See Article page 2012.

Commentary: There is a type Ia leak in that stent-graft?

Tohru Asai, MD, PhD, Shizuyuki Dohi, MD, PhD, Atsumi Oishi, MD, PhD, and Daisuke Endo, MD, PhD

Atsumi Oishi, MD, PhD, Shizuyuki Dohi, MD, PhD, Tohru Asai, MD, PhD, and Daisuke Endo, MD, PhD

Thoracic aortic aneurysm repair has become one of the most demanding procedures in cardiovascular surgery. Since thoracic endovascular aortic repair (TEVAR) has been applied to aortic arch pathology, surgeons have been attracted by this potentially less-invasive procedure. Despite the anatomy and shape of the aortic arch, the atheromatous burden, and risk of strokes and aortic dissection, this application has spread. However, endovascular repair has an intrinsic and potentially fatal complication: endoleaks. Once detected, endoleaks may require aggressive correction. Some early proximal attachment site endoleaks (Ia) in abdominal aorta stent grafting are reported to resolved spontaneously,^{1,2} but the natural history of type Ia endoleaks after aortic arch TEVAR has not been well elucidated yet.

In this issue of the *Journal*, De León Ayala and colleagues³ report the midterm outcomes of conservatively treated slow-flow type Ia endoleaks after TEVAR. The authors report the natural history of type Ia endoleaks after TEVAR in zones 0, 1, and 2 in their series of 221 cases, with a 30-day mortality rate of 11.8%. They divided type Ia endoleaks into 2 categories, fast flow and slow flow based on the time before contrast visibility in the aneurysmal sac. If the leak was evident only after the contrast medium had reached the distal part of the stent-graft or not before the first postoperative computed tomography, the endoleak was classified as a slow-flow type Ia endoleak. Although the authors corrected all fast-flow endoleaks aggressively, they managed slow-flow type Ia endoleaks conservatively.

CENTRAL MESSAGE

To delineate the self-resolving type Ia endoleaks in TEVAR procedures, the time until leak visibility in the aneurysmal sac seems important.

There were 47 type Ia endoleaks, and spontaneous resolution occurred in 34 patients; of those, 32 endoleaks were slow-flow type Ia endoleak. By the end of the third postoperative month, 97.1% of the conservatively treated type Ia endoleaks disappeared, and all of the spontaneous resolutions occurred within 1 year after the procedure.

It is a unique and interesting point of view of type Ia endoleaks to differentiate on the basis of the time until contrast visibility in the aneurysmal sac. Some further research may be needed to clarify the distinction between fast and slow, and its reproducibility in other centers. Moreover, the size and shape of aneurysmal sac, length of the stent graft coverage, and amount of thrombus in the sac may affect the way and time to visualize endoleaks in the sac. The procedures of debranching TEVAR in the aortic arch are still under development, and the challenges differ, partly because the curved proximal landing zones differ from the straighter regions of the descending thoracic and abdominal aorta. And there remains a crucial question: Is it really safer than open repair and preferable considering risks? We hope that the definition of slow-flow type Ia endoleak will become more objective with sophisticated imaging to distinguish the endoleaks most likely to resolve spontaneously.

More data with novel methods may warrant clear new decision-making. We are grateful to De León Ayala and colleagues³ for attracting the attention of our readers and raising awareness of the different fates of type Ia endoleaks in debranching TEVAR for the aortic arch.

From the Department of Cardiovascular Surgery, Juntendo University, Tokyo, Japan. Disclosures: The authors reported no conflicts of interest.

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 July 5, 2020; revisions received July 5, 2020; accepted for publication July 6, 2020; available ahead of print July 11, 2020.

Address for reprints: Tohru Asai, MD, PhD, Faculty of Medicine, Department of Cardiovascular Surgery, Juntendo University, 2-1-1, Hongo, Bunkyo-ku, Tokyo 113-8421, Japan (E-mail: t.asai.jj@juntendo.ac.jp).

