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Commentary: Managing the septum in chronic type B aortic dissections—power up the laser

Joshua C. Grimm, MD, and Wilson Y. Szeto, MD

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Thoracic endovascular aortic repair (TEVAR) as a management strategy of chronic type B dissections (cTBADs) presents several challenges aside from the technical aspects of device selection and deployment. Due to the chronicity of the process, the septum separating the true and false lumens is typically thickened and noncompliant. Accordingly, obtaining an adequate distal seal can be exceedingly complex and complicated by a number of factors, including persistent false lumen opacification and stent-graft induced new entry tear.

Several techniques have emerged to address this problem with varying degrees of success. Distal-to-proximal stent construction can minimize the risk of stent graft-induced new entry tear formation in cTBAD and has been associated with a low reintervention rate and progressive aortic remodeling.¹ In the candy-plug approach, a double-tapered stent graft is intentionally deployed in the false lumen and subsequently plugged to oppose an additional stent in the true lumen, thus avoiding the natural “spring-back” phenomenon that can lead to persistent false lumen pressurization.² Others have employed stent-assisted balloon-induced septal rupture (“Knickerbocker technique”) to prevent progression of the false lumen in the thoracic segment at the inherent risk of

CENTRAL MESSAGE

Endovascular management of cTBAD has been limited by persistent false lumen flow due to a rigid septum. Laser septostomy and TEVAR offers an adjunct technique to mitigate this problem.

type 1B endoleak.³ To mitigate this distal re-entry, an extended Petticoat, with covered thoracic stents proximal, bare metal stents within the visceral segments, and parallel iliac stents distal, has been applied in a limited series of patients with cTBAD.⁴

In the current issue of the *Journal*, Fukuhara and colleagues⁵ present their novel approach of laser septotomy and subsequent TEVAR in a small cohort of patients with cTBAD. The authors should be commended on devising an aggressive and nuanced strategy of septal fenestration to allow for complete approximation of the endograft to the aortic wall. It is worth noting that the Michigan group has a robust experience of fenestrating acute type A aortic dissections that has undoubtedly formed the foundation for the highly technical method described.⁶ The only “failures” in this series were evident in patients with intimal flaps not excluded by the proximal extent of the TEVAR. It will be interesting to observe the long-term results of this strategy, as its durability is currently unknown.

Regardless, given the complexities of managing cTBAD, it is critical that high-volume aortic centers closely follow DeBakey type I dissections and intervene early in patients defined as having high-risk features. Furthermore, when addressing cTBAD with an endovascular solution, patients with known anatomical predictors of poor outcomes, such as a dilated or aneurysmal landing zone at the level of the distal thoracic aorta, should be approached with extreme caution.⁷

From the Division of Cardiovascular Surgery, University of Pennsylvania School of Medicine, Philadelphia, Pa.

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Address for reprints: Wilson Y. Szeto, MD, Division of Cardiovascular Surgery, Penn Presbyterian Medical Center, Heart and Vascular Pavilion, 2nd Floor, Suite 2A, 51 N. 39th St, Philadelphia, PA 19104 (E-mail: Wilson.Szeto@pennmedicine.upenn.edu).

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Commentary: Endovascular solutions for chronic type B aortic dissection: Keep pushing the envelope in a safe way and helping our patients

Ourania Preventza, MD,^{a,b} and
Davut Cekmecelioglu, MD^{a,b}

Thoracic endovascular aortic repair (TEVAR) for chronic type B aortic dissection has inconsistent results. The purpose of conventional TEVAR for such cases is to exclude and halt the expansion of a descending thoracic aneurysm that has formed as a result of a previous acute type A or type B aortic dissection. To obtain this result, the total aortic diameter of the descending thoracic aorta should be reduced in size or stay unchanged, the true aortic lumen needs to expand, or the false lumen (FL) needs to shrink in diameter. Any of these results indicates positive aortic remodeling.

From the ^aDivision of Cardiothoracic Surgery, Michael E. DeBakey Department of Surgery, Baylor College of Medicine; and ^bDepartment of Cardiovascular Surgery, Texas Heart Institute, Houston, Tex.

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Address for reprints: Ourania Preventza, MD, Division of Cardiothoracic Surgery, Michael E. DeBakey Department of Surgery, Baylor College of Medicine, BCM 390, One Baylor Plaza, Houston, TX 77030 (E-mail: preventz@bcm.edu).

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Ourania Preventza, MD, and Davut Cekmecelioglu, MD

CENTRAL MESSAGE

Laser septotomy joins the endovascular toolkit as a way of obliterating the FL in chronic type B aortic dissection. Experience, careful patient selection, and collaboration with industry are needed.

The main reason why the results of treating chronic type B dissection are inconsistent is that the thick septum and downstream fenestrations that characterize this condition allow persistent flow into the FL of the thoracoabdominal aorta. In addition, the proximal and distal landing zones of the endograft ideally should be free of dissected tissue, and the landing zones should be approximately 42 mm in diameter and, ideally, 2 cm proximal to the entry tear.

Because few cases meet all of these requirements, alternative techniques have been developed to improve the proximal and distal landing zones. Cervical debranching and chimney graft placement in the left common carotid artery, fenestrated physician-modified endovascular grafts,