

# Intraaortic balloon counterpulsation

**Intra-Aortic balloon pump (IABP)** is a type of mechanical cardiac support. It is a mechanical device whose function is to support a failed circulation. <sup>[1][2]</sup>

Intra-Aortic balloon pump consists of a counterpulsation balloon implemented most often by the femoral artery into the descending part of the thoracic aorta and the counterpulsation device. <sup>[3]</sup>

## Principle

The principle of IABP is to inflate a counterpulsation balloon with inert gas (helium) in diastole and to blow it in systole. <sup>[4]</sup>

Inflating a balloon in diastole increases intraaortic pressure in the ascending aorta and aortic arch, potentiating blood expulsion into the *aa. & nbsp; coronariae, truncus brachiocephalicus, a. & nbsp; carotis communis sin., a. & nbsp; subclavia sin.* (possibly aortocoronary bypasses). We are talking about *diastolic augmentation*, which results in increased blood flow through the coronary arteries. <sup>[5]</sup>

Blowing out the balloon just before the onset of systole leads to a reduction in intraaortic pressure, and thus to a *reduction in afterload*. *Balloon inflation and deflation are controlled by the ECG or arterial pressure curve.* <sup>[7]</sup>

Diastolic augmentation and reduction afterload result in reduced left ventricular labor requirements and myocardial oxygen consumption. <sup>[8]</sup>

## Indication

The indications of IABP include: <sup>[9][10][11]</sup>

- AIM complications;
- cardiogenic shock;
- unstable angina pectoris unresponsive to conservative therapy;
- low minute output syndrome (LCOS).

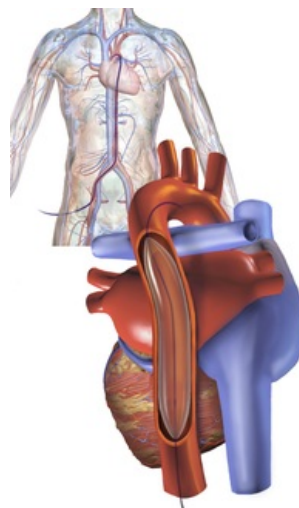
## Contraindications

An absolute contraindication to IABP is a significant **aortic valve insufficiency** (*diastolic pressure augmentation increases the diastolic volume of the left ventricle, which may cause damage to the left ventricle*), <sup>[12]</sup> *aortic aneurysm, traumatic aortic changes.* <sup>[13]</sup>

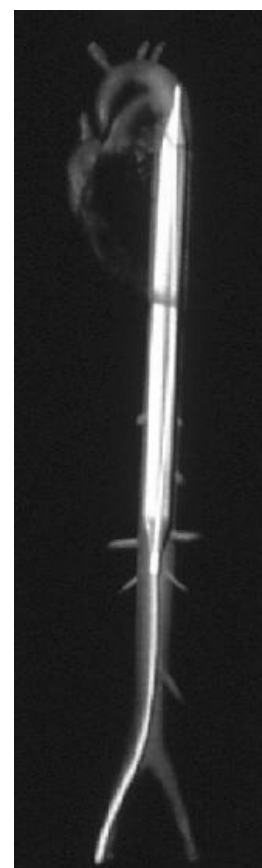
## Complications

Among the possible complications of IABP are mainly: <sup>[14][15][16] [17]</sup>

- bleeding and infection at the puncture site;
- arterial perforation;
- artery dissection (a. & nbsp; femoralis, a. & nbsp; iliaca, aorta);
- limb ischemia;
- thrombocytopenia.



Intraaortic Balloon



IABP

## Links

### Related articles

### External links

Tutorial video 1 IABP on YouTube (<https://www.youtube.com/watch?v=o11fhdVOYWA>). Tutorial video 2 IABP on YouTube (<https://www.youtube.com/watch?v=cplLWs1Mw2E>)

### Sources

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MANDÁK, Jiří. "Intraaortální balonková kontrapulzace". *"Kardiologické fórum"* [online]. 2005, vol. 3, p. 44–46, Available from <[http://www.kardiologickeforum.cz/pdf/kf\\_05\\_02\\_09.pdf](http://www.kardiologickeforum.cz/pdf/kf_05_02_09.pdf)>. ISSN 1801-7606.

## Recommended literature

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