J Thorac Cardiovasc Surg 2022;163:2022-3

0022-5223/\$36.00

Copyright © 2020 by The American Association for Thoracic Surgery

<https://doi.org/10.1016/j.jtcvs.2020.07.014>

References

1. Millen AM, Osman K, Antoniou GA, McWilliams RG, Brennan JA, Fisher RK. Outcomes of persistent intraoperative type Ia endoleak after standard endovascular aneurysm repair. *J Vasc Surg*. 2015;61:1185-91.
2. O'Donnell TFX, Corey MR, Deery SE, Tsougranis G, Maruthi R, Clouse WD, et al. Select early type IA endoleaks after endovascular aneurysm repair will resolve without secondary intervention. *J Vasc Surg*. 2018;67:119-25.
3. De León Ayala IA, Chen SW, Cheng YT, Chu SY, Nan YY, Liu KS. Outcomes of type Ia endoleaks after endovascular repair of the proximal aorta. *J Thorac Cardiovasc Surg*. 2022;163:2012-21.e6.

See Article page 2012.

Commentary: Time will tell

Ivancarmine Gambardella, MD, and
Mario F. L. Gaudino, MD

De León Ayala and colleagues¹ tackle the controversial topic of type Ia endoleaks after thoracic endovascular aortic repair (TEVAR) of the proximal aorta (zones 1-3).¹ Their analysis commendably adds perspective to the current literature, examining the fate of aortic arch stenting in view of the rapidity of endoleak. The denouement of their analysis was that all slow endoleaks resolve spontaneously within 1 year from TEVAR. However, we ought to avoid falling into the danger of not seeing the forest for the trees. The fact that slow endoleaks resolved at the 1-year mark is of relative importance compared with considerations that ought to question the appropriateness of treatment in terms of hard clinical end points like survival. TEVAR has experienced a relentless increase since approval by the Food and Drug Administration in 2005, surpassing open repair for aneurysm in 2006 and for dissection in 2010 according to a pool of 155,187 patients from the National Inpatient Sample.² Contrary to what is seen in the natural development of most procedures, the mortality of TEVAR in the United States has actually been increasing from 6.6% in 2004-2006 to 8.8% in 2013-2014. This paradoxical effect is due to the fact that, as operators become more familiar

Ivancarmine Gambardella, MD, and Mario F. L. Gaudino, MD, MSCE

CENTRAL MESSAGE

Although appealing, endovascular repair has not met yet the benchmark set by modern open replacement for the treatment of aortic arch pathology.

with the procedure, TEVAR is employed to treat patients with higher risk profiles.³ A National Inpatient Sample cohort of 11,669 patients highlighted that, whilst TEVAR had less procedure-related complications (odds ratio, 0.39; $P < .01$) and length of stay (by 1.3 days), open repair had substantially lower hospital cost (by \$6713). Most importantly, open and endovascular repair had equal risk-adjusted operative mortality nationwide (2.3% for both).⁴ Whilst such figures apply to conventional TEVAR, when the latter is employed in the aortic arch its results are more sobering. Indeed, the operative mortality of the cohort presented by De León Ayala and colleagues¹ was 24%, which has to be seriously pondered both in light of the young mean age of its patients (57 years), and in comparison to the mortality of modern open arch replacement for all-comers (5.3%).⁵ Additionally, a median follow-up of 4 years is likely insufficient to reveal the true consequences of endovascular stenting in such young patients. Indeed, a propensity-matched comparison of 15,305 Medicare

From the Department of Cardiothoracic Surgery, Weill Cornell Medicine, New York, NY.

Disclosures: The authors reported no conflicts of interest.

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 June 23, 2020; revisions received June 23, 2020; accepted for publication June 24, 2020; available ahead of print July 11, 2020.

Address for reprints: Mario F. L. Gaudino, MD, MSCE, Department of Cardiothoracic Surgery, Weill Cornell Medicine, 525 E 68th St, M404, New York, NY 10065 (E-mail: mfg9004@med.cornell.edu).

J Thorac Cardiovasc Surg 2022;163:2023-4

0022-5223/\$36.00

Copyright © 2020 by The American Association for Thoracic Surgery

<https://doi.org/10.1016/j.jtcvs.2020.06.096>