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OUTCOMES OF PATIENTS WITH RIGHT VENTRICULAR DYSFUNCTION FOLLOWING INSERTION OF MICROMED DEBAKEY VENTRICULAR ASSIST DEVICE

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Introduction: Right heart failure (RHF) after left ventricular assist device (LVAD) insertion has a high morbidity and mortality. Patients with preoperative right ventricular dysfunction (RVD) have a high incidence of developing RHF. Potential causes of postimplantation RVD include increased venous return, RV anatomical changes, bleeding and transfusions. Large first generation pumps may compress abdominal organs and require more complicated procedures. The MicroMed DeBakey VAD is a smaller, less invasive axial pump producing continuous flow. We report our experience with 31 patients receiving a MicroMed DeBakey VAD and the incidence of RVD and RHF.

Methods: Charts were reviewed for 31 patients undergoing MicroMed DeBakey VAD insertion. Postoperative RVD was defined as 14 days or more of inotropic support. RHF was defined as requirement for RVAD. Intraoperative echocardiography (IOE) was performed on each patient.

Results: RVD was found on 6/31 patients, of these 2/31 developed RHF requiring emergency implantation of Biomedicus RVAD, who eventually died. Of the remaining RVD patients, 2 survived to transplant, one died of other causes, and one is still hospitalized with ongoing LVAD support. All 6 patients had IOE evidence of preimplantation RVD.

Discussion: The MicroMed DeBakey is the most widely used axial flow VAD, weighs less than four ounces, and is designed for bridge to transplant and as a permanent device.1 Advantages of this pump include small size, lower risk of infection, ease of implantation and lower cost. Incidence of RHF in studies with larger VAD's can be as high as 9%, while RVD occurs in up to 30%.2,3 All six patients with postoperative RVD had IOE evidence of preimplantation RVD. Our incidence of RHF was 6%, and RVD was 19%.

Conclusion: Our preliminary experience with continuous flow pumps suggests that the incidence of RHF is lower than reported with pulsatile devices. Importantly, all patients who developed postimplantation RVD had preexisting IOE evidence of RVD. In the future these results might be improved with the advent of new medications for the treatment of RVD and with advancements in VAD technology. RVD remains a serious issue that requires consideration whenever a LVAD is being implanted.

References:

1. Goldstein, DJ. Worldwide Experience with the MicroMed DeBakey Ventricular Assist Device as a Bridge to Transplantation. *Circ* 2003;108 [Supp II]: 272-277.
2. Ochiai, Y, et al. Predictors of Severe Right Ventricular Failure After Implantable Left Ventricular Assis Device Insertion. *Circ* 2002;106 [12 SuppI]: 198-202.
3. Kavarana, M, et al. Right Ventricular Dysfunction and Organ Failure in Left Ventricular Assist Device Recipients: A Continuing Problem. *Ann Thor Surg* 2002;73:745-50.

Outcome		Days of LVAD Support
Bridged to transplant	2	16, 45
Died from right heart failure	2	16,19
Died of other causes	1	76
Ongoing hospitalization	1	68