Know Your Adversary: The Type of Aortic Pathology Determines Late Outcomes after TEVAR

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KNOW YOUR ADVERSARY : THE TYPE OF AORTIC PATHOLOGY DETERMINES LATE OUTCOMES AFTER TEVAR

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Central Message

The late outcomes of TEVAR depend on the underlying aortic pathology.

Text

Twenty-two years after its first clinical application, TEVAR is now entering into the age of maturity. Its availability has revolutionized aortic medicine, and the current predictability of results has made it the first-line treatment for traumatic aortic transection and acute complicated type B thoracic aortic dissection. It is an important tool to be considered for elderly, morbid patients with chronic pathology deemed at high surgical risk, but also for younger individuals with suitable anatomy. At the same time, the knowledge about the field of application of state-of-the-art TEVAR has expanded in parallel with knowledge about its limitations.

In this issue of the Journal, Ziza and coworkers present a relevant single-center cohort of 235 TEVAR recipients over a 15-years period, with a median 29.9 months follow-up [1]. The Authors of this report have commendable experience in the field and their Institution has courageously engaged in a solid TEVAR program since the pioneering early developments of this technique. The vast heterogeneity of etiologies of aortic disease and of baseline patients' conditions can be regarded to as a methodological drawback of this series ; nonetheless, from another angle of view it also represents its greatest strength. In fact, the direct comparison of early and late outcomes among subgroups of indications to TEVAR yields the main message of this

article : while the early outcomes of TEVAR are a function of the baseline patients' characteristics, the late outcomes are more strongly dependent on the underlying aortic pathology. First, traumatic aortic transection is associated with the lowest rates of early mortality after TEVAR (1.7%) and virtually no late reintervention. Second, the degenerative aneurysm group presents the highest early mortality (18.8%), although this in turn depends on the rate of acute cases and severely ill (ASA score ≥3) patients in this subgroup. Third, chronic dissection patients are characterized by the highest rate of late reintervention and endoleak (30.4% rate of of any endoleak). Notwithstanding, the degenerative aneurysm sugroup presented the second highest rate of late complications (25.6% rate of any endoleak). Fourth, stent-graft deployment in zones 0 and 1 of the aortic arch independently predicts reintervention.

Endoleak(s) and reintervention mainly derive from the evolution of aortic disease at landing zones : such pathological behavior represents the inherent limitation of TEVAR. In the decision of treatment strategy, these elements need to be considered while evaluating patients with greater life expectancy and higher risk of evolutivity of aortic lesions. Appropriately, Ziza and coworkers refer to the increasing reliability of hybrid aortic arch surgery according to the frozen elephant trunk (FET) technique. To such respect, recent progress in devices, cerebral and visceral perfusion techniques have allowed predictability of results in chronic pathology, and are expected to further minimize the risk of spinal cord injury [2]. Low rates of delayed complications at the downstream aorta have been associated with FET [3 *Weiss G EJCTS 2016*]. Information gleaned from this important paper by Ziza and coworkers will undoubtedly contribute to evidence-based decision making.

Despite the importance of this experience, its single-center nature inevitably introduces the risk of sample bias ; the population is split into multiple subgroups

which numerosity may be insufficient to draw reliable conclusions with respect to specific scientific questions (i.e., effect of level of landing zone on the risk of spinal cord injury in peculiar disease subsets). It can be foreseen that nation-based data collection for specific procedures as well as for global cardiothoracic surgical activity, represents the natural evolution beyond multicentre registries. If conducted under the sponsorship and quality seal of national scientific societies, this strategy has the potential to truly address major issues in clinical practice and constitute a framework for quality certification and development of multidisciplinary cooperation.

Since the pathology of the aortic arch and of the upper thoracic aorta is at the crossroad between cardiac surgery, vascular surgery and interventional radiology, we strongly believe that the success of an Institution's program depends on a shared multidisciplinary collaboration among these specialties. It is reasonable to expect a tendency towards further merging of competencies in the future, not only in daily practice but also in evolving core *curricula* of young cardiovascular specialists ('Aorta Team Attitude'). In such perspective, endovascular thoracic aortic interventions and open surgery with or without hybrid endoprostheses (FET) should be considered as a continuum of potential strategies to adapt to patients' anatomy and characteristics. Together with transcatheter valve therapy, this domain represents the main bench testing for such a cultural evolution.

References

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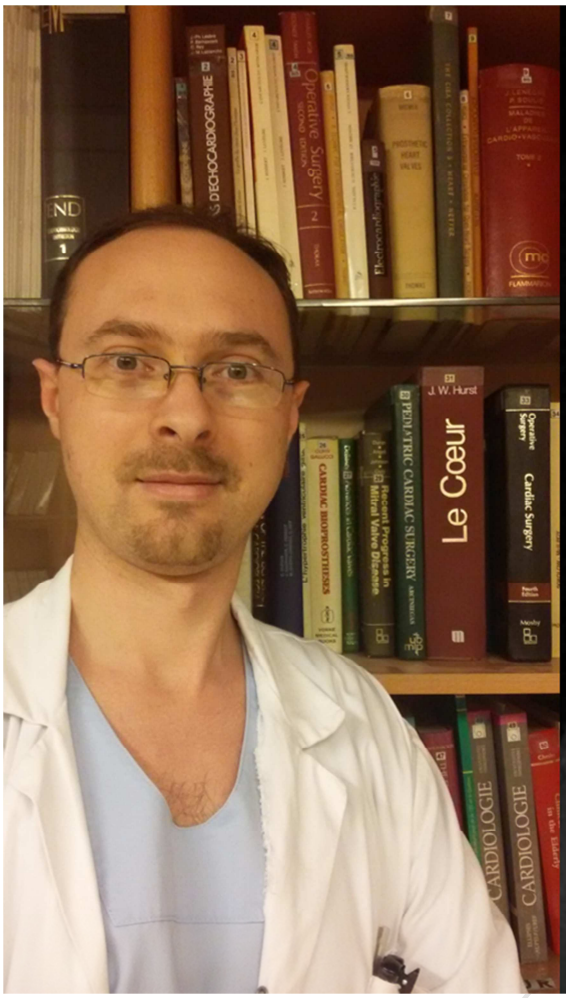
3. Weiss G, Santer D, Dumfarth J, Pisarik H, Harrer ML, Folkmann S et al. Evaluation of the downstream aorta after frozen elephant trunk repair for aortic dissections in terms of diameter and false lumen status. *Eur J Cardiothorac Surg. 2016;49:118-24*.

Central Picture Legend

Author's photo. Dr Anselmi (left) and Prof Verhoye (right).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