Tittle: Multifactorial Considerations in Frozen Elephant Trunk Selection and Treatment Strategies for Acute Type A Aortic Dissection

Authors: Yang Yu, MD, PhD, Liulu, MD, Enyi Shi, MD, PhD, Tianxiang Gu, MD, PhD
1 Department of Cardiac Surgery, The First Affiliated Hospital of China Medical University, Liaoning, Shenyang, P.R. China
*Corresponding author: Tianxiang Gu, MD, PhD
Department of Cardiac Surgery, The First Affiliated Hospital of China Medical University, Liaoning, Shenyang, P.R. China
+86 (024) 83283458 sey2004@sina.com

No disclosures to claim.
Word count: 477

The article by Dr. Kitada et al. introduces a novel method for sizing the proximal descending aorta in the treatment of acute type A aortic dissection (ATAAD) using the frozen elephant trunk (FET) technique[1]. Their approach aims to enhance long-term aortic remodeling and reduce the risk of stent-induced new entry (SINE) by accurately determining the FET size with a new equation, which they claim outperforms other methods.

Etiology and Genetic Factors Matter. In this research, only 2 Marfan patients were enrolled. Hereditary connective tissue disease is a common reason for aortic dissection, the survivors always have a larger aorta diameter and it will always continue dilating even after FET of TEAVR, second-stage intervention is high probability. In this scenario, FET most contributes to simplifying the second stage operation. The sizing of the FET may not be that crucial. Besides, different pathogenic variants may have a variable prognosis of the dissected aorta[2].

Tear Characteristics Matters. Total arch replacement with FET addresses the proximal tear. However acute aortic dissection always presents multiple tear sites. The complexity of aortic dissection, characterized by the number, size, and location of tears, undoubtedly affects the optimal FET sizing and the strategy for achieving aortic remodeling. The presence of multiple tear sites can complicate the treatment and the expected remodeling process, underscoring the need for a more nuanced approach that considers these variables in FET sizing and placement. Some surgeons address this by
performing septectomy during or after the procedure, which can significantly impact the remodeling process[3].

True Lumen Dynamics matter. The authors mainly focus on the size of the entire aorta cross-section, while the true lumen has various statuses from different patients, some of them have very small true lumens with equal flow in both lumens, and others have relatively larger true lumen with thrombosed false lumen. The status of the true lumen will affect the FET size choice, further, the true/false lumen ratio may affect the FET size from another perspective.

Local Aortic Pathology and Perioperative Factors matter. Local aortic conditions such as severe atherosclerosis and the management of perioperative blood control are also crucial considerations that can impact the choice of FET size and the long-term outcomes of the surgery[3]. These factors further emphasize the complexity of decision-making in FET procedures and the limitations of relying solely on a standardized sizing equation.

In conclusion, while Dr. Kitada’s method marks a significant improvement in ATAAD treatment, a holistic and individualized approach to FET sizing is crucial. This approach should incorporate factors such as etiology, tear characteristics, true lumen status, and local aortic pathology to optimize patient outcomes in the complex landscape of aortic dissection. From our experience, we advocate for a smaller stented graft size (26-30mm) to balance the remodeling of the distal dissected aorta and to prevent malperfusion due to rapid thrombosis in the false lumen.

Reference:
3. Zimmermann, J., Bäumler, K., Loecher, M. et al. Hemodynamic effects of


Beyond Sizing: Multifactorial Considerations in Frozen Elephant Trunk Selection and Treatment Strategies for Acute Type A Aortic Dissection