

## Catheter Ablation

### **Introduction**

You have read the information on Electro-Physiology Study (EPS), or you may already have EPS performed. Catheter ablation is a therapeutic procedure to treat abnormal heart rhythm (arrhythmia). It has been used since 1990 to treat cardiac arrhythmia. In general, there are 2 types of energy delivered during catheter ablation, namely radiofrequency ablation and cryoablation. Based on the type of abnormal heart rhythm, and the site intended to ablate, your doctor will choose the appropriate form of energy. This energy is released at the tip of the catheter to the abnormal heart tissue, leading to a minor injury area, within which the conduction property will be lost. This aims at successful cure of the arrhythmia.

### **Importance of Procedure**

Successful ablation can cure the arrhythmia and you can avoid taking long term anti-arrhythmic medications. If you refuse this procedure, you may experience recurrent arrhythmic attacks. During an arrhythmic attack, you may have palpitation, chest discomfort, dizziness or vertigo. This may result in heart failure or even sudden death. Alternative treatment includes taking long term medications.

### **Pre-Procedure Preparation**

- You may be required to stop some or all of the anti-arrhythmic drugs before the procedure.
- If you experience severe symptom during this period (e.g. palpitation or fainting attack), please seek immediate medical attendance at nearby clinic or Accident & Emergency Department.
- You need to sign an informed consent after explanation from your doctor.
- You need to undergo investigations like blood tests and electrocardiogram.
- An intravenous infusion will be set up and you need to fast for 4-6 hours.
- Shaving and disinfection near the puncture site may be required.
- 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.

### **The Procedure**

- 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.
- 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.

- Small wounds are made over the groin, under the clavicle or around the neck for access to arteries or veins.
- Catheters are advanced to the heart under X-ray guidance.
- Sometimes your doctor may need to perform transseptal left heart catheterization by using special needle and instrument to create a small hole in the interatrial septum. This procedure enables the passage of catheters from the right atrium to the left atrium.
- At specific sites inside the heart, we will record electric information; we then deliver tiny electric current to alter your heart rate and try to trigger arrhythmias.
- You may experience discomfort when your heart is being excited to certain rate; when an induced arrhythmia is persistent, we may use direct current cardioversion to convert it.
- Energy will be delivered to the target site for up to 1-2 minutes via special catheter. You may experience slight chest discomfort during delivery of energy.
- After ablation, electrophysiology study will be carried out to confirm the success of the procedure.
- The duration of the procedure could last from 2 hours to over 6 hours depending on the nature and complexity of the arrhythmia.
- You will be sent to the ward for observation for another 12-24 hours.

### **Post-Procedure Care**

- After the procedure, catheters will be removed. The wound site will be compressed to stop bleeding.
- Nursing staff will check your blood pressure, pulse and wound regularly.
- Bed rest may be necessary few hours. In particular, please do not move or bend the affected limb. Whenever you cough or sneeze, please apply pressure on the wound with your hand.
- You should inform your nurse if you find blood oozing from the wound site.

### **Post-Procedure Follow Up**

- Usually, you can be discharged the day after the procedure.
- The wound will be inspected and covered with light dressing. Please keep the wound site clean and change dressing if wet. Showers are allowed. You may remove the dressing 2 days later.
- Please avoid vigorous activities (household or exercise) in the first few days according to doctor's advice. Bruising around the wound site is common and usually subsides 2-3 weeks later. If you notice any signs of infection, increase in swelling or pain over the wound, please come back to the hospital or visit a nearby Accident and Emergency Department immediately.

- Usually, your doctor has explained to you the results of the procedure before discharge. Should you have further questions, you and your close relatives can discuss with your doctor during subsequent follow-up.

### **Risks and Complications**

- The procedure carries certain risks.
- The risk depends on the type of abnormal heart rhythm to be treated and the site of treatment. The following quoted risk is based on the treatment of supraventricular tachycardia (not including atrial fibrillation, premature ventricular complex, ventricular tachycardia). The risk of surgical procedures for other abnormal rhythm generally carry higher risk.
- Major complications account for about 0.1-0.2%. These include damage to blood vessels and the heart that may need surgical intervention, and death (0.2%) due to uncontrollable complications.
- Minor complications (about 4%) include infection and bleeding at puncture site, blockage of blood vessel by clot, and arrhythmia.
- About 1-3% (depending on the distance of ablation site and normal conduction pathway) of patients may need permanent pacemaker implantation due to damage to the normal conduction pathway.
- Procedure may not be successful in treatment of the arrhythmia in about 3-10% of cases.
- Recurrence of arrhythmia despite a successful ablation is about 3-15%.
- Other potential risks include air embolism resulting in death or neurological damage, retained foreign body such as guide wires.
- Device deployment complications include device dislodgement, device entrapment and wire fracture

### **Fees and Charges**

- This procedure involves the use of consumables which are 'Privately Purchased Medical Items'. Please make financial arrangement before the procedure.
- You need to pay an estimated deposit. The final charge, however, depends on the complexity of the procedure and range of consumables required.
- After the procedure, you may need to pay the balance to or collect refund from the account office.
- Please note that the procedure may need to be staged or re-do for various reasons. Separate charging is required for each procedure.
- If you have financial difficulty, you can apply for assistance through our medical social worker.

## Remarks

- It is hard to mention all the possible consequences if this procedure is refused.
- For complex arrhythmia ablation, the successful rate and complication rate might be different. Please consult your physicians.
- The list of complications is not exhaustive and other unforeseen complications may occasionally occur. The risk quoted is in general terms. In special patient group, the actual risk may be higher.
- Should a complication occurs, another life-saving procedure or treatment may be required immediately.
- If there is further query concerning this procedure, please feel free to contact your nurse or your doctor.

## Reference

1. Page RL, Joglar JA, Caldwell MA, et al. 2015 ACC/AHA/HRS Guideline for the Management of Adult Patients with Supraventricular Tachycardia. J Am Coll Cardiol. 2016;67(13):e27.
2. 2019 ESC Guidelines for the management of patients with supraventricular tachycardia. The Task Force for the management of patients with supraventricular tachycardia of the European Society of Cardiology (ESC): Developed in collaboration with the Association for European Paediatric and Congenital Cardiology (AEPC). European Heart Journal, Volume 41, Issue 5, 1 February 2020, Pages 655–720