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EDITORIAL COMMENT

Management of type B aortic dissection: Assessing paradigm shifts and the impact of endovascular technology

Tratamento da dissecção da aorta de tipo B. Avaliação das mudanças de paradigma e do impacto da tecnologia endovascular

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The management of type B aortic dissection (TBAD) has undergone significant changes in the past two decades, with increasing use of endovascular technology. However, there is still significant uncertainty over the optimal strategy. In their study published in this issue of the *Journal*, Lopes et al. conducted a retrospective review of the last 100 consecutive patients with TBAD admitted over a 16-year period to the Vascular Surgery Department of Centro Hospitalar Universitário de Lisboa Norte, a referral institution recognized for its proficiency in Portugal.[1] The aim was to assess paradigm shifts in TBAD treatment modalities and outcomes according to clinical presentation and type of treatment and the impact of endovascular technology on TBAD management. The results were stratified according to treatment modality and stage of the disease, and the study was further divided into two time periods, before and after the introduction of a dedicated endovascular program for aortic dissection that began in 2013.

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Of the 100 patients included in the study, 59 were admitted in the acute stage, and half had complicated dissections. The other 41 patients were admitted for chronic dissections; most of these underwent surgical treatment of aneurysmal degeneration, often presenting acutely. The analysis showed an increase in the number of patients operated for aortic dissection, mainly due to an increase in chronic patients (33.3% in 2003–2010 vs. 64.4% in 2011–2019) and a clear shift toward endovascular treatment from 2015 onward. Overall in-hospital mortality was 14%, with higher mortality in the chronic phase (acute 5.1% vs. chronic 26.8%, odds ratio 5.30, p=0.003) and in patients with aortic aneurysmal degeneration, regardless of the temporal phase.

Some important aspects of this study can be discussed. Firstly, this is a large series coming from a referral institution covering a large population area. Given the paucity of data on the management of TBAD in Portugal, it provides relevant data on which to base or adjust decisions and benchmarking. Prior to this study, only one other publication with similar characteristics could be found in the literature. This was a study by Poleri et al., published in 2019, that analyzed the results from a university institution in Porto.

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These authors reported on 32 patients admitted between 2006 and 2016, of whom 79% presented acutely and only six received interventions. This sample is clearly insufficient for direct comparisons, but nevertheless it is interesting to note that the study by Lopes et al. has a much higher rate of intervention for acute and chronic TBAD.

The outcomes of patients with acute TBAD in this study compare favorably to the existing literature. In the IRAD registry, possibly the largest collaborative effort in this field, overall early mortality for acute TBAD was around 13%. In this registry, in-hospital mortality was significantly higher after open surgery (34%) than after endovascular treatment (11%, p=0.002).[2] Lopes et al. report overall mortality of only 5%; among those operated it was 5% and 3.6% for open and endovascular surgery, respectively,[1] which is remarkable considering the high proportion of patients presenting with malperfusion.

Counterintuitively, mortality was significantly higher for patients presenting with chronic TBAD. This finding likely reflects the specific population being analyzed, in which there was a high proportion of admissions for chronic TBAD, of which 10% were fatal ruptures before repair. Of the 34 chronic patients who were operated, 19 underwent open repair and five died (26% mortality). In those treated by endovascular means (15 cases), there were two deaths (13% mortality), of which one occurred after hybrid repair with arch debranching. It should be noted, however, that a greater proportion of patients with rupture were treated by open repair (6/19 vs. 1/15). The poor outcomes of emergent operations for complicated chronic TBAD, evident here, support the idea that appropriate follow-up and timely intervention (in selected patients) can improve results.

The study highlights the importance of endovascular technology in TBAD management, which appears to have had a positive effect on in-hospital mortality over time, although the heterogeneity of groups and the small sample size preclude definitive conclusions. The lower mortality in the endovascular group is consistent with findings from previous studies.[2] Endovascular treatment offers a less invasive approach with fewer complications, making it an attractive option for patients with TBAD, which is clearly reflected in guidelines such as the 2017 European Society for Vascular Surgery guidelines on the management of descending thoracic aorta diseases.[3] However, it is essential to note that careful patient selection is critical in ensuring optimal outcomes. In some cases, open surgical repair may still be the preferred approach, especially in patients with severe aneurysmal degeneration who are low-risk candidates for open surgery or those with connective tissue disorders.

As endovascular techniques are further refined and new devices and strategies are put into place, it is foreseeable that outcomes after endovascular repair will continue to improve. For instance, the use of STABILIZE and similar strategies in acute complicated and some selected uncomplicated TBAD cases will likely result in safer procedures in the (sub)acute phase, while simultaneously decreasing problematic late complications.[4–6] In chronic dissections, novel devices, such as those using inner branch technology or preloaded catheters, will probably improve the results of elective repair or post-dissection aneurysms and offer better endovascular alternatives for chronic TBAD.[7,8]

Another noteworthy point is the fact that this study includes all admitted patients, and not only those who underwent interventions. This is important because most real-world evidence on the management of TBAD only reflects the population of operated patients, but the outcomes of those treated conservatively is equally relevant, especially in uncomplicated cases. Unfortunately, the authors were unable to provide out-of-hospital information on those managed conservatively who survived the acute episode. This is especially important considering the high number of patients admitted later due to complications in the chronic phase, particularly rupture.

Lastly, a word on centralization. As a complex aortic disease, there is an argument for centralization of TBAD, in both acute and chronic settings. International experience with centralization of vascular care has generally resulted in marked improvements in outcomes, and a recent survey of members of the Portuguese Society of Angiology and Vascular Surgery showed that most vascular surgeons in Portugal support centralized treatment of this type of condition, as long as this is based on audited results and the departments themselves have a key role in the organization of centralization.[9]

In conclusion, the study by Lopes et al. demonstrates the evolution of TBAD management and the impact of endovascular technology on outcomes. It is hard to draw firm conclusions due to the heterogeneity of the groups, but in this series open repair offered acceptable results in the chronic phase, and very good results in the acute phase, while endovascular repair offered very good results in any scenario.

The appropriate use of endovascular technology can substantially reduce hospital mortality, but careful patient selection and individualized treatment planning are crucial for optimal outcomes, with open surgery still playing an important role. Collaborative efforts using platforms such as the Portuguese National Registry of Vascular Procedures (*Registo Nacional de Procedimentos Vasculares*) or other structures could help resolve many of the limitations of the present study and help define the optimal management of TBAD in this country.

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Conflicts of interest

The author has no conflicts of interest to declare.

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