Letters to the Editor

Ross operation for bicuspid aortic valve: the myth, the reality

Shahzad G. Raja*
Department of Paediatric Cardiac Surgery,
Alder Hey Hospital, Eaton Road,
Liverpool L12 2AP, UK

Received 29 April 2004; accepted 14 May 2004; Available online 24 June 2004

Keywords: Ross operation; Pulmonary autograft; Bicuspid aortic valve; Autograft failure

I read with great interest the article by Hraska et al. [1], in the May issue of EJCTS, summarizing their 7 years experience with the Ross and Ross–Konno operation in children and adolescents in two centers. Like most other series, their mid-term experience validates the safety and efficacy of Ross operation in treating aortic valve disease in this important subset of patients where growth, active life style with appropriate activity level and difficulty in medical compliance are important considerations. Interestingly, they mention bicuspid aortic valve disease as an important cause for failure of the Ross operation but fail to provide any evidence of this fact in their case series. This leads one to once again raise the controversial issue: Is bicuspid aortic valve really a contraindication for Ross operation?

Bicuspid aortic valve (BAV) is considered the most common congenital heart defect with the generally accepted rate of BAV prevalence in the general population being 1–2% [2]. In our recently published analysis of mid-term outcomes after Ross operation in children and young adults [3], the incidence of bicuspid aortic valve was 53%. On the other hand, about 80% of the adults undergoing Ross operation have bicuspid aortic valve [4]. Despite all the skepticism and concerns, available evidence suggests that Ross operation can be performed in patients with bicuspid aortic valve disease with excellent operative and post-operative results [3,4]. It is noteworthy that despite the allegedly greater tendency of patients with BAV to experience autograft root dilatation, there is no conclusive evidence to prove this allegation. In fact, Elkins [5] has shown an absence of correlation between aortic valve structure and late autograft dilatation.

This suggests that factors other than bicuspid aortic valve per se must play a role in the appearance of autograft dilatation and failure. Among these factors, degenerative lesions of the pulmonary artery media occurring after the autograft has been implanted as a consequence of its altered microvascular supply and of its exposure to the hemodynamic stress of the systemic circulation, severity of prior aortic regurgitation (AR) and variables relative to the operative technique may have an impact. Meticulous attention to correction of geometric mismatch, performance of Ross operation before massive ventricular dilatation sets in due to severe AR and control of systemic blood pressure are some of the maneuvers which prolong the life of pulmonary autograft even when implanted in patients with bicuspid aortic valve disease.

Which lesions are most benefited by the operation? Are there contraindications in patients with aortic dilation such as those with Marfan syndrome? What happens to the autograft valve in patients with rheumatic aortic valve insufficiency? What happens to the pulmonary autograft valve and proximal neo-aorta over the short- and long-term? What is the fate of the pulmonary heterograft and valve? Can acute or chronic coronary or myocardial dysfunction affect outcomes? Can these children and adults exercise without serious risk? Should the technique be modified? Are there better technical surgical options and for whom? These are some of the questions, which were adequately answered fairly early after the acceptance of Ross operation. However, it was the dark myth surrounding the feasibility of Ross operation for bicuspid aortic valve which took the longest to see the dawn of reality.

References


* Tel.: +44-151-252-5635; fax: +44-151-252-5643.
E-mail address: drrajashahzad@hotmail.com (S.G. Raja).

doi:10.1016/j.ejcts.2004.05.016