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Repairing your heart's leaking mitral valve by keyhole surgery (TEER)

Department of Cardiology

Information for Patients

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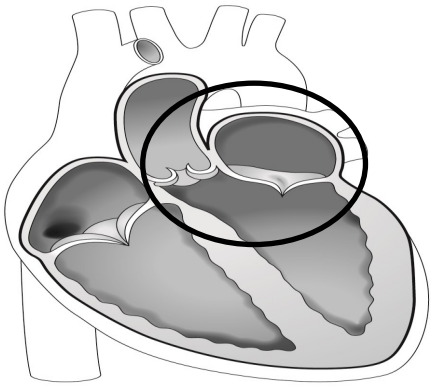
This booklet aims to help you learn what to expect before, during and after your procedure to repair your mitral valve. If you have any questions that the booklet does not answer, please do not delay to ask the nursing or medical staff who are looking after you.

What is mitral regurgitation?

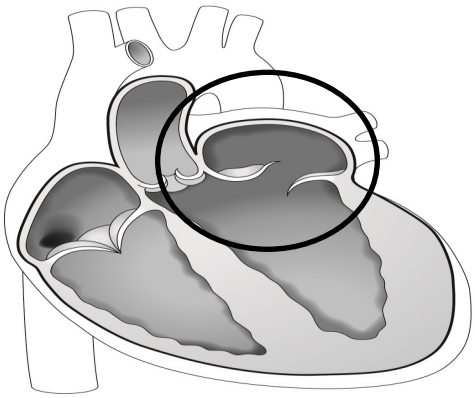
You have a heart valve condition called **mitral regurgitation**. The mitral valve is 1 of 4 heart valves that control the flow of blood in and out of the heart.

If the valve becomes more leaky than normal (mitral regurgitation),

- the heart must work harder to pump the same amount of blood with each heart beat. so the work for the left ventricle (pumping chamber) increases.
- As a result the chambers of the heart may become bigger.



normal mitral valve



mitral regurgitation

Health information and support is available at www.nhs.uk or call 111 for non-emergency medical advice

Visit www.leicestershospitals.nhs.uk for maps and information about visiting Leicester's Hospitals
To give feedback about this information sheet, contact InformationForPatients@uhl-tr.nhs.uk

Without treatment, this usually gets worse over time . Medicines can slow it from getting worse. The effects of long-term mitral regurgitation can result in symptoms and signs of heart failure (breathlessness, tiredness, fluid over-load). In these cases, surgery or trans-catheter mitral valve repair may be needed to fix the leaking mitral valve. This is called transcatheter mitral valve repair (TMVR)

What causes mitral regurgitation?

- Wear and tear of the valve as you get older
- Damage to the valve after a bacterial infection
- Problems related to the heart muscles
- Mitral valves flaps are too floppy or stretchy

What are the symptoms of mitral regurgitation?

- Shortness of breath.
- Weight gain.
- Chest pain.
- Weakness.
- Dizziness.
- Swelling in the ankles, feet and, or tummy.
- Irregular heartbeat.

How is mitral valve regurgitation treated?

The symptoms of mitral valve regurgitation can sometimes be treated with medications if the symptoms are mild. When medications do not work to control symptoms, transcatheter mitral valve repair or surgical valve repair or replacement is done.

What surgery options are available to repair a mitral valve?

Until recently, mitral valve repair has involved open-heart surgery.

This method **needs**

- a cut through the breastbone.
- surgical repair or replacement of the weak valve.

Trans-catheter edge to edge repair (TEER) is less invasive. It is available for some patients who are not fit for open heart surgery.

At present, TEER involves

- Being put to sleep (general anaesthetic).
- It is carried out through a tube called a catheter which is put into the femoral vein (small cut near the crease of the groin, usually on the right side).
- Repair devices are inserted through the tube to the mitral valve.
- X-rays and ultrasound scanning is done.
- When the device is in the right place, it is released to clamp onto a part of the mitral valve to bring its edges together. This reduces the amount of blood that leaks through the valve.

What are other treatments to a TEER?

The 2 other treatments available for mitral regurgitation are;

- Open heart surgery– as explained above.
- Medication- can help relieve your symptoms, but your mitral valve will continue to get worse.

If your mitral valve is not repaired, you will continue to have symptoms such as

- Shortness of breath.
- Tiredness.
- Too much fluids.

