Commentary: One size does not fit all: The landing zone of the frozen elephant trunk will be different for every patient, and we need to be safe

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In this issue of the Journal, Takagi and colleagues\(^1\) raise some important points about the frozen elephant trunk (FET) procedure regarding the length of the stent graft, the thoracic vertebral level where the stent lands, and the outcome of distal malperfusion in patients with acute type A aortic dissection. In this interesting and informative report, the authors state that landing the FET at the level of T8 does not increase the risk of spinal cord ischemia and can alleviate distal malperfusion in patients with acute type A aortic dissection. In addition, the authors show that a 150-cm stent, when deployed from zone 0 and precisely from the anastomosis at the level of the origin of the innominate artery, the end of the stent graft lands at the level of T8-T9. Also, the authors use transesophageal echocardiography to exactly position the end of the FET proximal to the level of the aortic valve.

Because using a long stent graft may be associated with spinal cord ischemia, the length of the stent graft in an FET procedure has been the subject of multiple studies. In a recent meta-analysis of 35 studies with more than 3000 patients combined,\(^2\) stent length >15 cm or coverage to or beyond T8 was significantly associated with spinal cord ischemia.

The main long-term advantage of FET in patients with acute type A aortic dissection is the potential for favorable distal remodeling. Hemiarch replacement with antegrade stent delivery has been incorrectly described as an FET procedure in the literature; nevertheless, it has been shown to decrease the long-term incidence of secondary thoracoabdominal aortic aneurysm and potentially, in the short term, relieve malperfusion in type A aortic dissection cases.\(^3\)\(^4\)\(^6\) Another novel device, the Ascura Medical Dissection Stent, also has been shown to relieve malperfusion without causing spinal cord ischemia because the distal portion of the stent is bare metal, having no cover to obstruct the intercostal arteries feeding the spinal cord.\(^7\)

Even though this is an interesting and educational report, more studies and reports are needed before we can conclude that the stent length of the FET and the landing zone that the authors suggest are ideal. Anatomical differences among patients necessitate adjustments to accommodate a given patient’s body habitus. Given the length of the arch, which can vary from approximately 2.5 to 4 cm, starting the proximal anastomosis at the origin of the innominate artery sometimes helps land the stent at or close to the level of T8, but not always.
Spinal cord ischemia is a devastating adverse event that can be potentially prevented by keeping the stent less than 15 cm long or above T8. Whether malperfusion resolves depends mainly on the time from the onset of the dissection to the restoration of blood flow to the compromised organ. Although early distal aortic fenestration or stenting has shown promising results, more studies are needed to show that in cases of distal malperfusion, landing the FET stent at T8-T9 has better outcomes than landing it above that level.

References