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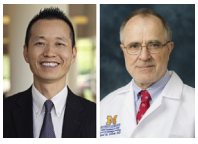
References

1. Norton E, Williams D, Kim K, Khaja M, Wu X, Patel HJ, et al. Management of acute typeB aortic dissection with malperfusion via endovascular fenestration/stenting. *J Thorac Cardiovasc Surg*. 2020;160:1151-61.
2. Williams DM, Lee DY, Hamilton BH, Marx MV, Narasimham DL, Kazanjian SN, et al. The dissected aorta: percutaneous treatment of ischemic complications—principles and results. *J Vasc Interv Radiol*. 1997;8:605-25.
3. Ueki C. Primary entry closure is still first line treatment for patients with dynamic obstruction. *J Thorac Cardiovasc Surg*. 2021;161:e366-7.
4. Formica F, D'Alessandro S. Commentary: fenestration and stenting technique and malperfusion syndrome—to give to Caesar what is Caesar's. *J Thorac Cardiovasc Surg*. 2020;160:1164-5.
5. Evangelista A, Salas A, Ribera A, Ferreira-González I, Cuellar H, Pineda V, et al. Long-term outcome of aortic dissection with patent false lumen: predictive role of entry tear size and location. *Circulation*. 2012;125:3133-41.
6. Nienaber CA, Divchev D, Palisch H, Clough RE, Richartz B. Early and late management of type B aortic dissection. *Heart*. 2014;100:1491-7.
7. Sailer AM, van Kuijk SM, Nelemans PJ, Chin AS, Kino A, Huininga M, et al. Computed tomography imaging features in acute uncomplicated Stanford type-B aortic dissection predict late adverse events. *Circ Cardiovasc Imaging*. 2017;10:e005709.
8. Burris NS, Patel HJ, Hope MD. Retrograde flow in the false lumen: marker of a false lumen under stress? *J Thorac Cardiovasc Surg*. 2019;157:488-91.

https://doi.org/10.1016/j.jtcvs.2020.12.133



REPLY FROM AUTHORS: THORACIC ENDOVASCULAR AORTIC REPAIR VERSUS FENESTRATION/STENTING: BOTH EFFECTIVE WEAPONS FOR THE SAME DISEASE

Reply to the Editor:

Ueki[1] proposed thoracic endovascular aortic repair (TEVAR) as first-line treatment for dynamic malperfusion in acute type B aortic dissection (ATBAD) as opposed to aortic fenestration/stenting described in our previous study[2] for 2 reasons: TEVAR is quick, and TEVAR can protect against aortic rupture. We agree with Ueki's statements about TEVAR, but remind readers that we must always be ready to evaluate for and treat the static obstruction that can accompany dynamic obstruction and share our views of using fenestration/stenting as first-line treatment.

- Aortic fenestration/stenting is a percutaneous approach, with no need for cut-down at the groin, which is used for TEVAR. After access in the femoral artery, it takes 30 minutes to create a fenestration in the dissection flap and stent the aortic true lumen. We can quickly assess branch artery hemodynamic status and resolve the dynamic malperfusion without a skin incision.
- Our approach allows us to study every branch vessel to confirm or rule out residual or static malperfusion by measuring the blood pressure at each individual aortic branch. If there is residual or static malperfusion, we can stent the branch vessel in the same procedure. Whether one treats the aortic injury by TEVAR or fenestration/stenting, this same diagnostic survey and targeted treatment of vulnerable branches must be performed.
- Fenestration/stenting does not cause thrombosis in the false lumen of descending thoracic aorta or thrombosis of intercostal arteries; we had 0% postoperative paraplegia compared with 2% to 10% paraplegia rate after TEVAR.[3-5]
- Because we only place a wire in the arch instead of deploying a stent graft, the rate of retrograde type A aortic dissection was 0% in our series compared with 2% to 3% after TEVAR.[6]
- Fenestration/stenting does not require covering the left subclavian artery, whereas TEVAR frequently has to cover the left subclavian artery to achieve complete seal of primary intimal tear because the intimal tear is often very close to the left subclavian artery. Subsequently, a patient may need revascularization of the left subclavian artery either before or after TEVAR.
- Fenestration/stenting only leaves patients a bare stent in the aorta, which has very low risk of infection, even if patients have an active infection such as bacteremia. We have not had a stent infection in 30 years of treating dissections. TEVAR leaves a large piece of stent graft in the patient's aorta, and puts patients at lifelong risk of lethal graft infection. We have taken out infected stent grafts with pus around them in the descending thoracic aorta, which is horrific. In the setting of active infection such as bacteremia, TEVAR is contraindicated.

For some situations, we do use TEVAR for dynamic malperfusion in ATBAD.

- When patients have signs of rupture and pending rupture of the dissected aorta, we use TEVAR to treat the rupture and malperfusion at the same time. The ruptured cases in our series all happened before TEVAR was available.

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During the past 10 years, we had 0% mortality in ATBAD with malperfusion.

- If the primary intimal tear is at the mid-descending, which can be easily covered by a piece of stent/graft, we would also consider TEVAR.

Treating aortic dissection with malperfusion in a busy program requires 2 tools. Cardiac surgeons are familiar with TEVAR, which is 1 tool. It is a quick solution for dynamic malperfusion despite some potential risks, as we described above. If a cardiac surgeon is the only one taking care of the patient's ATBAD with malperfusion, TEVAR is a good option. Fenestration/stenting of the aorta and its branches is the other tool, and is a routine procedure for interventional radiologists. Wielding both tools by collaborating cardiac surgeons and interventional radiologists is very powerful in selecting the best approach for a patient based on the patient's anatomy and condition. Collaboration always wins, and our patients benefit from our collaborations.

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References

1. Ueki C. Primary entry closure is still first line-treatment for patients with dynamic malperfusion. *J Thorac Cardiovasc Surg*. 2021;161:e366-7.
2. Norton E, Williams D, Kim K, Khaja M, Wu X, Patel HJ, et al. Management of acute type B aortic dissection with malperfusion via endovascular fenestration/stenting. *J Thorac Cardiovasc Surg*. 2020;160:1151-61.
3. Ullery BW, Cheung AT, Fairman RM, Jackson BM, Woo EY, Bavaria J, et al. Risk factors, outcomes, and clinical manifestations of spinal cord ischemia following thoracic endovascular aortic repair. *J Vasc Surg*. 2011;54:677-84.
4. DeSart K, Scali ST, Feezor RJ, Hong M, Hess PJ Jr, Beaver TM, et al. Fate of patients with spinal cord ischemia complicating thoracic endovascular aortic repair. *J Vasc Surg*. 2013;58:635-42.e2.
5. Scali ST, Wang SK, Feezor RJ, Huber TS, Martin TD, Klodell CT, et al. Preoperative prediction of spinal cord ischemia after thoracic endovascular aortic repair. *J Vasc Surg*. 2014;60:1481-90.e1.
6. Canaud L, Ozdemir BA, Patterson BO, Holt PJ, Loftus IM, Thompson MM. Retrograde aortic dissection after thoracic endovascular aortic repair. *Ann Surg*. 2014;260:389-95.

https://doi.org/10.1016/j.jtcvs.2020.12.096