It is important to talk to your doctor about what will happen if you choose not to do the procedure.

What are the benefits of this procedure?

The procedure is carried out to:

- Reduce mitral regurgitation.
- Reduce shortness of breath and chest pain.
- Improve quality of life.
- Improve heart failure symptoms.

The benefits may be personal to you. Please talk to your consultant about this.

What are the risks of the procedure?

Every procedure carries some risks. These can be different for each person. There are a number of risks related to TMVR. You have to think about these before giving consent to have the procedure done. The risks that are common or rare are:

Common risks:

• Bruising or discomfort at the place the catheter is introduced.

• 1 to 2.4 in 100 risk of stroke, heart attack or minor bleeding.

- 1 to 3 in 100 risk of collecting fluid or blood around heart which may need drainage or surgery.

Rare risks:

- 1 in 100 risk of death.
- 5 to 10 in 100 risk of failure of the valve repair to work satisfactorily.
- 5 in 100 risks of having minor complications affecting blood vessels.
- 1 to 5 in 100 risk of causing irregular heartbeat (arrhythmia).
- 1 to 4 in 100 risk of infection related to the procedure, including infection of the valve itself.
- 5 in 100 risk of causing significant mitral regurgitation, where the blood flows the wrong way in the heart as the mitral valve does not close properly
- Less than 1 in 1000 to 10000 risk of radiation induced cancer by using x-ray machine for the procedure.
- Less than 1 in 100 risk of device moving out of position after the implant.
- Damage to teeth, throat or oesophagus: During the procedure, the doctor will put a flexible tube (a probe) down your throat into your swallowing tube (oesophagus). This is a transoesophageal echo (TOE), which gives imaging guidance for clip placement. Fewer than 1 in 1,000 people (0.1%) have serious complications from a TOE, such as damage to teeth, throat or oesophagus.
- **Blood transfusion:** Very unlikely.
- **Other procedure:** Urgent support related to the flow of blood within the organs and tissues in the body (haemodynamic) or emergency heart surgery.

Your pre-admission appointment

Eat and drink as normal for this appointment .

You will be asked to attend an appointment before you are admitted at Clinic D, Glenfield Hospital. Please be prepared for a stay for about 2 hours.

- A nurse will check how you are feeling and your medical history. You will be given further information at this appointment and you will be given a chance to ask questions.
- You will also have a simple test that can be used to check your heart's rhythm and electrical activity (electrocardiograph) (ECG), and blood tests. To check for MRSA swab samples will be taken from your nose and between your legs (perineum) and any skin wounds that can be seen.
- If you are on any blood thinning tablet or have diabetes, the nursing staff will tell you about what tablets you may need to stop taking before the procedure. Remember to bring all your usual medication with you to your appointment before admission and during admission.

Giving your consent for the procedure

You will be asked to give your legal consent by signing a consent form. This will be either when you see the operating heart surgeon at your outpatient appointment or during your admission.

It is very important that you ask any questions or raise any concerns that are on your mind before signing.

Admission to hospital

- You will be admitted to hospital the day before or early on the day of your procedure.
- It is very important that you tell us if you have any known allergies (medication or others).
- The admission ward will repeat some blood tests, and blood will be taken to cross match in case you need blood transfusion during or after the procedure.

What happens on the day?

- You will be fasting for solid foods for 6 hours and 2 hours for water before the procedure-the the ward staff will inform you from when you have to be without food.
- If there is too much hair growth in the groin area (catheter incision site), it may be shaved off.
- You will need to shower with an antibacterial wash, then dress in a gown.
- You will be **checked by** an anaesthetic doctor and your cardiologist. You will have both a general and local anaesthetic during the procedure.

How is the trans-catheter edge to edge repair (TEER) performed?

TEER can be done in the cardiac catheter laboratory or in theater by a cardiology team under general anesthetic.

When you arrive in the catheter room or in theater,

- you will see that there is a lot of machinery. This can be overwhelming, do not be alarmed as this is special monitoring and x-ray equipment.
- you will need to lie on your back on a x-ray table. The heart monitor wires will be attached to you.
- the anaesthetic doctor will insert a small needle in your hand
- you will receive some oxygen from a mask
- the anesthetist will give you injections to make you sleep. 1 dose of antibiotics will be given, just before the procedure to prevent infection.
- Once you are asleep, a tube will be put in your windpipes so that the anaesthetist can support your breathing during the procedure.

