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Reviews:

Outcomes of Patients Implanted Using a Left Thoracotomy Technique for a Miniaturized Centrifugal Continuous-Flow Pump.

Sileshi B, O'Hara BK, Davis ME, Haglund NA, Meng X, Deegan R, Stulak JM, Kushwaha SS, Shaw A, Maltais S. *ASAIO J.* 2016 Sept-Oct; 62(5) 539-44.

Left ventricular assist devices are getting smaller, more sophisticated, and reliable with time, but the patients that they get implanted into are getting more complex, with multiple prior surgeries, end-organ dysfunction, right ventricular dysfunction, and advanced age. Re-do sternotomy has a higher risk of bleeding, mediastinal infection, and damage to bypass grafts. Repeated cardiopulmonary bypass runs increase the risk of right ventricular dysfunction and neurologic complications.

The advent of smaller LVADs has made it feasible to implant them through a lateral thoracotomy approach. Potential advantages include avoiding complications of re-sternotomy, preserving the sternum for transplant, reduction or elimination of cardiopulmonary bypass time, decrease in blood product use, and less injury to the right ventricle.

In this retrospective review, Sileshi and colleagues report on 6 month outcomes of 81 bridge-to-transplant patients who underwent Heartware LVAD placement via lateral thoracotomy (LT) or conventional sternotomy (CS) between 2013 and 2014. LT candidates were identified by the institutional selection committee, and CS approach was taken if concomitant surgeries were anticipated. Other exclusion or inclusion criteria are not specified. Patients were consented for one surgical approach. Primary outcomes were 6 month mortality and adverse events including stroke, GI bleed, driveline infection, thrombus, right ventricular failure, and readmission rates.

Of 81 LVAD implants, 27 underwent LT approach, and 54 underwent CS. Reported baseline characteristics were similar, with the exception of higher IABP use and re-do sternotomy in the CS groups. There was no difference in 6 month survival, implant hospital length of stay, RV failure/need for RVAD, thrombus, stroke, GI bleed, or readmissions between the two groups. The LT group had lower blood product utilization and mechanical ventilation time. Only one patient in the LT group required reoperation for bleeding. Reoperation rates for inflow cannula/pump malposition are not reported.

Overall, this study supports use of the LT approach in selected patients. This was not a randomized study, only a very limited number of baseline characteristics are reported, only BTT patients are included given the HVAD FDA approval, and the outcomes are those of one surgeon in one institution, which limit the generalizability of results. Nevertheless, a less invasive procedure was able to achieve comparable hard clinical endpoints. Although *decreased* RV dysfunction rates or hospitalization times was not demonstrated with the LT approach, the study was likely underpowered to detect these differences. Another important role for the lateral thoracotomy approach is to facilitate transplantation.

Post-transplant outcomes in LT patients vs. CS patients would be of interest, but was not available given the relatively short follow-up duration of the study relative to transplant wait times. The HVAD Lateral study is an ongoing multicenter study evaluating the thoracotomy approach in up-to145 patients, and should further clarify the role of lateral thoracotomy LVAD implantation.

Reference List of MCS Articles

ASAIO Journal

Wong, Joshua K.; Chen, Peter C.; Falvey, Jennifer; Melvin, Amber L.; Lidder, Alcina K.; Lowenstein, Lisa M.; Miranpuri, Amrendra S.; Knight, Peter A.; Massey, H. Todd. Anticoagulation Reversal Strategies for Left Ventricular Assist Device Patients Presenting with Acute Intracranial Hemorrhage. ASAIO Journal: [September/October 2016 - Volume 62 - Issue 5 - p 552-557](#)

Ertugay, Serkan; Engin, Cagatay; Daylan, Ahmet; Pektok, Erman; Ozturk, Pelin; Nalbantgil, Sanem; Zoghi, Mehdi; Yagdi, Tahir; Ozbaran, Mustafa. Outcomes of Various Treatment Strategies for Patients with Continuous-Flow Ventricular Assist Device Thrombosis: A Retrospective Analysis ASAIO Journal: [September/October 2016 - Volume 62 - Issue 5 - p 533-538](#)

Swartz, Michael F.; Angona, Ron; Smith, Karen; Kraenzlin, Franca; Stypula, Christine M.; Joshi, Devang; Tchantchaleishvili, Vakhtang; Hicks, George L.; Massey, H. Todd. Costs and Outcomes in the Care of Bi-ventricular Support as a Bridge to Cardiac Transplant. ASAIO Journal: [September/October 2016 - Volume 62 - Issue 5 - p513-517](#)

