



Procedure Information – Cardiac Resynchronization Therapy

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Name: Sex/Age:
Doc. No.: Adm. Date:
Attn. Dr.:

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Patient No.: PN

*Please fill in /
affix patient's label*

Introduction

Heart failure patients have symptoms of shortness of breath and body swelling caused by decreased pumping of blood from the heart. Initial management includes treating underlying cause, adopting a healthy lifestyle and taking medications. Patients with persistent symptoms despite the above treatments may consider cardiac resynchronization therapy (CRT). It is essentially an implantable cardiac pacemaker which consists of a battery-powered generator and leads connecting the generator to the patient's heart. But there is a special lead placed in the left heart, so that the device can stimulate both the left and right heart in a coordinated (synchronized) manner. The synchronized contraction will increase pumping of blood from the heart.

Importance of Procedure

Recent studies have shown that in selected groups of patients, CRT improves heart failure symptoms, quality of life, exercise capacity and heart function. The death rate from the disease may also be reduced. If you refuse this procedure, you may have persistent or worsening heart failure symptoms and the result may be detrimental. Alternative treatments include continuation of medical therapy or more invasive surgical treatment (such as cardiac transplant)

The Procedure

1. This invasive procedure is performed under local anesthesia in a cardiac catheterization centre. You are alert during the procedure, but we may give you sedation to calm you down.
2. Electrodes are adhered to the chest to monitor the heart rate and rhythm. Blood oxygen monitor through your finger tip will be set up. Measurement of blood pressure from your arm will be taken during the examination.
3. Skin disinfection will be performed and a small skin incision (about 3-5 cm long) will be made under your left (sometimes right) clavicle.
4. Contrast may be injected intravenously to visualize the veins in your arm and needle puncture under the clavicle may be required to obtain access to your vein.
5. 3 leads will be advanced to your heart chambers through your vein under X-ray guidance. One lead is placed in the right atrium and one in the right ventricle. A special lead is implanted in a vein called the coronary sinus which lies on the surface of the left ventricle. Contrast injection is required to show this vein.
6. The generator will be connected with the lead(s) and implanted in a pocket created under the skin or muscle.
7. The wound will be closed with suturing material and covered with pressure dressing.
8. The procedure usually takes around 3-4 hours.



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Risks and Complications

- Major complications:
 - Perforation of heart chambers (<1%)
 - Death (<1%)
- Other potential risks:
 - Wound infection (<1%)
 - Air embolism
 - Pneumothorax
 - Haemothorax
 - Contrast allergy
 - Wound haematoma (<1%)
 - Vein thrombosis (<1%)
 - Vascular injury
 - Special risks related to the device include lead dislodgement, insulation break or fracture, and pocket erosion.
 - The special left ventricular lead can cause damage to coronary sinus or cardiac veins (6%), and is more prone to dislodgement (9%).

Before the Procedure

1. Your doctor will explain to you the reason, procedure and possible complications. You will need to sign a consent form.
2. Preliminary investigations including blood tests, chest X-ray, electrocardiogram and echocardiogram of the heart will be performed.
3. Blood thinning drugs or metformin (for diabetes) may have to be stopped several days before the procedure. Steroid will be given if contrast injection is necessary and there is history of allergy.
4. An IV infusion will be set up and you need to fast for 4-6 hours.
5. Shaving and disinfection near the implant site may be required.
6. If you are a female, please provide your last menstrual period (LMP) and avoid pregnancy before the procedure as this procedure involves exposure to radiation.

After the Procedure

A. Hospital care

1. After the procedure, you will be kept on close monitoring in the ward.
2. Nursing staff will check your pulse and wound regularly.
3. You should inform your nurse if you find blood oozing from the wound site.
4. Mild wound pain is common. You may take simple analgesic to relieve pain.
5. Antibiotics will be given for a few days to minimize the risk of wound infection.
6. Before discharge, CRT programming may be performed.
7. You may be discharged from hospital several days after the CRT implantation.



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B. Follow up

1. The wound should be covered with light dressing. Please keep the wound site clean and avoid making the dressing wet during a bath. Always change dressing if wet.
2. You may need to come back to the ward or clinic for suture removal 1 week after the procedure. You may remove the dressing 2-3 days after suture removal.
3. Please avoid lifting the affected arm for 1 week, and avoid vigorous arm movement in the first month after the procedure.
4. You will be arranged to attend CRT clinic for regular CRT analysis, re-programming and battery power assessment. To maximize the benefits of CRT, the settings will be optimized with the help of echocardiogram.
5. Please carry your CRT identity card at all times.
6. Follow your doctor's instructions or refer to the information booklet from the CRT company to minimize the risk of CRT malfunction due to electromagnetic interference. In general, strong electro-magnetic field or radiofrequency signal will interfere your pacemaker. Please keep a distance of >15 cm (6 inches) from an active mobile phone. Household electrical or electronic appliance usually does not affect pacemaker.
7. CRT generator will need to be replaced several years later when the battery is depleted.

Remarks

This is general information only and the list of complications is not exhaustive. Other unforeseen complications may occasionally occur. In special patient groups, the actual risk may be different. Should a complication occur, another life-saving procedure or treatment may be required immediately. For further information please contact your doctor.

Reference

Hospital Authority – Smart Patient Website

I acknowledge that the above information concerning my operation/procedure has been explained to me by Dr. _____. I have also been given the opportunity to ask questions and receive adequate explanations concerning my condition and the doctor's treatment plan.

Patient / Relative Name

Signature

Relationship (If any)

Date