To the Editor:

We read with great interest the recent article by Lancaster and colleagues describing hemispherical aortic annuloplasty reconstructive technology (HAART) in adolescents, which requires implantation of a rigid ring inside the aorta (Figure 1, A). A few immediate questions come to mind. Is implantation of an internal ring necessary if efficient and durable stabilization could be achieved with other annuloplasty techniques? Would the expected endothelization of the ring induce fibrosis in the high-shear-stress subaortic area? Would this, in turn, create an iatrogenic subaortic membrane and induce the spread of the fibrosis into the base of the cusps? Would this ring influence the valve function long term? These questions remain to be answered and are of great importance, especially because durable stabilization techniques with proven long-term excellent results already exist.

With increasing experience in aortic valve repair, the need for aortic root stabilization has become evident. An annuloplasty has been previously applied with very good long-term results using either suture (Figure 1, B) or an external ring (Figure 1, C). Such technique has been proven to provide durable and reproducible long-term results. Similar techniques have been applied to stabilize autografts after the Ross operation. Although suture annuloplasty is effective in most patients with symmetrical annular dilatation, some patients with asymmetrical dilatation after previous truncal valve surgery or arterial switch operation, particularly with so-called run away sinus, will require stabilization with...

an external ring (Figure 1, C). Most importantly, it is the current expectation that with proper stabilization technique the aortic valve repair will last for life and must have a durable long-term result.

HAART is an interesting option for aortic valve repair and aortic root stabilization. Previously published articles described substantial reduction in aortic regurgitation and acceptable mean gradients across the aortic valve after HAART implantation at midterm. The argument that the HAART ring eliminates the need for proximal coronary artery dissection would not hold in patients undergoing valve-sparing root replacement because most of the time the coronary buttons are dissected anyway. Furthermore, this argument is, generally, not strong because in most patients the annulus can be reduced and stabilized with a suture without dissection of the coronary arteries. In contrast to other widely used annuloplasty techniques, HAART necessitates intraluminal placement of the rigid ring and, despite the best effort, may have direct contact with aortic cusps in diastole and cause increased shear stress in the subaortic area in systole. Thus, it appears counterintuitive to place a bulky annuloplasty ring in a subvalvular area and pledges inside the aorta because such an arrangement appears to be doomed to induce aortic valve fibrosis at the hinge point of each cusp. Would this, in fact, induce aortic valve fibrosis long term? Time will tell.

In any rate, there are durable and reproducible alternatives for aortic annulus stabilization without intraluminal rings.

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References


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