THE EFFECTIVENESS OF SIMPLIFIED FROZEN ELEPHANT TRUNK REPAIR FOR ACUTE DEBAKEY TYPE I DISSECTION

To the Editor:

We read with great interest the recently published study by Roselli et al¹ regarding the effectiveness of simplified frozen elephant trunk repair for acute DeBakey type I dissection. In this clinical study, a single, commercially available descending thoracic stent graft was delivered antegrade directly into the open descending aorta. Two of the flares on the stent graft were resected to create a fenestration around the supra-aortic branch vessel. The stent graft at the base of this fenestration then was sutured to the base of the branch artery with a pledgeted mattress suture. By using such a simplified procedure, extended repair of the ascending aorta, arch, and upper descending aorta were performed during the same surgical intervention. We congratulate them for their excellent clinical results and also would like to discuss a few questions regarding the effectiveness of the simplified procedure.

The stent graft selected for the simplified procedure is what was used in the intervention procedure. In general, the proximal end of such a stent is designed to open widely to provide strong radial force to strengthen the proximal fixation.² According to the reported procedure, 2 of the flares on the proximal end of the stent graft were resected to create a fenestration around the supra-aortic branch vessel. The integrity of the proximal end of the stent graft was destroyed and the proximal end of the stent graft might not attach to the native aorta so tightly. We think that there is a potential risk for a type 1 endoleak, although only a type 2 endoleak from the left subclavian artery was detected in the small series during the short follow-up period. We have another concern regarding the broken

ends of the metal stent after removing 2 of the flares. After the metal stent is cut, the spring of the stent may create strong radial force at both broken ends and cause injury to the aortic wall. We also want to know the indications for such a simplified procedure. If the arch vessels are affected by the dissection or the primary tear is located at the great curvature of the arch, can such a procedure be used? In the reported series, the left subclavian artery was covered by the stent graft in almost half of the patients. Although ligation of the left subclavian artery after strict evaluation of collateral circulation could be safe for type A dissection patients,³ subclavian artery steal syndrome or arm ischemia may be inevitable in some cases. In addition, what was the incidence rate of such complications in the patients whose left subclavian artery was sacrificed?

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Reply to the Editor:

We appreciate the insightful comments from Drs Gu and Shi regarding our article describing the initial experience with a simplified single anastomosis frozen elephant trunk

repair for acute DeBakey type I dissection.¹

They are concerned with the integrity of the stent-graft after modification. The device is made of 3 separate stents: one at each flared end and one continuous stent comprising the main body. Trimming flares from one end within the arch will not affect the rest of the device because it is a separate stent. Bare ends of the wire have not posed a problem because the flares are securely covered with graft material, and this portion of the device is directly sutured within the aorta. During this procedure, the device is fixed to the aortic wall not only by radial force and sutures at the base of the branch vessel but also by at least half of the circumference of the suture line between the ascending surgical graft and the aortic wall (the conventional hemiarch anastomosis). Despite no issues with the initial published experience, we have since had a patient develop a proximal type 1 endoleak. Because the device was directly sutured to the aorta, migration is not an issue. This endoleak was easily addressed with endovascular embolization, and we now place additional full-thickness tacking sutures within the arch to achieve better seal. Our hope is that in the future there will be a disease-specific device that allows for even easier performance of this simplified single anastomosis technique.

The team from Shenyang also asked about indications. This technique is applicable to a wide variety of patients presenting with type I dissection. In this initial series of consecutive patients, there have been 7 entry tears extending through the arch, a patient with aneurysmal arch, 1 descending tear extending retrogradely, and several patients with dissection into the arch branches. Tears within the arch were easily covered by the stent-graft. The entry tear rarely occurs right at the base of a branch vessel. It may be necessary