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Commentary: B-SAFER and reintervention rates: “das Kind nicht mit dem Bade ausschütten,” or “don’t throw the baby out with the bath water”

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Roselli and colleagues¹ developed the novel branched single anastomosis frozen elephant trunk repair (B-SAFER) to facilitate emergency DeBakey type I dissection repair. In the procedure, an aortic stent graft is placed antegrade into the true lumen of the descending aorta, covering the left subclavian artery (LSCA), and is sutured to a graft that encircles the arch vessels. A hole is created in the aortic stent graft to accommodate an LSCA stent graft, which is then inserted through the surgeon-created fenestration and into the LSCA under direct visualization, leaving 5 to 7 mm in the aortic stent graft lumen.¹ This procedure allows for short circulatory arrest times and has been demonstrated to be safe. Although 14% of the patients in the authors’ series required late reoperation, this can often be performed endovascularly, minimizing surgical risk.

Guo and colleagues² reported 2 cases in which patients who previously underwent B-SAFER presented with aneurysmal expansion owing to persistent perfusion of the false lumen. One patient, a 55-year-old male with Marfan syndrome, had an intimal tear at the branch point of the LSCA with aortic stent graft insertion into the false lumen,

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Contrast-enhanced sagittal computed tomography scan demonstrating a subclavian stent graft placed as a side graft into a surgeon-modified aortic stent graft, as described in the B-SAFER procedure.

CENTRAL MESSAGE

The B-SAFER procedure might not replace individual arch anastomosis in repair quality, but it is a useful technique for select difficult cases.

which was repaired via left thoracotomy. The other patient, a 59-year-old woman, had a patent false lumen at the proximal arch, as well as a stenotic celiac artery arising from the false lumen, which was repaired by thoracoabdominal incision.

Although it is tempting to abandon the entire concept given the risk of complications requiring reintervention, there is a novel attractive endovascular feature with B-SAFER, albeit off-label, that deserves attention. Hence “das Kind nicht mit dem Bade ausschütten,” or “don’t throw the baby out with the bath water.” The frozen elephant trunk (FET) procedure carries an approximate 4.7% risk of spinal cord ischemia.³ Preserving LSCA flow is critical for preserving upper spinal cord collateral blood supply and minimizing this risk. In some patients, the LSCA is friable or difficult to reach via sternotomy, whereas others present with true lumen compression and malperfusion. In these situations, it can be difficult to complete a traditional anastomosis. The goal of the initial operation is to preserve LSCA flow during aortic repair, to minimize the risk of spinal cord ischemia associated with FET. Endoleak from the LSCA branch point is certainly possible, but it can be subsequently addressed as needed with false-lumen embolization, branched thoracic endovascular aortic repair (TEVAR), or carotid-subclavian bypass with either TEVAR or left subclavian embolization.

In addition, the B-SAFER technique can also be adapted to a modified zone 2 debranching technique, as described by

the Penn Aortic Team.⁴ Rather than debranching all 3 great vessels, the stent graft can be modified to accommodate a subclavian artery side branch in cases where the subclavian artery is inaccessible, tissue quality is poor, or anastomosis cannot be accomplished for other reason.

Patient selection is important for B-SAFER. In our experience, patients with Marfan syndrome are better served with traditional anastomosis of the left subclavian artery. As with any endovascular aortic surgery, postoperative surveillance is important. Although B-SAFER might not be the first choice for every case and may have relatively higher re-intervention rates, it can be an expedient technique for

otherwise difficult procedures and is an additional tool in the aortic surgeon's armamentarium.

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