Abstract: **P5749**

**Haemodynamical effects of left ventricular assistance during high-risk percutaneous coronary interventions with a pneumatic left ventricular assist device**

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Topic(s):  
Coronary Intervention: Mechanical Circulatory Support

Citation:
Background: Referral for high-risk percutaneous coronary intervention (PCI) is a progressively growing trend. Percutaneous Mechanical Circulatory Support (MCS), may protect the myocardium and reduce the risk of major adverse events. Clinical data on Left Ventricular (LV) unloading by pneumatically driven Percutaneous Left Ventricular Assist Devices (pVAD’s) is currently scarce.

Purpose: describe the unloading pattern produced by a pneumatically driven pulsatile pVAD on LV haemodynamics through real-time Pressure-volume (PV) analysis with a conductance catheter positioned in the left ventricle.

Methods: 19 patients undergoing high-risk PCI treated with MCS were monitored with PV loops and pulmonary artery catheterization throughout the intervention.

Results: When activated on 1:1 assist ratio, the mean output produced by the pVAD was 1.36±0.13L/min. Compared to pre-implantation, 1:1 support produced a significant reduction in End-systolic Wall Stress (WSes: -11.95%, p<0.01) and PV area (PVA: -16.67%, p<0.01). Contractility did not significantly change (V100: +29.48%, p=0.073; End-systolic Elastance, Ees: 1.24%, p=0.86). Effective Arterial Elastance (Ea), representing afterload, decreased (Ea: -12.05%, p<0.01). Total Arterial Compliance (TAC: +31.59, p<0.01) increased and Ventricular-arterial Coupling (Ea/Ees: -9.79%, p=0.06) non-significantly improved. Mean arterial pressure non-significantly decreased (MAP: -6.66%, p=0.06) and global Cardiac Output remained stable (CO: -0.06%, p=0.37). When the pVAD was removed after the PCI these changes were reversed (Figure 1).

Conclusion: High-risk PCI with pneumatic MCS may result in LV unloading and reduced myocardial oxygen consumption. Further insights will be released in the PULSE trial (Clinicaltrials.gov NCT03200990).
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