

## **Stent implantation (coronary, carotid, renal artery, iliac artery)**

**Percutaneous balloon coronary angioplasty (PTCA)** is a minimally invasive, therapeutic medical procedure that re-establishes a normal blood flow in the heart muscle along a narrowed and blocked coronary artery.

During this procedure, we introduce, through puncture at the level of the femoral artery (usually), a narrow and flexible tube (catheter) that has a balloon at the end. The balloon is manoeuvred up to the narrowing of the vein, where it is inflated in order to enlarge the diameter of the artery. The simple dilatation of the stenosis involves the inflating and deflating of the balloon; however this procedure has to be frequently repeated.

### **Percutaneous coronary angioplasty with bare-metal stent**

A better solution for maintaining a stable blood flow is to implant a stent on the stenosed segment of the vein.

When introduced, the balloon + stent system is bent over and in this state it has a <1 mm diameter. The stent is a lacy metal tube that unpacks when the balloon on which it is installed is inflated and it remains in the vein after the balloon is extracted. The stent is chosen based on the arteries that it has to cross through and the injury that it has to treat; moreover, it needs to maintain the initial shape of the vein, as well as its optimal diameter for as long as possible. Based on the diameter of the vein, the span of the injury and other risk factors, such as diabetes, 20-30% of the patients will present, in time, new narrowings in the stent (in-stent restenosis).

### **Percutaneous coronary angioplasty with drug-eluting stent**

This procedure restrains and prevents in-stent restenosis: the procedure is the same as the percutaneous coronary angioplasty with bare-metal stent; however, in this case, the stent is covered in a special material that is impregnated with a pharmacological substance that intervenes at cellular level and prevents the phenomenon of neointimal hyperplasia (the thickening of the interior layer that covers the vein).

This substance prevents the phenomenon of neointimal hyperplasia and enables the stent to become part of the vein's wall (that treats the injury) without producing in-stent restenosis, except in very rare cases. This type of special stent is called "Drug-eluting Stent" (stent that releases a pharmacological substance).

**Percutaneous coronary angioplasty with ABSORB bioresorbable stent** represents a step forward in interventional cardiology and more precisely in the treatment of coronary diseases. The ABSORB bioresorbable stent was conceived to open the blocked arteries of the heart, as safely as the traditional metal stent, but to dissolve naturally afterwards.

This state of the art stent is made of polylactide, which is a material that dissolves naturally inside the artery leaving behind a vein that can recover its natural mobility and pulsation functions and that reduces the angina pectoris. These results cannot be achieved through the permanent metal stents. Once the artery regains its natural functions, this has long-term improved results.

ABSORB is the first bioresorbable platform with active pharmacological substance (cytostatic) in the world used in treating coronary conditions by cardiologists all around the world.