

Robotic mitral valve surgery

Background

The mitral valve of the heart normally opens and closes in a coordinated fashion as the heart contracts, in order to ensure that blood is pumped efficiently. Mitral valve surgery is performed to repair or replace defects of the mitral valve, most commonly in the form of ‘regurgitation’ through a leaky valve, or ‘stenosis’, which describes to an obstructed valve. Robotic mitral valve surgery is a minimally invasive surgical technique that aims to achieve the same goals as conventional mitral valve surgery, but without a ‘sternotomy’ involving a large cut through the bony breast plate.

Indications

Robotic mitral valve surgery has been performed by specialized cardiac surgeons in selected centers for over a decade. Whether a patient is suitable for robotic mitral valve surgery or a conventional technique such as sternotomy depends on several factors. These include the disease process and anatomy of the mitral valve, previous surgical procedures, preexisting medical conditions and level of expertise of the surgeon.

Technique

Mitral valve surgery encompasses a wide range of repair and replacement techniques. In repair operations, the patient’s valve is modified by the surgeon but largely left in place. In replacement operations, a new valve, such as a bioprosthetic or mechanical valve, is implanted by the surgeon. The precise technique performed by the surgeon will depend on the findings from ultrasound imaging of the heart, known as echocardiography, performed before and during the operation. After administration of a general anesthetic, three or more small incisions are made on the right chest wall. Additional cuts are often required in the right groin for access to the bypass machine. Thin surgical instruments and a specialized camera, attached to the robotic machine, are inserted through the incisions in the chest and controlled by the surgeon via a specialized computer console. After the mitral valve has been repaired or replaced and the surgeon is satisfied with its function, the instruments and camera are removed and the incisions in the chest and groin are closed.

Benefits

Robotically-assisted mitral valve surgery offers a number of potential benefits compared to more invasive conventional techniques. In addition to greater precision and range of motion of the surgical instruments, robotic mitral surgery uses smaller incisions, resulting in improved cosmetic results and less pain following the operation. Robotic mitral valve surgery may also result in reduced surgical risks of bleeding and infection, as well as a shorter stay in hospital and faster recovery time.

Risks

As with all surgical procedures, there are still risks that need to be considered and these relate to both the specific procedure and the use of a general anesthetic. These risks include small risks of wound infection, bleeding, conversion to open surgery and the need for a reoperation in the future. There is also a risk of developing abnormal heart rhythms and small risks of heart attack, stroke and death. As always, the risks should be weighed against the benefits and discussed with your surgeon.

For more information, please visit the following websites:

<http://my.clevelandclinic.org/services/heart/services/robotically-assisted-heart-surgery/robotically-assisted-mitral-valve-repair>

http://www.hopkinsmedicine.org/healthlibrary/test_procedures/cardiovascular/robotic_cardiac_surgery_135,11/

<http://sydneyheartandlung.com.au/surgery/minimally-invasive-surgery/minimally-invasive-mitral-valve-surgery-mini-mitral/>

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