Topkara, Veli K.; Knotts, Robert J.; Jennings, Douglas L.; Garan, A. Reshad; Levin, Allison P.; Breskin, Alexander; Castagna, Francesco; Cagliostro, Barbara; Yuzefpolskaya, Melana; Takeda, Koji; Takayama, Hiroo; Uriel, Nir; Mancini, Donna M.; Eisenberger, Andrew; Naka, Yoshifumi; Colombo, Paolo C.; Jorde, Ulrich P. Effect of CYP2C9 and VKORC1 Gene Variants on Warfarin Response in Patients with Continuous-Flow Left Ventricular Assist Devices. ASAIO Journal: [September/October 2016 - Volume 62 - Issue 5 - p 558-564](#)

Schumer, Erin M.; Black, Matthew C.; Rogers, Michael P.; Trivedi, Jaimin R.; Birks, Emma J.; Lenneman, Andrew J.; Cheng, Allen; Slaughter, Mark S. Donor Oversizing Results in Improved Survival in Patients with Left Ventricular Assist Device. ASAIO Journal: [September/October 2016 - Volume 62 - Issue 5 - p 571-577](#)

Journal of Cardiac Failure

[Prateeti Khazanie](#), MD, MPH, [Bradley G. Hammill](#), DrPH, [Chetan B. Patel](#), MD, [Michael S. Kiernan](#), MD, [Lauren B. Cooper](#), MD, [Suzanne V. Arnold](#), MD, [Timothy J. Fendler](#), MD, [John A. Spertus](#), MD, [Lesley H. Curtis](#), PhD, [Adrian F. Hernandez](#), MD, MHS. Use of Heart Failure Medical Therapies Among Patients With Left Ventricular Assist Devices: Insights From INTERMACS. Journal of Cardiac Failure. [September 2016](#) Volume 22, Issue 9, Pages 672-679

Circulation Heart Failure

Veli K. Topkara, MD, MSc; A. Reshad Garan, MD; Barry Fine, MD, PhD; Amandine F. Godier-Furnémont, PhD; Alexander Breskin, BS, MPH; Barbara Cagliostro, RN, MSN; Melana Yuzefpolskaya, MD; Koji Takeda, MD, PhD; Hiroo Takayama, MD, PhD; Donna M. Mancini, MD; Yoshifumi Naka, MD, PhD; Paolo C. Colombo, MD. Myocardial Recovery in Patients Receiving Contemporary Left Ventricular Assist Devices: Results From the Interagency Registry for Mechanically Assisted Circulatory Support (INTERMACS). Circ Heart Failure . e003157

Arnold SV, Jones PG, Allen LA, Cohen DJ, Fendler TJ, Holtz JE, Aggarwal S and Spertus JA. Frequency of Poor Outcome (Death or Poor Quality of Life) After Left Ventricular Assist Device for Destination Therapy: Results From the INTERMACS Registry. 2016;9:e002800

European Journal of Heart Failure

No MCS articles in 7/16, 8/16

Journal of Thoracic and Cardiovascular Surgery

William E. Stansfield, Vivek Rao. HeartMate 3: Facing the challenge of past success. *J Thorac Cardiovasc Surg* 2016;152:683-5.

Takayama, Hiroo. Did you like Terminator 3 better than Terminator 2? "Rise of machines" with HeartMate 3?. *J Thorac Cardiovasc Surg* 2016;152:686-7

Journal of the American College of Cardiology

[Sing-Chien Yap, MD, PhD](#), [Faiz Ramjankhan, MD](#), [Rahat Muslem](#), [Nicolaas de Jonge, MD, PhD](#), [Hans J. Kirkels, MD, PhD](#), [Sakir Akin, MD](#), [Olivier C. Manintveld, MD, PhD](#), [Ozcan Birim, MD, PhD](#), [Tamas Szili-Torok, MD, PhD](#) and [Kadir Caliskan, MD, PhD](#). Ventricular Arrhythmias in Patients With a Continuous-Flow Left Ventricular Assist Device. *J Am Coll Cardiol*. 2016;68(3):323-325.
doi:10.1016/j.jacc.2016.05.016.