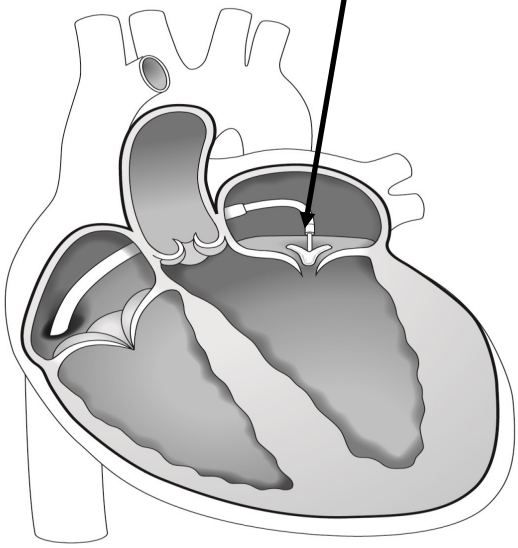
To begin the procedure, the cardiologist will

- Clean your left and right groin areas with a cold antiseptic liquid.
- They will then cover you with sterile sheets to keep a sterile working area.
- You will then be injected with local anaesthetic in both groins to numb (freeze) the area.
- The tubes (catheters) will be put into the blood vessels (1 in either side) and guided into the chambers of the heart.
- Once you are asleep, an ultrasound probe (transoesophageal probe) will be put into your food pipe (gullet). This is so that the mitral valve can be checked during the procedure. This also will help your consultant position the catheters and repair device.
- The doctor will create a small hole in the wall between the 2 upper chambers of the heart. This hole will allow the doctor to check the left chamber (atrium) with a special tube that has a clip device at the tip. At this point you will be given an anti-clotting drug through the needle in your hand or arm.
- The catheter will be put with the repair device in the mitral valve. The heart doctor (cardiologist) then will attach the repair device to the mitral valve. The doctor may use 1 or 2 repair devices depending on the leaking. Once the doctor has decided the valve leaking is reduced, the catheter will be removed.
- The small atrial septal hole (a small hole in the wall between the 2 upper chambers of the heart) is left and almost never has any effect.
- The doctor may close the catheter insertion site with a closure device that uses stitches (sutures). 1 of the staff will put pressure on the area to stop the blood vessel from bleeding.
- Once the bleeding has stopped, a small sterile dressing will be put on the area.

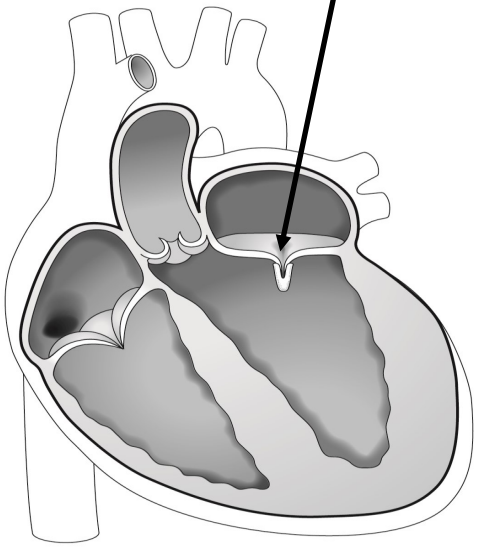
The procedure takes 1 to 2 hours and you will be asleep for most of this time. Once awake you will be helped by the recovery team.

