A Modification to the Ross Procedure that May Eliminate Autograft Dilatation

Ross Ungerleider MD, MBA
Rainbow Babies and Children’s Hospital
Cleveland, OH

The use of the Ross Procedure (RP) has been declining for adult patients. One reason for this has been the concern about potential for autograft dilatation (AD) following RP. Beginning in October 2004, we began performing RP in adult (>16 y/o) patients (n=20) using a modified technique (MR) in which the autograft was completely encased in a Dacron graft (24-32 mm) prior to implantation. Autografts were evaluated with serial echocardiograms for the presence of AD (aortic root diameter ≥ 40 mm). We compared the MRP patients to a cohort of similar adult patients who received a conventional Ross procedure (CR) between 1/01 thru 4/06 (n=22).

AD was only present in the CR group (15/22; 68%). None of the patients in the MR group dilated. Mean aortic root diameter (largest follow-up diameter) was significantly larger for the CR group. (CR: 40.5 ± 9.8; range 21.2 – 57; MR: 31.3 ± 3.5; range 24.1 - 38. P = 0.0002). The hazard for the “event” of autograft dilatation following a CR is fairly constant over time at 28% per year. Although the follow-up period was longer for the CR group (CR: 2.9 ± 1.4 years; MR 1.85 ± 0.86 years. P = 0.007), the progressive appearance of AD makes the differences between the groups notable.

Conclusions: AD is a prominent event following a CR that may diminish long-term benefit of the procedure. The appearance of AD following a CR fits a constant hazard model that predicts a risk of 28% per year for patient who have not yet dilated. A modification of the RP in which the autograft is encased in a Dacron graft prior to implantation shows attractive potential to eliminate AD. This technique is reproducible and consistent and may be especially applicable to adults who are at risk for AD following RP.