Author's response to reviews

Title: Single-stage Repair of Adult Aortic Coarctation and Concomitant Cardiovascular Pathologies: A New Alternative Surgical Approach

Authors:

Mert Yiimaz (cvitr@yahoo.com)
Bulent Polat (bupolat@hotmail.com)
Davit Saba (davids@uludag.edu.tr)

Version: 4 Date: 20 June 2006

Author's response to reviews: see over
1. The authors cite just one reference to justify their conclusion that it is preferable to correct both lesions simultaneously. This statement could be challenged, since patients with very complex cardiac disease requiring a long procedure, might best be served with a staged approach. What patients would the authors not consider suitable for a one stage approach?

Answer: As the Reviewer’s suggestion, I added two references that were supporting simultaneous repair. The recent published papers mostly suggested single-stage technique for complex coarctation but as we indicated at the introduction “Adult patients with aortic coarctation (CoA) and concomitant cardiac surgically correctable lesions is still dilemma for the surgeons. The optimal operative approach for such patients remains unsettled. Different surgical strategies have been described. One approach is to perform the CoA operation and the additional cardiovascular operation as staged procedures. Situations exist for which one can present a rationale for either operative procedure being the initial operation.” there is no one technique that is providing very low risk and excellent result. We only presented our experience on this alternative technique.

2. Although several authors recommend bypass grafts of varying lengths to treat aortic coarctation, the quality of the aortic tissue may lead to late complications beyond the author’s relatively short length of follow-up (see reference 10). Why did not the authors consider and end to end conventional graft repair? Would primary end to end repair not have been preferable in Case 1, a 27 year old female with a long life expectancy?

Answer: End to end anastomosis is only occasionally used today providing there is sufficient normal tissue present (after resection of the lesion) to complete the repair without tension. Prosthetic interposition tube graft is the most commonly used technique having largely replaced the end to end anastomosis. Careful dissection is used to show the relevant anatomy and to avoid left recurrent laryngeal nerve injury. Vascular sloops or tapes are passed around the left subclavian artery, the aorta both proximal, and distal to the coarctation. The presence of a thin and weak aortic wall adjacent to the site of coarctation may have implications in terms of postoperative complications. The collateral circulation is important in two respects. Large intercostal vessels may enter the descending aorta adjacent to the site of coarctation. These vessels are often friable and aneurysmal. Techniques for surgical repair which require cross clamp of the descending aorta demands that at least some of these vessels must be dissected and divided or temporarily occluded. This can be hazardous as if these vessels are damaged, it can lead to profuse haemorrhage. The other important aspect of this collateral circulation is in its ability to sustain adequate perfusion of the descending aorta during aortic cross clamping. An important aspect of coarctation repair in this age group is in the assessment of the need to provide additional means of descending aortic perfusion. For the above reasons, we never thought to perform end to end repair or graft interposition.
3. With reference to case 2, severe atheromatous changes can occur in IMA arteries in patients with longstanding untreated coarctation. Did the authors have any concern about using the IMA in this relatively old patient?

Answer: I added the paragraph “Any attempts at CoA repair in these patients would be disastrous without prior or simultaneous coronary revascularisation. The internal mammary arteries are often increased in size and are unsuitable for use as conduit for revascularisation.” In patients requiring coronary artery bypass grafting in combination with CoA repair, care must be taken to ensure adequate mammary artery flow before its use, because of its greater susceptibility for atherosclerotic narrowing. LIMA graft was used only in one patient that required CABG. At the discussion that was explained why we used LIMA I in one patient and not in the other.

4. Are the authors not concerned about the potential for embolization of atherosclerotic debris in older patients in whom a side biting clamp will be placed on the aortic arch with their technique?

Answer: We never used the sidebiting clamp performing this technique and our technique’s superiority against the previous methods is single incision, short graft length and not using/no necessity side-biting clamp that could be the reason of neurologic disorder or neighbour organ damage such as esophagus.

5. Although the authors have demonstrated the technical feasibility of the combined approach, they should more clearly define the specific situations in which they would use the technique and also the conditions where they would not.

Answer: I added the main indications for the single-staged repair at the discussion as follow:

The main indications for single-stage repair are:
1. Calcified or serious adult CoA with concomitant cardiovascular pathologies required surgery.
2. CoA with serious triple coronary artery disease.
3. Re-CoA with concomitant cardiovascular pathologies required surgery.

And I also added the limitation of our technique at the discussion as follow: “The limitation of using our technique is extensive calcification at the arcus aorta.”