

ALDERFER & TRAVIS CARDIOLOGY, PC
670 Lawn Ave., Suite 3A Sellersville, PA 18960
Tel (215)257-9500 FAX (215) 257-9500

Intraaortic Balloon Pump

Other Names:

Intra-aortic balloon counterpulsation, IABP

What is an Intraaortic Balloon Pump (IABP)?

An IABP is a device that assists the heart in pumping blood throughout the body. An IABP improves the flow of blood from the heart, and decreases the "load", or the amount of work that the heart muscle must do.

The device consists of a long catheter with a balloon on one end. The catheter is usually inserted into an artery in the groin. The doctor then guides the catheter through the artery until it reaches the aorta (the largest blood vessel in the body). Once the balloon is placed in the aorta, a pump is attached to the other end. The balloon inflates and deflates with each heartbeat, which decreases the workload on the heart. The pump is synchronized with the heartbeat, usually by using a signal from an electrocardiogram (a test that measures electrical signals in the heart).

The inflation and deflation of the balloon are timed to the cycle of your heartbeat. The balloon inflates during diastole (the part of your heartbeat when your heart relaxes). This increases diastolic pressure, which increases blood flow in the coronary arteries (the arteries that supply the heart muscle with oxygenated blood), and throughout the body. The balloon deflates at the end of diastole, right before the start of the next heartbeat, which decreases blood pressure in the aorta and improves the ejection of blood from the left ventricle (the lower left chamber of the heart).

An early form of the device was first used in 1967.

When is an IABP used?

An IABP is typically used in critically ill patients.

An IABP is used in certain circumstances when the heart needs assistance in pumping blood. An IABP is sometimes used immediately following cardiac surgery, after the patient is taken off of the heart-lung bypass machine (the machine used during open heart surgery that does the work of the heart).

A large heart attack can cause a condition called cardiogenic shock (a condition when the heart can't pump blood efficiently enough to supply oxygen to the tissues of the body). An IABP is sometimes used to temporarily treat this condition. Cardiogenic

shock occurs in approximately 7.5% of patients with acute myocardial infarction (heart attack).

IABP is sometimes used for patients with hypotension (low blood pressure) or pulmonary edema (fluid in the lungs).

What are the risks of an IABP?

Complications of an IABP are usually associated either with the insertion process, or with the device itself. Complications associated with insertion of the catheter include:

- aortic dissection (tearing of the wall of the aorta), or dissection of the common femoral artery

- dislodgement of plaque or emboli into the major arteries

- perforation of the arteries

Complications associated with the device itself include:

- obstruction of the common femoral artery with peripheral ischemia (a temporary oxygen deficiency in the area supplied by the artery).

- infection

- blockage of a major artery

- blood clot formation

- balloon rupture: gas embolism

The longer the IABP remains in the body, the more likely complications are to occur. Weaning from AIBP usually begins within 48 hours, by gradually reducing the proportion of cardiac cycles during which the balloon inflates. When the patient's own circulation can be maintained at a pumping frequency of every fourth or greater cardiac cycle, the balloon can usually be removed successfully. It should not be completely stopped when in the body, because of the danger of thrombus formation.

IABP is instrumental in preventing death in a significant number of cases of critically ill patients. However, since its use is reserved for critically ill patients, high death rates do occur. These deaths are typically associated with the disease itself and not with the use of an IABP.