Coronary angioplasty

WHAT IS CORONARY ANGIOPLASTY?

Coronary angioplasty (also referred to as a percutaneous coronary intervention or PCI) is a minimally invasive procedure to open a coronary artery that has become blocked because of coronary artery disease. The coronary arteries are the small vessels that supply the heart muscle with oxygen.

- Angioplasty is a minimally invasive alternative to open-heart bypass surgery.
- Angioplasty is performed on more than one million people a year in the United States.
- Most people go home one to two days after having angioplasty. Full recovery from the procedure is usually one week or less.
- Angioplasty is associated with less scarring, lower risks of infection and fewer surgical complications than the open surgical alternatives.
- General anesthesia is not needed for angioplasty—patients remain awake, although they are given medication to help them relax.
- Heart disease is the biggest killer in the United States.

HISTORY

Coronary angioplasty was first developed in 1977 as an alternative to coronary artery bypass graft (CABG) surgery. The procedure was quickly adopted by cardiologists, and by the mid-1980s, many leading medical centers throughout the world adopted the procedure as a standard treatment for coronary artery disease.

HOW IS CORONARY ANGIOPLASTY PERFORMED?

During coronary angioplasty, a small tube with a balloon at the end is used to open a clogged coronary artery. An interventional cardiologist will create a keyhole incision in the groin area, insert the catheter and the balloon, and then thread the balloon into the femoral artery (the main artery of the leg), up to the arteries of the heart and on to the site of the blockage. Once in place, the balloon is inflated, opening the blockage and pushing the diseased tissue against the artery wall. The balloon is deflated and removed, and normal blood flow along the artery to the heart muscle is restored. In many cases, however, the opened artery will close again soon after the procedure. To help prevent the artery from reclosing and the need for repeat operations, stents were developed.

THE ROLE OF STENTS

During coronary angioplasty, a drug-eluting stent is often placed in the artery providing a miniature scaffold for the newly opened vessel. A drug-eluting stent is a tiny mesh cylinder coated with a medication that is crimped tightly onto a balloon. As the balloon expands, so does the stent, ready to be left in place as the balloon is removed. A drug-eluting stent doesn’t just provide mechanical protection against vessel reclosure, the drug coating on the stent also reduces the chance that the artery will become blocked again by slowing the growth of excessive tissue as the artery wall heals after the procedure. With respect to efficacy, usually measured by the need for repeat procedures, coronary angioplasty with drug-eluting stents has been shown to be vastly superior to simple balloon angioplasty and bare-metal stent angioplasty.

THE NEXT GENERATION

Drug-eluting stents have not been without drawbacks, including long-term safety concerns. Many of these are now being addressed in a new generation of stents that combine the efficacy advantages of drug-eluting stents with the excellent safety profile of bare-metal stents.