strategies we’ll uncover if we free our minds.
References