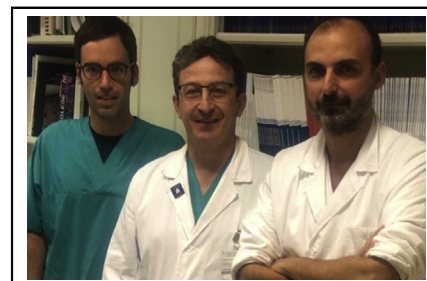


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## Commentary: Novel interventions in complex aortic disease: A perfect storm to “B-SAFER”

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The frozen elephant trunk (FET) technique has been used in acute aortic dissection to stabilize the descending aorta at the stent level, promote re-expansion of the true lumen in the distal aorta, and ensure resolution of dynamic branch occlusion, restoring a normal flow in the visceral arteries. Since the introduction of this innovative procedure, various modifications to facilitate the management of the left subclavian artery (LSA) and reduce hypothermic circulatory arrest time have been attempted.<sup>1</sup>

The branched single anastomosis frozen elephant trunk repair (B-SAFER) was introduced by the Cleveland Clinic in 2013 with the objective to simplify the FET procedure. Initially, they created a fenestration by resection of a portion of proximal stent graft to incorporate all the supra-aortic vessel; it was further modified in 2018 with a selective fenestration below the LSA and direct branch vessel stent grafting to avoid persistent false lumen perfusion.<sup>2</sup> Unquestionably, every innovative technique should guarantee “simplification” but also “durability” to be reliable.

In this interesting issue of *JTCVS Techniques*,<sup>3</sup> the authors presented 2 cases of distal aneurysmal expansion after a B-SAFER procedure secondary to persistent perfusion of the false lumen, which necessitated open repair. The first

### CENTRAL MESSAGE

Every novel intervention to treat complex aortic disease necessitates simplicity but also efficacy and durability to “B-SAFER.”

patient had a persistent proximal flow from the dissected LSA into the false lumen, whereas the second had a proximal leak secondary to incomplete closure of the false lumen at the distal anastomosis to dissected zone 2 arch. In both situations, the new simplified FET operation had the primary limitation to leave untreated a re-entry tear in the distal arch, providing persistent retrograde flow into the false lumen. Likewise, stenting of the LSA is not always a guarantee of distal sealing and later the formation of endoleaks is common if the false lumen is not properly excluded from the aorta.

These drawbacks favor later distal aortic reinterventions, reducing the efficacy of FET that was born with the idea of treating not just the arch but also the descending thoracic aorta in a one-step procedure. The results of the literature clearly demonstrated the efficacy of FET in terms of false lumen thrombosis around the stent portion, true lumen expansion, and positive remodeling in downstream aortic segments in acute and chronic thoracic aortic dissections.<sup>4,5</sup> This primary intention using the branched single-anastomosis FET repair is much mitigated in favor of an intraoperative simplification that might facilitate persistent blood flow into the false lumen. The use of such simplification might foster early complex reinterventions like in the Michigan experience, where both patients required an open TAAA repair 1 year after primary arch intervention.

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In conclusion, we might argue that B-SAFER remains a novel technique for complex aortic disease and it is critical to monitor its efficacy; however, every innovative treatment need not only “simplify” but also have “efficacy” and “durability,” which is a perfect storm to “B-SAFER” for every new intervention.

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