**Differential survival benefit of IABPs and PVADs by procedural timing and clinical indication**

**Background**: Temporary mechanical circulatory support with intra-aortic balloon pumps (IABPs) and percutaneous ventricular assist devices (PVADs) are used to support patients in cardiogenic shock (CS) and with acute myocardial infarction (AMI). There is limited data concerning the optimal timing of placement of IABPs and PVADs, and outcomes based upon indication for placement.

**Methods**: Adult patients who received an IABP (n = 61,230) or PVAD (n = 944) between 2005 and 2011 and for whom information on procedural timing was available were identified in the National Inpatient Sample. We compared in-hospital mortality between PVAD and IABP by timing of placement and indication for placement (CS vs AMI).

**Results:** IABP and PVAD were initiated for the indications of CS (n = 23,913 and 282, respectively), and AMI without CS (n = 23,104 and 261, respectively). Patients receiving IABP were similar in age (65.1 ± 12.6 years vs. 64.5 ± 14.1 years, p = 0.15), but more likely female (31.4% vs. 26.0%, 0.0004) and Caucasian (66.7% vs. 60.9%, p = 0.0002) than PVAD patients. The median hospital length of stay for both IABP and PVAD patients was 8 days (range: 0-261 days vs. 0-81 days), and the majority of IABPs and PVADs were placed on the first day of hospitalization (60.0% vs. 33.9%; range: 0-197 days vs. 0-82 days). In patients diagnosed with CS, IABP patients had increased mortality compared to PVAD patients when support was placed on hospital day 0 or 1 (30.2% vs. 20.6%, p = 0.01). This difference was not present when support was placed > 1 week post admission (33.8% vs. 34.1%, p = 0.96). In patients diagnosed with AMI without CS, IABP patients had decreased mortality compared to PVAD patients when placed on hospital day 0 or 1 (10.7% vs. 32.1%, p = 0.0001), and difference also disappeared when the devices were placed > 1 week post admission (26.8% vs. 27.5%, p = 0.91).

**Conclusions**: The survival of patients receiving IABPs versus PVADs is influenced by the timing of the procedure and the clinical indication for placement.