



## INTRA-AORTIC BALLOON PUMP: A MECHANICAL CIRCULATORY SUPPORT DEVICE

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### ABSTRACT

Circulatory compromise conditions can be witnessed with cardiac disorders which when aided with mechanical circulatory support devices can help with enhancement of systemic and coronary perfusion and reducing the cardiac workload. One such circulatory support device is IABP. It facilitates with unloading the left ventricle to prevent worsening myocardial function, decreasing myocardial oxygen demand, preventing hydrostatic pulmonary edema, and enhancing circulatory support in patients.

**Key words:** IABP, Intra-Aortic Balloon Pump.

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### REVIEW ON IABP

IABP is Intra-aortic balloon pump. It is a mechanical circulatory support device. It assists in circulation by rhythmic counter pulsation mechanism. The IABP balloon inflates and deflates continuously with the help of a gas pumped in and out. The inflation and deflation are timed with cardiac cycle. During systole the balloon is deflated and during diastole the balloon is inflated. The contraindications in the use of IABP are Aortic Dissection, Aortic insufficiency, abdominal aortic aneurysm, and there are contraindications to anticoagulation.<sup>[1]</sup>

The IABP is used as a cardiac assistive device since 1968. The IABP can be used with high-risk myocardial infarction (MI), MI complicated by cardiogenic shock, acute severe mitral incompetence or ventricular septal rupture and for prophylactic support ahead of high-risk percutaneous coronary intervention (PCI) and coronary artery bypass graft (CABG) surgery.

The positioning of the IABP should be very precise so that any complication like ischemia to the arteries originating from the aortic arch perfusing the

abdominal organs does not occur. IABP's are included with radio-dense markers that can be readily assessed by a frontal chest radiograph.<sup>[2]</sup>

Cardiogenic shock is a leading cause of mortality and morbidity in acute cardiovascular care and is associated with short-term mortality of nearly 30% to 45% in the contemporary era. The IABP offers the theoretical advantage of unloading the LV to prevent worsening myocardial function, decreasing myocardial oxygen demand, preventing hydrostatic pulmonary edema, and enhancing circulatory support in patients. Importantly, the ability of the IABP to improve coronary artery perfusion pressure in diastole is of incremental benefit. The costs and complications of other percutaneous MCS devices are significantly higher than the IABP that might limit their utility in clinical practice.<sup>[3]</sup>

The IABP should be selected and used very judiciously as they can develop spinal cord ischemia and infarct leading to the development of neurological deficits.<sup>[4]</sup>



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