See diagrams on the next page

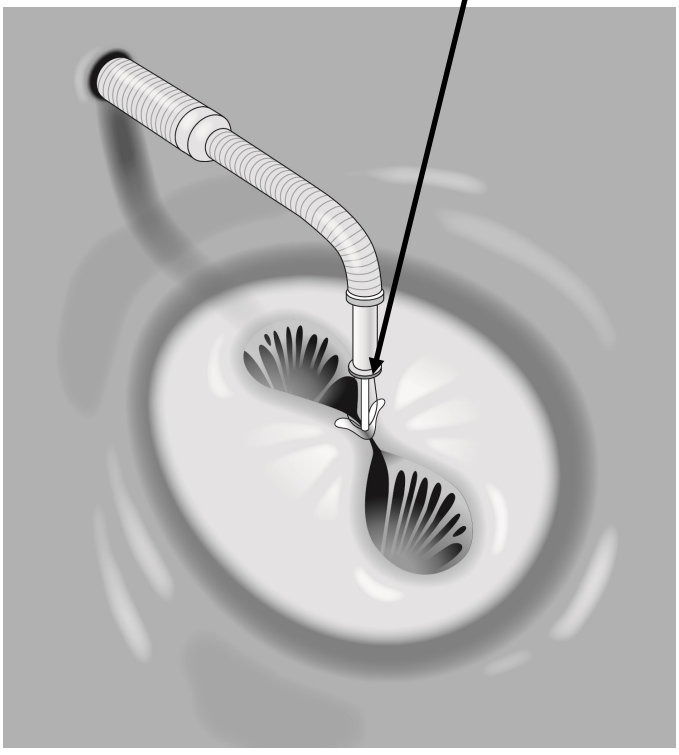
Clip to repair the leaky valve



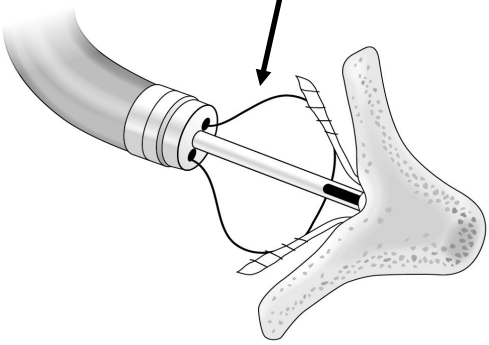
Clip attached to the valve



Close up after the repair



Repair device



After the procedure

- You will be taken to the recovery unit for observation.
- Once you recovered from the anesthesia your nurse from the cardiology ward will collect you from the recovery area where a brief handover is given
- When you return to the ward, the nurse will check your blood pressure, pulse and pulses in your feet (called 'pedal pulses'). An ECG (electrocardiograph) or heart tracing will also be done. These are all normal checks that are needed in case you start having any issues.
- You will need to lie flat for a few hours so that you do not start bleeding.
- If you have temporary loss of feeling (numbness) or weakness in your leg, special steps will be taken to make sure you are safe when you first get up.
- If you need to wee and your leg is numb, it may not be safe to walk to the bathroom. You will use a urinal or bedpan instead.
- You will also be connected to a drip - or IVI (intravenous infusion), that will be running for about 4 to 6 hours.

Tell your nurse immediately if you have

- a fever,
- chest pain,
- swelling at the groin
- pain in your groin or leg
- bleeding at your groin site.

If you have any specific worries about any of these issues, please talk to your consultant.

Before discharge

On the evening of the procedure your medications will be checked and started again.

Sometimes you will be asked to do a repeat scan of your heart (echocardiogram) before discharge.

Discharge

If there are no issues you will be able to go home 24 to 48 hours after your procedure. The doctors will speak to you about your results. You will need to have someone to drive you home.

You can go home when your doctor says it is okay.

Going home after the procedure

You should do as little as possible for 3 days this means,

- **no heavy lifting**
- **no heavy cleaning**
- **no heavy shopping**
- **no heavy gardening**
- You are told not to drive for 4 weeks. You do **not** need to contact the DVLA unless you hold a PSV/HGV license.
- The stitches are dissolvable so do not have to be removed. Please get your GP or practice nurse to check your wound if it becomes red or swollen.
- Slightly more common is the development of a painful bruise over the puncture wound in your groin. This is due to bleeding under the skin. If a painful lump does develop, especially if the groin becomes painful when walking, please ask for medical help.
- Bruising and a change to the original colour that looks bad (discolouration) above and below the groin, even down to the knee may start over the week after the procedure. This may look very ugly passing from a blue-purple colour in time to a yellow one. This is often not painful and is not serious. Paracetamol can be taken for minor pain.
- Avoid baths, hot tubs, or swimming pools for the first 5 days or until the wound is closed. Showers are okay after 24 hours, but do not let the spray hit the site.
- Avoid bending or squatting or any intense activity such as running, or lifting anything over 20 pounds for 1 week.
- Take short walks (5 to 10 minutes) 4 or 5 times a day and build up slowly.
- If there is any doubt or problem with your groin wound, within the 1st week of returning home, please contact your GP.
- You can go back to work when your consultant say it is okay.

