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Commentary: True, false, or indeterminate

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Treatment of type B aortic dissection (TBAD) with thoracic endovascular aortic repair (TEVAR) is an evolving technology. Initially, treatment for acute TBAD focused on covering the entry tear, which could often be simply accomplished with stent grafting alone. Conversely, applying this technology to chronic TBAD has had suboptimal long-term results. The concept of aortic remodeling has been refined, as the state of the field has shifted from the study of purely radiologic prognostic findings, such as true lumen (TL):false lumen (FL) ratio, to adjunctive therapies that address the many underlying factors important in the chronic state, including residual intimal tears, the fibrotic composition of the chronic dissection flap, and FL pressurization. How do anatomic features relate to long-term physiologic processes? Endovascular practices vary widely, from limited aortic coverage aiming to treat the entry tear alone¹⁻³ to extensive coverage of the entire thoracic aorta^{4,5} and, more recently, adjunctive interventions aimed at the FL. The answers, however, are not always straightforward. Kim and colleagues⁶ showed that even with successful endovascular therapy, FL thrombosis status does not always predict abdominal aortic expansion.

In this edition of the *Journal*, Levack and colleagues⁷ describe the use of balloon fracture as a novel adjunct in the treatment of DeBakey IIIB chronic TBADs. Their technique falls in the category of FL therapies. At the anatomic level, the technique addresses the chronic dissection flap by fracture fenestration, thereby facilitating other goals of endovascular treatment, namely improved apposition and

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CENTRAL MESSAGE

A novel adjunctive intervention aimed at improving outcomes for patients with chronic aortic dissection by use of endovascular fracture fenestration holds promise.

expansion of the stent graft and improved TL flow. This bold innovation comes from an institution and surgeons with the requisite experience and expertise to continue advancing the field. Although the series was small ($n = 49$) and without a control group, the authors found the procedure to be safe, with no instances of aortic rupture. The 3 cases of intraoperative complications of TL compromise, likely due to new stent-graft-induced entry tears, were successfully treated with additional endovascular procedures.

Whether these early technical successes will ultimately translate to improved long-term aortic and overall outcomes is difficult to ascertain; longer-term data and multicenter studies will be needed. The authors used a rigorous definition of positive remodeling, incorporating 3 aspects (FL thrombosis, $\geq 10\%$ TL area increase, and $\geq 10\%$ total aortic dimension decrease). Only 26% ($n = 13$) of the cohort met these criteria for positive remodeling. Yet, definite progression of disease occurred in only 13 patients, and the majority of the cohort had “indeterminate” remodeling status on the basis of FL thrombosis without aortic dimension changes. We welcome this stricter definition of aortic remodeling, as the existing literature on TEVAR for chronic dissections is characterized by vastly heterogeneous study end points. As the field continues to evolve, standardization of outcomes reporting is increasingly important for comparing the efficacy of different treatment options. In this context, the term “indeterminate” is a prudent one. As noted previously, FL thrombosis status has not been a clear

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Disclosures: Dr Preventza discloses a financial relationship with W. L. Gore & Associates and Terumo Aortic. Dr Hui reported no conflicts of interest. This work has received no external funding.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

Received for publication Oct 14, 2020; revisions received Oct 14, 2020; accepted for publication Oct 15, 2020; available ahead of print Oct 22, 2020.

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J Thorac Cardiovasc Surg 2022;164:14-5

0022-5223/\$36.00

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<https://doi.org/10.1016/j.jtcvs.2020.10.059>

predictor of distal aneurysmal degeneration in TEVAR for chronic TBAD. However, this has been in the setting of TL-oriented interventions. The balance between addressing FL pressurization upfront and maintaining flow to all significant thoracoabdominal vascular beds is a dynamic one. Whether Levack and colleagues' novel fracture fenestration, or other FL-aimed therapies, alters that calculus remains indeterminate, but optimism is warranted.

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