

### What is a heart biopsy?

A heart biopsy (*endomyocardial biopsy*) is a test in which small tissue samples are removed from your heart and analyzed under a microscope for signs of damage. A long, thin tube called a biopsy catheter is inserted through a vein in your neck or groin and guided through your blood vessels to your heart. The test may be used to check for the cause of heart muscle disease (cardiomyopathy) after you have been diagnosed with heart failure but the standard tests have failed to find the cause.

In advanced cases of heart failure, a transplant to replace the damaged heart may be the only option. A series of heart biopsies will be done after a [heart transplant](#) to check for signs that your body is rejecting the transplanted organ.

### Who might have a heart biopsy?

Heart biopsies are not routinely done, but your doctor may request one if she or he suspects a disease that cannot be detected with regular tests, or if your heart failure is rapidly getting worse even with treatment.<sup>1</sup>

If you have had a heart transplant, you will undergo routine heart biopsies to check for any signs that your body is rejecting the transplanted heart.<sup>2</sup>

### How do I prepare for a heart biopsy?

You should not eat or drink for 6 to 8 hours before the test. You will be asked to remove all your clothing and jewelry and put on a hospital gown.

Before you have a heart biopsy, be sure your doctor knows if you:

- Are allergic to any medications
- Are allergic to the iodine dye used in the test
- Have diabetes
- Have a history of bleeding problems or are taking blood-thinning medicines
- Have a history of kidney problems
- Have asthma
- Are breastfeeding (you should not resume doing so until the dye has been cleared from your body, about 24 hours)

### What happens during a heart biopsy?

The day of the procedure you will be taken to a procedure room called a catheterization lab or biopsy suite, where you will lie on an X-ray table. You will be hooked up to an [ECG](#) with small sticky patches on your arms and chest so that your heart rate can be monitored. Your pulse, blood pressure, and breathing will also be monitored during the test. You will remain awake during the entire procedure, but you may be given medicine to help you relax.

Usually, the biopsy catheter (a long, thin tube used to access your heart and take samples) will be inserted through a vein in your neck, although the groin may also be used. The area will be cleaned, shaved, disinfected, and numbed with a local anesthetic. A needle will be used to enter the vein, and a wire will be inserted through the needle. A small nick will then be made in your skin and an *introducer sheath* will be slid over the wire. The sheath is a short, hollow tube that provides an easy path for the catheter from outside your body to the inside of your vein. The biopsy catheter, called a *bioptome*, is inserted via the sheath and guided through your vessels using moving X-ray images until it reaches the inner wall of your heart.

Once the bioptome is in position, tiny jaws at the tip will open and close to snip a small piece of heart muscle; the process is then repeated 5 or 6 more times to get more samples. The samples are roughly the size of the head of a pin. After the samples have been collected, the bioptome and sheath are removed and pressure is applied at the insertion site to stop the bleeding. The insertion site is then covered with a small bandage that you can remove later.

The entire procedure takes about an hour.

### **What happens after a heart biopsy?**

After the test is completed, you may need to stay in the hospital for 3 to 4 hours for observation to make sure the insertion site heals properly. The insertion site will be covered with a small bandage that you can remove after 24 hours. There may be some swelling and bruising at the insertion site, but it should go away on its own. If bleeding occurs at the site, apply gentle pressure to it for about 10 minutes; if the bleeding doesn't stop, go to the emergency room.

Your doctor will provide you with additional care instructions. Because of the medication given to you to help you relax, you should have someone with you to take you home.

### **What do the results of a heart biopsy mean?**

A negative test result means that the heart muscle tissue either looked normal or no identifiable cause of the heart failure was found.

A positive biopsy result means the test found a possible cause of heart failure, such as inflammation due to an infection or the presence of an abnormal protein in the heart.

A heart biopsy done to monitor rejection after a heart transplant will look at the number of rejection cells present in the tissue samples to determine how well your body is accepting the transplant.

### **What are the risks of a heart biopsy?**

A heart biopsy is generally a safe procedure when performed at experienced medical centers. However, there is always some risk of damage whenever a catheter is introduced into your blood vessels and heart. Between 1% and 2% of patients who undergo a heart biopsy may experience bleeding at the puncture site, creation of a small hole (perforation) in the heart wall, irregular heart rhythms, or leaking air around the lungs that causes them to collapse.<sup>1, 3</sup>

Since the procedure uses X-rays to guide the catheter into the heart, some exposure to radiation is involved. The amount of radiation you are exposed to during diagnostic tests is considered safe, and the technicians are trained to minimize your radiation exposure. For information on radiation safety, see the [National Institutes of Health Radiation Fact Sheet](#) .

### References

1. Cooper LT, Baughman KL, Feldman AM, et al. The role of endomyocardial biopsy in the management of cardiovascular disease: a scientific statement from the American Heart Association, the American College of Cardiology, and the European Society of Cardiology. Endorsed by the Heart Failure Society of America and the Heart Failure Association of the European Society of Cardiology. *J Am Coll Cardiol.* Nov 6 2007;50(19):1914-1931.
2. Heimansohn DA, Robison RJ, Paris JM, 3rd, Matheny RG, Bogdon J, Shaar CJ. Routine surveillance endomyocardial biopsy: late rejection after heart transplantation. *Ann Thorac Surg.* Nov 1997;64(5):1231-1236.
3. Deckers JW, Hare JM, Baughman KL. Complications of transvenous right ventricular endomyocardial biopsy in adult patients with cardiomyopathy: a seven-year survey of 546 consecutive diagnostic procedures in a tertiary referral center. *J Am Coll Cardiol.* Jan 1992;19(1):43-47.

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