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

**Background**: Temporary mechanical circulatory support with intra-aortic balloon bumps (IABPs) and percutaneous ventricular assist devices (PVADs) are used to support patients in cardiogenic shock and patients undergoing high risk percutaneous coronary interventions. There is limited data comparing the optimal timing and practice patterns between IABPs and PVADs.

**Methods**: Adult patients who received an IABP or PVAD between 2005 and 2011 and for whom information on procedural timing was available were identified in the National Inpatient Sample using ICD-9 procedure codes. We compared in-hospital mortality between PVAD and IABP by indication for circulatory support and distinguished between early circulatory support (on hospital day 0 or 1) and late circulatory support (>7 days post-admission).

**Results:**

Circulatory support with IABP and PVAD was initiated for cardiogenic shock (CS, 39.1% vs. 29.7%), acute myocardial infarction (AMI) without CS (37.8% vs. 27.5%), or percutaneous coronary intervention (PCI) without either AMI or CS (3.4% vs. 33.3%). Median hospital length of stay for both IABP and PVAD patients was 8 days (range: 0-261 days vs. 0-81 days), and the vast majority of IABPs and PVADs were placed on the first day of hospitalization (60.0%, range: 0-197 days vs. 51.0%, 0-82 days). In patients with PVAD placed for CS, delayed circulatory support had increased mortality compared to early circulatory support (34.1% vs. 20.5%, < calculate p value>). However, there was no such difference in patients with IABP (33.8%, vs. 30.2% < calculate p value>). On the contrary, in patients diagnosed with AMI without CS, early IABP placement had decreased mortality compared to late IABP placement (10.7% vs. 26.8%, < calculate p value>). However, there was no such difference for patients with PVAD placement (32.9% vs. 27.5%, <calculate p value>). In patients who received PCI without AMI or CS, early circulatory support had decreased mortality for both IABP (6.4% vs. 10.9%, <calculate p value>) and PVAD (25.8% vs. 35.7%).

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