- Heart valve surgery: mitral valvuloplasty and aortic valve replacement

These procedures are aimed at correcting **heart valve** defects. There are four valves inside the heart (*aortic, mitral, pulmonary and tricuspid*) that enable blood to flow inside the heart, in only one direction. If these structures "become ill" they will cause difficulty in opening the valves (*valve stenosis*) or incomplete closing of the valves, thus enabling the blood to flow in the opposite directions (*valve insufficiency*). In both cases the heart will "operate" under abnormal conditions and, in time, the patient will experience breathing difficulties (dyspnoea), precordial pain, excessive fatigue or loss of consciousness.

Valve diseases can be treated, in some cases, through procedures that repair and preserve the patient's valve (*valvuloplasty*); however, in other cases, the entire valve needs to be replaced with a prosthesis (*valve replacement*).

A very advantageous surgical procedure is mitral valvuloplasty, which is performed to treat mitral insufficiency in patients with a favourable valve anatomy. While the traditional technique involves replacing the affected valve with an artificial one, our surgeons prefer to perform the valve repair surgery (which preserves the patient's native valve) as often as possible, since it has multiple advantages for the patient. Among these advantages, the most important is that of regaining a normal cardiac status and implicitly, a normal life, without the administration of anticoagulants, as in the case of patients who have undergone an implantation of prosthetic heart valve.

The efforts made by medical research to create a valve substitute have materialised in a wide range of products.

Depending on the material they are made of, there are mechanical and tissue valves.

**The mechanical valve** consists of a ring and metal disks covered in pyrolytic carbon; the ring is covered in a plastic material that helps maintain the stiches in place.

**The tissue valve** is made of a biological material of animal origin (bovine pericardial valve, porcine valve) that is treated and installed on a metal frame and a textile fixation fabric (stented tissue valve) or without a metal frame (stentless tissue valve).

The choice for a mechanical or tissue valve depends on clearly defined criteria:

- **Mechanical valves** are recommended for young patients (with an age limit of 65-70 years old), with a long life expectancy, without contraindications for anticoagulant treatment. Due to the construction characteristics of the valve, it has an indeterminate lifespan and it does not require replacement if the patient strictly complies with an adequate maintenance treatment, except in the case of complications.

- **Tissue valves** are recommended for older patients (over 65 years old) for whom they are more advantageous from two points of view: they do not require long-term anticoagulant treatment and they have higher durability in elderly people. At the same time, tissue valves are recommended for young women who want to have babies (the anticoagulant treatment that is compulsory for patients with mechanical valves has a high risk of producing congenital malformations in the foetus), if they agree with the fact that this type of valve will need to be replaced in the near or distant future and for patients with contraindications for anticoagulant treatment.