Proximal reconstruction during Type A aortic dissection

In the paper by Farhat and colleagues [1], 15 patients with Type A aortic dissection were repaired using the valve sparing aortic root replacement (reimplantation or David procedure) for the proximal aortic reconstruction. The authors report an excellent early mortality of 7% and a 2-year actuarial survival of 93%. In their conclusion, the authors proposed that the ‘systematic’ use of this technique is recommended for repairs of Type A aortic dissection. In such a small series, the data presented does not support this conclusion, but we credit the authors for bringing our attention to a continuing question: What is the best management strategy for the aortic root during acute Type A aortic dissection?

At experienced centers outcomes during repair of acute Type A aortic dissection have improved and more complex procedures are being performed. Many centers have previously reported results of the reimplantation technique with acceptable early outcomes for acute dissection [2]. Thus, the question of whether this technique can be performed safely in the setting of acute aortic dissection — the stated aim of this study — has been previously answered. A more significant question is should it be performed? Unfortunately, the answer to this question will require the results of long-term follow-up of the aortic valve function and whether proximal reoperation was required, neither point addressed in this study.

Management of the aortic root during acute Type A aortic dissection may involve the following techniques (in increasing level of complexity): ascending supra-coronary aortic replacement with aortic valve resuspension or prosthetic valve replacement, composite aortic root replacement (Bental), and the valve-preserving aortic root replacement with aortic valve reimplantation (David). Many factors influence the choice of procedure including patient characteristics (age, comorbidities, degree of aortic insufficiency, root diameter, leaflet morphology, and the presence of genetic disorders like Marfan’s), concern of durability of reconstruction with need for future reoperation, and most importantly surgeon’s experience and comfort level with each procedure. Some groups have proposed a more aggressive approach to addressing the aortic root, i.e., complete aortic root replacement (Bental) in order to eliminate the need for future proximal reoperation [3] while others have subscribed to a basic surgical approach (supracoronary ascending replacement with valve resuspension) — like ourselves — achieving excellent early survival but accepting the potential for future proximal reoperation [4].

For several reasons, we currently maintain a less complicated but expeditious approach to repair of acute Type A aortic dissection. In our experience, aortic valve resuspension with aortic root reconstruction has been associated with an incidence of proximal reoperation in less than 5% of cases maintaining an early mortality of less than 7% in cases of non-tamponade. In addition, we have found that aortic valve replacement was a risk factor for late mortality during repairs of the ascending and transverse arch supporting the strategy of valve preservation [5]. The need for proximal reoperation is likely related to both patient factors as well as operative technique. We believe that some of the operative factors that contribute include incomplete excision of the tear, failure to obliterate the false lumen, and proximal redissection. Proximal redissection refers to pressurization of the aortic root from a less than ‘water-tight’ proximal anastomosis in the setting of a supracoronary ascending graft replacement. If the aortic root is non-dilated and is to be preserved, then it is of paramount importance to prevent proximal redissection. Proximal redissection may increase the risk of late aortic insufficiency, late dilatation of the sinuses of Valsalva, and late ostial coronary stenosis.

We, like many others, have adopted and have been pleased with the valve-preserving aortic root replacement (David) for selected cases of aortic root aneurysm although our experience with this approach for acute dissection has been limited. Appreciating that the degree of preoperative insufficiency may predict long-term durability of the valve with these procedures, we also are more inclined to perform the David procedure in patients with moderate or less insufficiency than those with severe insufficiency. We admit, however, in the case of aortic dissection, the degree of aortic valve insufficiency has not influenced our approach to the aortic root reconstruction and valve resuspension. In this study by Farhat and colleagues [1], report of preoperative aortic valve status (as determined by echo-cardiography) was not mentioned and would have been informative.

The authors use the term ‘systematic’ to describe the application of the David procedure for aortic dissection. Assuming the authors are referring to ‘standard’ or ‘routine’ when they use the term systematic, we cannot agree. Despite our biases, it remains difficult to recommend for all one technique over another since no clear evidence supports a specific approach. Even if evidence supported a specific approach, what often times remains unaccounted for in these
studies is the surgeon’s skill and experience as well as comfort with a specific procedure.

The points noted in this commentary are not new and will continue to be debated for years to come. Despite the approach performed, the importance of survival in an otherwise devastating disease must be reiterated. We like to conclude by emphasizing the poignant comments made by Stephen Westaby in an editorial recently published in the European Journal: ‘the principle goal of aortic dissection surgery is to achieve a hospital survival, and mortality is unlikely to be reduced by a more complicated procedure performed under emergency conditions’. He goes on to add, ‘The operation performed should therefore reflect the ability of the surgeon and be tailored to achieve survival with understanding that the patient can always be referred to an experienced aortic center should late complications ensue [6]’.

References


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