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EXTENSIVE LEFT ANTERIOR DESCENDING ARTERY ENDARTERECTOMY AND RECONSTRUCTION

To the Editor:

We congratulate Myers and colleauges[1] for their recent article regarding extensive endarterectomy and reconstruction of the left anterior descending coronary artery (LAD). Our group[2] previously reported the technique of using the internal thoracic artery (ITA) as an onlay patch after an extensive LAD endarterectomy, and we consistently use this technique whenever we encounter diffuse LAD disease that cannot be treated by conventional revascularization techniques. In cases where the left ITA is not adequate because of the extent of the endarterectomy, we use a saphenous vein onlay patch over the endarterectomized vessel and then graft the left ITA onto the hood of the vein patch.

Of 1571 patients undergoing coronary endarterectomy, 368 patients underwent endarterectomy of the LAD (23.4%). Of these, 212 patients received a left ITA graft: 184 patients with a left ITA onlay patch and 28 with the left ITA anastomosed onto the hood of a saphenous vein onlay patch. We have had excellent results with both of these techniques. Among the 89 patients who underwent angiography, the LAD was patent in 81%.

We have used another option in patients with diffuse coronary artery disease and small vessels. Twenty-four patients underwent transmyocardial laser revascularization with a high-energy carbon dioxide laser[3] in addition to bypass grafting and endarterectomy of the LAD. They received 8 to 24 channels, with a mean of 10.8 channels per patient. We have found transmyocardial laser revascularization to be a useful adjunct to bypass grafting and endarterectomy in patients with diffuse and small vessel disease,[4,5] with an 80% reduction in angina. Of late, in addition to extensive endarterectomy and left ITA onlay patch, 3 patients have received stem cell implants on either side of the LAD segment that was grafted.

We commend Myers and colleagues[1] for their results, and we take this opportunity to emphasize the option of endarterectomy for tackling diffuse coronary artery disease.

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Reply to the Editor:

We thank Keshavamurthy and colleagues for their positive and interesting comments on our report on extensive endarterectomy and reconstruction of the left anterior descending coronary artery.[1] We are aware of their earlier study,[2] which provided excellent angiographic data (81% patent left anterior descending coronary artery in 89 patients) in a subset of their extensive patient population.

We also thank Kato and colleagues for their comments on our report and for providing us with the opportunity to address key issues relevant to the understanding of this technique. We are aware of their recent publication.[3] Unlike our study, only 33% of their patients required an endarterectomy. We therefore think that their patient population is totally different from ours, which explains the better 10-year survival. We nonetheless congratulate them on their excellent results, and we agree that identifying the causes of death will enhance our knowledge about this complex group of patients Unfortunately, we do not have the data on the specific causes of death, but rather only all-cause mortality, as provided by the Social Security Death Index.

Regarding the use of a saphenous vein patch, this technique was only used in select patients, as outlined in our article,[2] in whom the endarterectomy required a long arteriotomy to complete the extraction of the atherosclerotic core. In these patients, we were concerned about the length of the left internal thoracic artery (ITA) pedicled graft, and we instead chose to use a vein patch onto which a left ITA was grafted. Although venous graft disease and the superiority of standard left ITA–left anterior descending coronary artery anastomosis are well documented, there are relatively few data on the fate of vein patches used in conjunction with left ITA grafts. We believe that a pedicled ITA graft has the ability to

secrete endothelial relaxing factors that may help prevent venous graft disease.

Finally, with regard to perioperative medical management, we believe that modern antiplatelet therapy has improved outcomes. We respectfully disagree with Kato and colleagues with regard to the need for warfarin in the modern practice. Dual antiplatelet therapy has replaced the use of warfarin sodium in our practice.

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CAN BOTH A2 AND P2 SCALLOP PROLAPSES IN BARLOW DISEASE BE REPAIRED SUFFICIENTLY WITH EDGE-TO-EDGE SUTURES?

To the Editor:

The recent article by De Bonis and colleagues[1] highlights the importance and outcomes of the edge-to-edge repair technique for mitral valve repair procedures. From 1993 to 2000, a total of 174 patients with severe degenerative mitral regurgitation were treated with the double-orifice technique combined with ring annuloplasty. Mitral regurgitation was caused by anterior leaflet prolapse in 36 patients, bileaflet prolapse in 128, and posterior leaflet prolapse in 10 patients. Their retrospective clinical and echocardiographic results are acceptable.[1] We congratulate De Bonis and colleagues[1] on their results.

A clarification can be obtained by viewing the disease as a pathophysiologic triad of the terms describing valve etiology, valve lesions resulting from the disease, and valve dysfunction resulting from the lesion.[2] Not only does this pathophysiologic triad facilitate communication among the cardiologist, the echocardiographer, and the surgeon, it also has significant clinical relevance for the individual patient.[2] Unfortunately, De Bonis and colleagues[1] did not document the etiologies among their patients. In this circumstance, there may be some confusion as to whether this technique can be safely applied in Barlow disease, because Barlow disease is generally associated with the most complex valve pathology and dysfunction.[3]

The advantages of the edge-to-edge repair technique include its ease of applicability both during the learning curve and later, especially in single-scallop prolapse, and its prevention of systolic anterior motion. De Bonis and colleagues[1] noted that the edge-to-edge suture is performed with deep bites to decrease the height of the leaflets, and postoperative systolic anterior motion can be effectively prevented even in huge myxomatous bileaflet prolapse resulting from Barlow's disease.[1] Although a deep bite can decrease both anterior and posterior leaflet height, it does not reduce the tension on the remaining chordae; some of the excess tissue should be therefore resected to maintain normal valve geometry, to reduce the tension on the remaining chordae, and to stop progression of the process. As shown by very long-term results,[4] the resection strategy should be performed according to the law of Laplace, which states that the larger the portion of a sphere, the greater the tension on its surface, and thus in this case on the chordae.[5] This technique therefore may result in leaflet tearing, which was also speculated on by De Bonis and colleagues.[1] We believe that a too-superficial stitch of the edge-to-edge suture is more likely responsible for that.

No matter which repair technique is performed, according to Carpentier's principles[5] creation of a large surface of coaptation is always essential, which necessitates a healthy suspension system (or subvalvular apparatus). This suspension system has two functions: one is to facilitate the opening of the leaflet during diastole (active opening), and the other is to prevent the upward displacement of the leaflet above the plane of the annulus during systole. Single-scallop prolapse can be repaired successfully because opposing a normal scallop's marginal chordae can prevent upward displacement of the previously prolapsing scallop when the edge-to-edge repair technique is performed. Performing the edge-to-edge repair technique may not be sufficient to suspend the prolapsing scallops in patients with both A2 and P2 prolapse, however, because there are no healthy marginal chordae to suspend the combined (sutured) A2 and P2 scallops. We think that this point is the main deficiency of the edge-to-edge repair technique.

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