

COMENTÁRIO EDITORIAL

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Frozen elephant trunk: The elephant has entered the room, and it's not leaving

Frozen Elephant Trunk (FET) is a procedure in which the ascending aorta, arch and proximal descending aorta are substituted with a hybrid prosthesis. It's difficult to think of a more extensive surgery in adult cardiac surgery apart from open thoracoabdominal procedures, since all the territories involved are vital to the patients cerebral, spinal and lower body functioning. How, then, can we correct pathologies in these locations, without injuring the heart, the brain, the spine and all that's distal to the diaphragm?

FET has first been described using two separate prosthesis more than 18 years ago, after lessons learned from the fresh elephant trunk experience and the then recent TEVAR. In these first cases, in the setting of type A dissection or Crawford type 2 or 3 aneurysms with additional arch aneurysms, surgeons did an antegrade TEVAR through an open arch and then substituted the arch with a conventional vascular prosthesis. In these first cases there was a clear advantage over fresh elephant trunk technique since the prosthesis on the descending aorta did not thrombose, and was very easy to get a wire into later, in contrast to fresh elephant trunk, for later extension TEVAR.

FET has been growing worldwide, and one of the two available prosthesis (E-VITA open plus, the other being Thoraflex) has now a worldwide registry with more than 450 patients whose results have been published in 2013. This goes to show that FET, despite being a complex operation, is no longer a last resource "rare" operation.

Lareiro *et al* have come forward to show their centre's results with E-Vita Open Plus. Other Portuguese centers have had a larger experience, some with numbers of patients into the dozens. But the article presented in this issue of RPCCTV is especially interesting for some reasons. First, it shows the initial experience of a smaller center that felt they lacked the ability to answer some of their patients needs, acted on it, and were able to deliver good results to their patients. Second, it shows that FET

is extending to the national territory from north to south. Third, it raises the question if FET should be extended to all cardiac surgeons or if it should be strongly restricted to a few centres.

The right answer is probably somewhere in the middle. While FET is not a simple operation, with significant risks and a restricted cerebral perfusion time, it still is somewhat reproducible and standardized (in most anatomies). On the other hand, type A and arch dissections continue to exert most of its early mortality through tamponade and visceral malperfusion, and because index mortality has improved, long term extensive thoracoabdominal aneurysms are on the rise. FET allows an improved control on the proximal descending aorta, depressurizing entry tears in this location, diminishing malperfusion, likelihood of malignant chronic aortic evolution, and greatly facilitating later endovascular treatment.

We have seen a continuous improvement in results of FET in acute dissection, probably due to more extensive experience in elective cases. As elective cases get better results, no doubt surgeons will also feel more at ease with emergent cases. The current paper by Lareiro *et al* shows how planning may help teams avoid having a learning curve fraught with accidents and morbidity/mortality. The authors are to commend for obtaining such good results in a small series with sparse patients over a few years. We believe that FET is an essential tool in the treatment of some subsets of acute type A dissection and extensive aneurysms, and should probably be available in every Center that performs emergent aortic surgery. As we are demanded better results in the future, so our offer to patients will improve, and in public hospitals we believe FET will have a central role and will be widespread (the same cannot be said for fresh elephant trunk probably). The first step is the one that Lareiro *et al* have taken - careful initial experience with patient selection allows excellent results.

REFERENCES

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