

See Article page 192.



## Commentary: Uplifting or down the rabbit hole?

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I was raised in the era of “big docs make big incisions.” No one questioned the 10-inch subcostal approach to the hot gall bladder, and the 6-inch McBurney was a badge of appendiceal courage. The access for surgery on and in the heart evolved from a bilateral sternum-splitting intercostal incision, which I still use for transplantation of en bloc heart and lungs and of double lungs. Today, full sternotomy remains the standard; however, its reliable exposure of the heart, excellent healing, and only modest pain has been under assault since 1995, when John Stevens and Wes Sterman founded Heartport Inc, and Tom Fogarty pushed surgeons with the promise of “keyhole” surgery. The hype inflamed by Internet videos of “chest cracking” made us feel awful about the continuing use of buzzing reciprocating sternal saws. Robotic assist to the mitral valve followed, with Randy Chitwood demonstrating remarkable visualization. Damiano demonstrated its added precision to off-pump mammary to left anterior artery anastomoses, and a few dedicated surgeons persist with robotic multivessel coronary artery bypass grafting surgery. Most recently, to keep pace with transcatheter aortic valve replacement, many surgeons have mastered the upper hemi-sternotomy or right anterior thoracotomy for surgical aortic valve replacement. I have tried all of these, but generally have returned to the midline sternotomy, but with a cosmetic, small skin incision.

A minimally invasive thoracotomy and upper hemi-sternotomy approach to a ventricular assist device was popularized by Schmitto and colleagues.<sup>1</sup> Zach Kon, then of our group, observed the Hannover surgeons and learned that the incidence of right ventricular failure had become



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### CENTRAL MESSAGE

A retractor that can lift the manubrium has been tested in cadavers for mini VAD insertion. The outflow graft can be anastomosed to the aorta without hemi-sternotomy.

negligible. We also noted a reduction in postoperative disabling right heart failure.<sup>2-6</sup> The mini approach seems to make transplant simpler and with less hemorrhage.<sup>7</sup> It has been known that maintenance of pericardial support and restraint reduces loss of right ventricular transverse diameter, long-axis velocity, and tricuspid annular phase systolic excursion seen with opening of the pericardium in coronary artery bypass grafting patients.<sup>8</sup> Similar studies need to be repeated in standard approaches to VAD patients with ischemic cardiomyopathy and nonischemic cardiomyopathy plus variable degrees of right ventricular dysfunction. The LATERAL trial did not show inferiority, but it was a noncomparison trial.<sup>9</sup> It is likely that the merits of the mini for right ventricular function will require additional experience.

The article describes a retractor and imaging system to lift an undivided upper sternum to expose the ascending aorta.<sup>10</sup> This access is evaluated in Thiel soft-fixed cadavers as a feasible technique for connecting the outflow graft of a VAD placed by a small fifth intercostal space thoracotomy. The authors report impressive exposure of the ascending aorta and use of a standard Derra–Cooley partial occlusion clamp to complete a running anastomosis. It is likely this will preserve the possible benefits of the hemi and reduce the implant to the small thoracotomy. For most of us

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Disclosures: The author reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

Received for publication Feb 9, 2021; revisions received Feb 9, 2021; accepted for publication March 5, 2021; available ahead of print March 9, 2021.

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JTCVS Techniques 2021;7:197-8  
2666-2507

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<https://doi.org/10.1016/j.xjtc.2021.03.011>

traumatized by the minimally invasive surgical tsunamis of the past, we can gain solace from the inimitable Bruce Lytle, who summed up a wait-and-see-attitude with a line from Bruce Springsteen's song "Thunder Road":

*"The door's open, but the ride ain't free."*<sup>11</sup>

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