There is a very small risk of the wound in your groin starting to bleed. If this happens

- do not panic but lie down on the floor (not the bed), where you are less likely to faint.
- ask a relative or friend to apply pressure with the flat of the fingers of both hands or a clenched fist over the groin wound for 30 minutes
- and ask someone to call 999.

You should get urgent medical advice if you feel unwell with after the procedure with symptoms of:

- Chest pain
- Dizziness
- Fainting
- Shortness of breath

Follow-up

When you leave hospital, an email will be sent to your GP. This will be explaining what you have had done and a list of your medications. After 2 to 3 months, you will have an ultrasound scan of your heart and see the cardiologist. The doctor will then decide about any future appointments.

Does transcatheter mitral valve repair cure mitral valve disease?

This procedure may relieve many of the symptoms of valve disease. Some patients may continue to need medications, even after a successful procedure.

Interpreters

Please tell a member of staff if you need an interpreter. We are committed to preventing discrimination and promoting equality and diversity.

Glossary of terms

Cardiac catheterisation: Something that is done to look at how well your heart is working. It is also to find out if you have disease of the heart muscle, valves or coronary (heart) arteries. During this test, doctors put a long, narrow tube (catheter) into a blood vessel in your arm or leg and guides it to your heart with the aid of a special X-ray machine. Doctors use contrast dye that they inject into your blood vessel through the catheter to create X-ray videos of your valves, coronary arteries, and heart chambers.

Catheter laboratory (Cath Lab): An examination room in a hospital or clinic. It has diagnostic imaging equipment used to picture the arteries of the heart and the chambers of the heart and treat any stenosis or abnormality found.

Contrast dye: this is a solution that radiologists use to see your organs and tissues more clearly in medical images such as X-rays, MRI and CT scan.

Electrocardiogram (ECG): A simple test that can be used to check your heart beat and electrical activity. Sensors attached to the skin are used to find the electrical signals produced by your heart each time it beats.

Echocardiogram (echo): An echocardiogram uses sound waves (ultrasound) to build up a moving picture of your heart and shows the structure and function of your heart valves and heart chambers. An echocardiogram takes around 20 minutes.

Haemodynamic support: Medications are used to keep your blood pressure and heart rate within the normal range.

Methicillin-resistant staphylococcus aureus (MRSA): An infection caused by a type of staph bacteria that has become resistant to many of the antibiotics used to treat ordinary staph infections.

Percutaneous: this is a method to check the inner organs through a needle puncture of the skin.

Radiologist: this is a doctor who is specially trained to explain diagnostic images such as x-rays, MRI and CT scans.

Transoesophageal echocardiogram (TOE): a test is sometimes done to take clearer pictures of the heart using a probe down your throat. You will be asked to lie down and swallow the tube. You may be given some drugs to help you relax before this is done.

More information

NICE guidance: Percutaneous mitral valve annuloplasty www.nice.org.uk/guidance/ipg352

British Heart Foundation: www.bhf.org.uk

The British Heart Foundation funds research into all heart and circulatory diseases and the things that cause them. The website contains a lot of helpful information, including:

- Tests for heart conditions
- Heart valve disease
- Caring for someone with a heart condition
- Cardiac rehabilitation

British Heart Valve Society: www.bhvs.org.uk

This is a group made up of medical staff with an interest in heart valve disease. It includes patient representatives. It is linked to the British Cardiovascular Society. It aims to improve the care of patients with valve disease by education and training programmes, literature and web information. It also aims to set standards of care for individuals, services and hospitals.

Heart Valve Voice: www.heartvalvevoice.com

Heart Valve Voice is a collection of people with real experiences of heart valve disease, including a group of experts in the field (cardiologists, cardiac surgeons, GPs), cardiac patient societies, and patients themselves. Leaflets include “Recovering from treatment”, “Post-treatment checklist”, and “10 surprising things you may not be able to do right after your treatment.”

Questions I would like to ask:

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Contact details

Structural Heart Valve Clinical Nurse Specialist: 07950 870853 (Monday to Friday, 8am to 4pm)

Structural Heart Valve Co-ordinator: 0116 258 3361 (Monday to Friday, 8am to 4pm)

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