What's New in MCS

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Journals Reviewed

Journal of Heart and Lung Transplantation
JACC-HF
European Heart Journal
Journal of Cardiac Surgery
Annals of Thoracic Surgery
Circulation

No star References

Sauer AJ, Meehan K, Gordon R, Abicht T, Rich JD, Anderson AS, Yancy C, McGee Jr EC. Echocardiographic markers of left ventricular unloading using a centrifugal-flow rotary pump. J Heart Lung Transplant 2014;33:449-450. (Very small study of ramp study in 15 HVAD patients)

Klotz S, Charitos EI, Meyer-Saraei R, Sievers H. CircuLite left ventricular assist device explantation: A word of caution. J Heart Lung Transplant 2014;451-452. (Case report of CircuLite explant complication with thrombus on inflow cannula which was closed with stopcock on explant)

1 Star References

Dobbels F, Mauthner O, Milisen K. Frailty in left ventricular assist device destination therapy: Putting a new motor in a rickety old car running out of gas? J Heart Lung Transplant 2014/33:347-349. (Nice editorial of the state of the art of frailty assessment in VAD patients)

Meyer AL, Malehsa D, Budde U, Bara C, Haverich A, Strueber M. Acquired von Willebrand syndrome in patients with a centrifugal or axial continuous flow left ventricular assist device. J Am Coll Cardiol HF 2014;2:141-145. (Similar decrease of vWF multimers in HMII and HVAD with similar bleeding rates – older age, longer duration of support and higher cRP are predictors)

Gupta DK, Skali H, Rivero J, Campbell P, Griffin L, Smith C, Foster C, Claggett B, Glyunn RJ, Couper G, Givertz MM, Mehra MR, di Carli M, Solomon SD, Pfeffer MA. Assessment of myocardial viability and left ventricular function in patients supported by a left ventricular assist device. J Heart Lung Transplant 2014;33:372-381. (Assessment of LV function only 2 months post LVAD with echo and SPECT imaging – no "recovery")

2 Star References

Pulikottil-Jacob R, Suri G, Connock M, Kandala N, Sutcliffe P, Maheswaran H, Banner NR, Clarke A. Comparative cost-effectiveness of the HeartWare versus HeartMate II left ventricular assist devices used in the United Kingdom National Health Service bridge-to-transplant program for patients with heart failure. J Heart Lung Transplant 2014;33:350-358. (Interesting paper with the British BTT population better survival with HVAD than HMII and more cost effective mostly because more HVAD bridged successfully than HMII)

VanderPluym CJ, Fynn-Thompson F, Blume ED. Ventricular assist devices in children: Progress with an orphan device application. Circulation 2014;129:1530-1537. (Excellent review of the state of the art of VADs in children including the challenges of single ventricle, graft failure and DT in children)

(2 MVAD right thoracotomy papers are listed below in ovine –McGee and sheep – Schima models):

McGee Jr E, Chorpenning K, Brown MC, Breznock E, LaRose JA, Tamez D. In vivo evaluation of the HeartWare MVAD pump. J Heart Lung Transplant 2014;33:366-371.

Schima H, Zrunek P, Stoiber M, Larose J, Shambaugh C, Tamez D, Deckert Z, Plasenzotti R, Bergmeister H, Wieselthaler G. J Heart Lung Transplant 2014;33:422-428.

Best Paper Summary

Dunlay SM, Park SJ, Joyce LD, Daly RC, Stulak JM, McNallan SM, Roger RL, Kushwaha SS. Frailty and outcomes after implantation of left ventricular assist device as destination therapy. J Heart Lung Transplant 2014;33:359-365.

This is a paper looking at the impact of frailty on outcomes in destination therapy patients. The definition of frailty was defined by 2 sets of parameters – subjective and objective. The subjective parameters was obtained from a questionnaire the authors had been using routinely within 6 months of VAD placement. These ask about needing help with: meals, feeding, dressing, toilet, housekeeping, stairs, bathing, walking, transportation, in/out of bed, managing meds, assistive devices, device for breathing, ability to climb 2 flights of stairs. Each was assigned 1 (yes) or 0 (no). The other 17 parameters were from the past history and include: MI, DM, PAD, CVD, COPD, PUD, hemiplegia, GFR < 60, liver disease, rheumatologic disease, malignancy, dementia, HTBN, dyslipidemia, depression, anemia, BMI (< 18.5 or > 30 = 1, 18-25 = 0, 25-30 = 0.5). The 99 patients were separated by tertiles of scores: < 0.23, = not frail, 0.23-0.32 = intermediatae frail, and > 0.32 = frail).

Using this definition, the patients were followed for mean of 1.9 years. There was no difference between groups in the length of stay, which is surprising (19. 16 and 17 for frail, intermediate and not frail). However, the 1 year mortality rates are significantly worse for the frail patients – 16.2%, 21.2% and 39.9% for not frail, intermediate and frail), giving a HR of 1.7 for intermediate and 3.08 for frail. Interestingly, in their cohort, initial INTERMACS class had no impact on survival.

In addition, rehospitalizations were more frequent in the frail group. HR for hospitalizations were 1.7 for intermediate frail and 1.42 for frail. Overall rehospitalization at 1 month was 37.9%. Finally, days alive out of hospital was 293 for not frail, 266 for intermediate frail and 250 for frail. While this is a relatively small study, it does give a starting point for the discussion of the impact of frailty on outcomes post destination therapy. While most of us can visually identify who we consider to be "frail" and thus poor candidates for destination therapy, this provides a tool to objectively quantify the frailty

of a potential destination therapy patient. An informative editorial accompanies this paper (see above).

Grady KL, Naftel D, Stevenson L, Dew MA, Weidner G, Pagani FD, Kirklin JK, Myers S, Baldwin T, Young J. Overall quality of life improves to similar levels after mechanical circulatory support regardless of severity of heart failure before implantation. J Heart Lung Transplant 2014;33:412-421.

Here is another outstanding paper from Dr. Grady on the quality of life of patients pre and post LVAD implantation. She obtained data from 1559 adults in the INTERMACS registry over a 4 year period and analyzed data pre, 3 months, 6 months and 12 months post LVAD implantation using the EuroQol-5D-3L (5 dimension, 3 Likert scale) questionnaire. The 5 dimensions studies include mobility self care, usual activities (physical dimensions), pain/discomfort and anxiety/depression (pain/emotion dimensions). A Visual Analog Scale (VAS) of 0-100 was also analyzed, with 0 being the worst possible health and 100 being the best possible health. It is important to note that only 7-8% of patients are destination therapy patients, with the rest being bridge to transplant, listed up to unlikely to be listed.

For the physical dimensions, all Intermacs levels had an immediate improvement beginning at 3 months, with the benefits sustained at 12 months. For the 2 pain/emotional domains, most groups had significant improvement, with others demonstrating a trend towards improvement. VAS assessment showed a dramatic improvement at 3 months with sustained benefit seen at 12 months. While the Intermacs level 1 patients had the lowest VAS score at baseline, their 3, 6 and 12 month scores were similar to other Intermacs levels.