

COMENTÁRIO EDITORIAL

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Total arch replacement with hybrid prosthesis – The best solution for a complex problem

The treatment of multisegment aortic pathology, involving the ascending, arch and the descending aorta remains a challenge in the domain of aortic surgery. There have been used multiple approaches to treat these complex patients: sternotomy, left thoracotomy, clam-shell incision or as a two-staged operation with both sternotomy and lateral thoracotomy (elephant trunk procedure and completion). In addition to the surgical approach, deep, and more recently, moderate hypothermic circulatory arrest with antegrade cerebral protection have been key additions to the global operative strategy that greatly improved the outcomes.

Besides these procedural aspects, the available prosthesis to replace the aorta have evolved and after initial experiences with custom made devices, the prefabricated Jotec™, now Criolyfe™ E-VITA Open Plus™ was introduced. Later, other prefabricated FET hybrid grafts were available in clinical practice.^{1,2} The concept of a hybrid prosthesis has turned a staged procedure into a single one but making possible to extend it with an endovascular approach, if needed. Besides, as the prosthesis is a single tube, with a sewing collar in the transition between the “surgical” and the “endovascular” portions, the distal anastomosis is somehow protected from the blood pressure. This single aspect is determinant to avoid bleeding in the distal anastomosis, which was a big problem in the past.

Besides open surgery, the endovascular stent graft technology introduced in 1998³ has enabled the treatment of the descending aorta. However, a totally endovascular treatment of the aortic arch pathology is challenging because of the supra-aortic vessels. Simultaneous perfusion of all supra-aortic arteries without longer cerebral ischemia time, while trying to avoid cerebral embolization, makes endovascular aortic arch repair with top level of technical complexity and surgical expertise. There are also hybrid options, as the debranching procedures, who still remain a useful alternative, avoiding or reducing extracorporeal circulation time or cardiac arrest, which may be beneficial in high-risk patients that otherwise would be rejected for treatment.⁴

However, endovascular techniques are rapidly

developing for ascending aorta and arch repair, as demonstrated by the first endo-Bentall procedure, presented last PCR London Valves, in 2019.⁵ Moreover, some cases have reported successfully endovascular treatment of ascending aorta aneurysms in very high risk patients.⁶

In this field of rapid expanding endovascular and transcatheter solutions, as usually, there may not exist only one solution for a given problem. Instead, Cardiac and Vascular Surgery teams dealing with aortic pathology will have an increasingly bigger toolbox, in order to tailor the therapy for each patient.

For now, open repair still stands as the first-line treatment, but the endovascular aortic arch approaches are valuable options for a patient who is high-risk or unfit for open repair.

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