Variety is the spice of life: One-stage or two-stage repair of extensive chronic thoracic aortic dissection

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Preoperative computed tomography of dissecting arch and thoracoabdominal aorta aneurysm after acute type I aortic dissection repair.

Central Message

Need for individualization and variety is key as we treat patients with extensive chronic thoracic aortic dissection.

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Extensive, 2-stage aortic replacement by the elephant trunk (ET) procedure was first described in 1983 by Borst and colleagues,¹ who used the procedure to facilitate the replacement of the descending and thoracoabdominal aorta. The ET procedure has greatly facilitated the second stage, but the cumulative risk incurred by performing 2 major operations² has created the need for a single-stage operation. Part of the argument for choosing the 1-stage approach is avoiding aortic rupture and mortality between procedures³ and an almost guaranteed second re-intervention. One-stage repairs could include the frozen ET (FET) procedure with a single-piece or custom-made device, and 1-stage open repair via bilateral anterior thoracotomy. Persistent patency of the distal false lumen, distal aortic dilation, and aneurysm formation are well-known potential sequelae that determine the fate of the distal dissected aorta.

We have to congratulate Dr Kouchoukos⁴ in this issue of the *Journal* for providing us with the largest series of chronic extensive thoracic aortic dissection repairs by a 1-stage technique via bilateral anterior thoracotomy. In this impressive work, 80 consecutive patients were treated for extensive chronic thoracic aortic dissection via a clamshell incision, with outstanding results. There is no question in anybody's mind that Dr Kouchoukos is a master surgeon with extensive experience. Replicating his results will be a challenging task. A hospital mortality rate of 2.5%, stroke rate of 1.2%, and spinal cord injury rate of 1.2% are outstanding results. Freedom from reoperation at 5 and 10 years was 89.2% and 84.4%, respectively.

Despite these outstanding results, 42.5% of patients required ventilator support for more than 72 hours, and 15% needed tracheostomy. Older patients and patients

with poor pulmonary function or concomitant chronic obstructive pulmonary disease can better tolerate a single median sternotomy than any other incision with regard to pulmonary recovery. In contrast, younger and healthier patients tolerate most incisions equally well.

Also, among the patients treated in this report, the distal descending aorta did not exceed 4.5 to 5 cm, so patients with mega-aorta and large (eg, extent II) thoracoabdominal aorta aneurysms were not treated with the described clamshell approach. Even for patients whose pathology extends no farther than the level of the diaphragm, what is wrong with a median sternotomy and a FET approach with an intent to treat the ascending aorta, arch, and descending thoracic aorta? For these patients, we currently favor using a stage 1 FET approach and to perform the completion stage 2 FET during the same hospital stay to avoid spinal cord injury. For patients whose pathology is limited to the upper descending thoracic aorta, we favor the 1-stage FET approach.

In addition, the report describes this approach in 13 patients (16%) with connective tissue disorders. It is difficult to draw any conclusions from 13 patients alone. Finally, unlike median sternotomy, bilateral anterior thoracotomy is not in the routine repertoire of most cardiac surgeons. Individualization and variety are key as we treat these patients.

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