Title: In cardiogenic shock, Impella use has consistently shown worse outcomes whereas Intraaortic balloon pump has proven safe with the potential of reducing mortality based on the NIS database

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Subtitle: A word of caution in the use of Impella in patients with cardiogenic shock

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With great interest, I read the manuscript entitled “Comparative Effectiveness of Percutaneous Microaxial Left Ventricular Assist Device (MCS) vs Intra-Aortic Balloon Pump or No Mechanical Circulatory Support in Patients With Cardiogenic Shock” in JAMA Cardiology. (1) They found that the adjusted 30-day mortality risk post-PCI was 41.3% in the IABP cohort which was 11.4% lower than with the use of MCS and was similar to no device et al (difference IABP vs no device 3.1%). Their findings were consistent even though they adjusted for every possible confounding factor. Despite their very convincing findings, the authors downplay the higher mortality found in the MCS cohort. They also avoided acceptance that mortality was much lower in the IABP cohort in comparison to MCS and was similar to any device use despite the fact that most patients treated with IABP are much sicker and if IABP had no positive effect on mortality, higher mortality suggesting a positive effect of IABP on mortality in their patients with cardiogenic shock. We published a preprint paper (2) pending peer review publication by analyzing over 844,020 patients with all types of cardiogenic shocks using the largest available Nationwide Inpatient Sample (NIS) database. 101,870 were treated with IABP and 39,645 with an Impella. Consistent with their results, we found much higher inpatient mortality rates with Impella use despite adjusting for over 47 confounding factors. Regardless of the severity
or any underlying condition, Impella increased mortality in patients with acute myocardial infarction-induced cardiogenic shock (AMICS) by approximately 30% whereas IABP reduced mortality by over 30% regardless of severity or hospital type. The benefit of IABP was also consistent regardless of comorbidities and also was highly significant in comparison to no device in all subgroup cohorts. The currently available literature is also consistent with worse outcomes with the Impella device. Two meta-analyses of Impella trials showed worse outcomes using Impella in patients with AMICS. (3,4) Finally, using the NIS database, patients with AMICS showed significantly higher mortality. (5) Based on increasing mounting data, Impella use in patients with cardiogenic shock appears to cause harm whereas IABP may be beneficial with no significant harm noted. Therefore, until large randomized trials are conducted, cardiologists should utilize IABP first in cardiogenic shock patients and exert utmost caution in the judiciary use of Impella and utilize it only in selected patients until more safety data are available.

References:


