

Minimally invasive mitral valve surgery

Background

The mitral valve controls the direction and flow of blood through the left chambers of the heart. If the valve becomes too hard (calcified) and too narrow (stenosis), flow will be reduced; if the valve becomes too loose, flow might travel backwards (regurgitation). Abnormal blood flow will force the heart to work harder, eventually causing heart failure. Symptoms that this is occurring include shortness of breath, palpitations, chest pain, syncope and/or fatigue.

When these symptoms become severe, the surgeon can decide to repair or replace the mitral valve through open heart surgery, which usually requires the breastbone to be cut open, or through a minimally invasive approach, which requires only small cuts to be made in the right side of the chest.

Procedure

There are several ways to perform minimally invasive mitral valve surgery. Each approach requires general anaesthesia.

- Mini-thoracotomy approach: a small 2-4 inch-long cut is made on the right side of the chest below and away from the nipple. A small cut is made in the heart to access the mitral valve. Several small holes are also made in the chest, which allow the surgeon to insert special long instruments and a camera to access and view the heart.
- Robotically-assisted approach: several tiny cuts are made in the chest. The surgeon then uses a special computer to precisely control robotic arms that are inserted into the chest. This provides an undistorted, 3-dimensional dimensional view of the valve components.

Once the surgeon gains access to the valve, he or she may choose to repair the valve and/or its supporting structures, or replace it with a mechanical (made of man-made materials) or biological (made of animal tissues) valve. Mechanical valves are very durable, but require patients to take blood-thinning medications, such as warfarin, for the rest of their lives. Biological valves may only last 7-15 years, but may not require the patient to take blood thinning medications.

Benefits

Benefits of minimally invasive mitral valve surgery may include:

- Reduced pain
- Reduced blood loss
- Reduced risk of infection
- Faster recovery and shorter hospital stay
- Less scarring and better cosmetic appearance.

Risks

Some risks associated with this type of surgery remain the same as those for open mitral valve repair. These include stroke, mortality and risks associated with cardio-pulmonary bypass. However, these are specialised procedures with a learning curve. The results are better in institutions specializing in minimally invasive cardiothoracic surgical procedures. The rates of these risks vary between institutions and depend on individual patient pathology and comorbidity. As with all surgical interventions, the potential risks need to be weighed against the benefits and discussed with your surgeon.

For more information, visit the following websites:

<http://www.nlm.nih.gov/medlineplus/ency/article/007411.htm>

<http://www.sts.org/patient-information/valve-repair>

http://my.clevelandclinic.org/heart/disorders/valve/mini_mv.aspx

<http://www.annalscts.com>

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