



OVERVIEW

The heart has a natural pacemaker called the sinus node, and several back up pacemakers, which produce electrical impulses to stimulate the heart to beat. An artificial pacemaker may be needed if these impulses are disrupted.

Depending on your condition, you may need a small generator device attached to one to three flexible, insulated wires (leads) placed in one or more chambers of your heart. These wires deliver the electrical pulses to maintain normal heart rate and/or rhythm. There are **four** primary categories of implantable devices: pacemakers, implantable cardioverter defibrillators (ICD), biventricular pacemakers or ICD's, and **lead-less pacemakers**. A lead-less pacemaker is a special type of pacemaker that is inserted into the heart using a tube placed in a large vein in the groin area.

PREPARATION

After your physician determines that a pacemaker or ICD is necessary, risks and benefits of the procedure will be discussed. Depending on your lifestyle, location of the device may be on the right upper chest or left upper chest (usually the opposite side from your dominant hand). **With a lead-less pacemaker, the entire device goes inside your heart.**

Your physician will let you know if you need to follow any other special instructions before or after your procedure. In some cases, you'll be instructed to stop taking blood thinning medications before your procedure. Let your physician know if you take any blood thinners. You will need to stop eating and drinking the night before your procedure.

If you have any type of implanted device, such as a spinal stimulator, or pain pump, talk to your doctor to see if you need to take any special precautions.

RISKS

Insertion of implantable devices carries a risk of complications, including:

- Bleeding or infection at the site where your device was inserted
- Damage to your blood vessels as the leads are guided to your heart
- Puncture of your heart
- Damage to your heart valves
- **Collapsed lung**
- Blood clots in your legs or lungs (venous thromboembolism)
- Stroke or heart attack
- Damage to your kidneys from dye used during the procedure
- Death in rare cases

Great care is taken to reduce these risks. Discuss the risks and benefits of implantable devices with your doctor to understand if this procedure is right for you.

DURING THE PROCEDURE

Insertion of the implantable device is performed in the hospital. You will be provided with a sedative through a peripheral intravenous line to help you relax just prior to the procedure. In some cases, general anesthesia may be necessary to place you in a sleep-like state, but you will make this informed decision beforehand.

After numbing the area of the chest where the device will be implanted, a sheath (tube) is inserted over a needle in the subclavian vein, and a small incision is made to create a pocket for the generator. Your physician will thread the leads through the sheath and guide them to several places within your heart and then attach the leads to the generator. Contrast dye may be injected into the catheter, which allows your blood vessels and heart to be visible using X-ray imaging. Special equipment is used to determine the leads are in position prior to closing the incision. The incision is usually closed with dissolvable sutures, and the skin is **closed** with **surgical glue**.

The operation takes **one to three** hours to complete, but complicated procedures may take longer. There should be no discomfort during the procedure.

AFTER THE PROCEDURE

Following your operation, you will rest with a sling on the operative side for the first 12-24 hours. Your blood pressure, heart rate and rhythm will be monitored to check for complications of the procedure.

The following morning the device will be interrogated to verify normal function. A nurse practitioner will review the device interrogation, evaluate you, and recommend your discharge home. Rarely, patients require repeat surgery to reposition a lead. Plan to have someone else drive you home after your procedure.

RESTRICTIONS

If a bandage was applied over the incision site, do not remove it. Keep the incision dry until the first post-operative visit. **Do not shower or soak in the tub for the first week after the procedure. Afterwards, you may shower but continue to keep the surgical site dry.** This is best achieved using "Glad Press N' Seal" saran wrap found anywhere saran wrap is purchased. The bandage will be removed at the first office visit.

Driving is discouraged the first 2 weeks. Lifting the arm over the shoulder height, heavy lifting, or any activity that could over extend the arm is not recommended for 6 weeks while the leads are healing into position.

The first office visit will be with a nurse and the device will be interrogated to confirm continued normal device function. At this time, additional instructions will be provided regarding bathing and incision care.

CLINICAL TRIALS

To see if you are a candidate for the latest methods, ask us if there are new treatments, testing or interventions to manage your condition.