EP Study and Ablation of: Supraventricular tachycardia's

A guide for patient and families

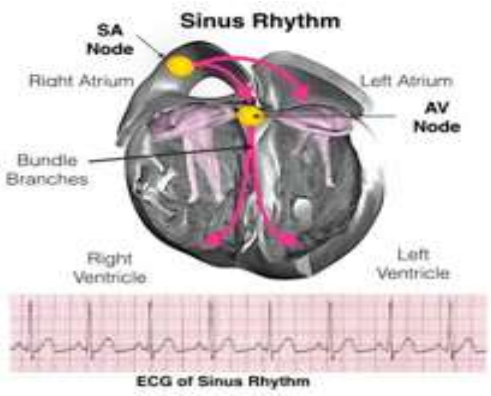
This document outlines:

- What is an EP Study
- What is Supraventricular tachycardia (SVT)?
- What is Atrial Tachycardia
- What is Wolff-Parkinson-White (WPW)
- What to expect before, during and after your ablation.

Normal Rhythm

The heart has four chambers, the two top chambers (the atria) and the two bottom chambers (the ventricles). The heart is a pump that responsible for maintaining blood supply to the body.

Normally, this electrical impulse begins in the right upper chamber of the heart in a place called the sino-atrial (SA) node. Then travels to the right and left atria causing them to contract evenly. The impulse then travels through the atrio-ventricular (AV) node, which is the only electrical connection between the top chambers and the bottom chambers. The impulse then splits into two branches which allows the electrical signal to spread evenly to the left and right ventricles at the same time. This causes them to contract and pump blood to the lungs and body.



What is Supraventricular tachycardia (SVT)?

SVT is a rapid heartbeat originating from top chamber of the heart which causes rapid signals to be conducted to the ventricles. When in SVT, heart rate is usually over 130 beats per minute and often over 200 beats per minute. Often these episodes can occur at any time of day and without a trigger. During an episode, symptoms might include:

- Dizziness
- Shortness of breath
- Sweating
- Chest pain
- Anxiety.

Is SVT dangerous?

In majority of the cases it is not life threatening or dangerous. Patients can feel unwell during an episode which should resolve once they are back in a normal rhythm.

Types of SVT

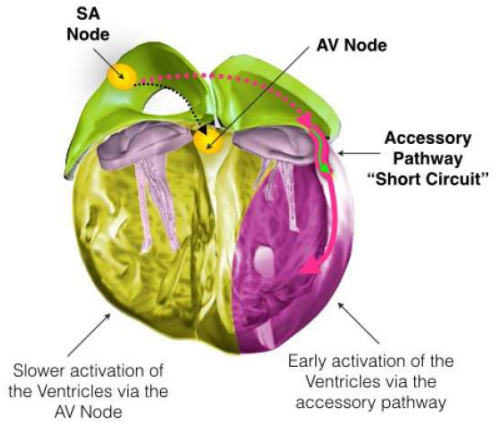
1. AV Nodal Re-entry Tachycardia (AVNRT)

This is the most common form of SVT. An abnormal short circuit occurs near the AV node.

Instead of a single AV node between the top and bottom chambers, there is a second connection that is abnormal. As a result of having 2 connections, a short circuit can occur.

2. Wolff Parkinson White Syndrome

Patients with WPW have an accessory pathway that acts as a short circuit to the AV node which means the ventricles are activated much earlier than in the normal situation. The presence of the extra pathway can create a short circuit.



3. Atrial Tachycardia

There is an extra abnormal origin of the electrical impulse from a small area in the atria other than the SA node where the cells fire too rapidly.

What is an EP Study and catheter ablation procedure?

This is a low risk procedure which allows doctors to study your abnormal heart rhythm under controlled conditions and diagnose your particular heart rhythm issue (arrhythmia).

It is performed by using electrical techniques to stimulate the heart and induce your arrhythmia (short-circuit).

By identifying where the arrhythmia is coming from the doctor can go on and perform the next step of the procedure – the radiofrequency ablation (RFA).

What is radiofrequency ablation (RFA)?

Radiofrequency is a low power, high frequency energy that causes a tiny region of the heart to increase in temperature, thus ablating a small area of abnormal tissue.

What is the success rate of the procedure?

The success rate of the procedure depends on which type of SVT is present but is usually approximately 95% to 98%. The risk of tachycardia returning or recurring after an apparently successful procedure is approximately 1% to 2%.

What are the risks of radiofrequency ablation?

Radiofrequency ablation procedures are performed on a daily basis at the Royal Melbourne Hospital. It is a common and very low-risk procedure.

The worldwide complication rate for Radiofrequency ablation procedures is less than 0.5%. Although most people undergoing Radiofrequency ablation do not experience any complications, you should be aware of the following risks:

- Local bleeding, blood clot or haematoma (blood collection) - this may occur at the catheter insertion site.
- Rapid abnormal heart rhythm - this may actually cause you to pass out for a very short period of time and in some cases a small

electric shock may be required to restore your normal rhythm.

- Perforation or damage - very slight chance that this may occur to either a heart chamber or to the wall of one of the arteries.
- Heart block - depending on the location and type of your abnormal rhythm being ablated, there is a chance of damage occurring to the heart's normal electrical system (the AV node). This may be temporary, but permanent damage would result in a permanent pacemaker being inserted. This is extremely rare.

Major complications - stroke, heart attack, death are also extremely rare. More than 2000 patients with SVT have been successfully treated at The Royal Melbourne Hospital during the last ten years by radio-frequency ablation, and no major complications have occurred.

Do I need to have this procedure?

There are 3 main options for people with SVT.

1. No treatment at all - Because SVT is a benign condition, for those people having infrequent and short-lived episodes that are not troublesome one option is to simply live with it.

2. Medication - For people who do not wish to continue having episodes a second option is to take regular daily medication. Medications reduce the frequency and severity of episodes but do not cure the problem.

3. Radiofrequency Ablation - This is a procedure that aims to cure the condition

What happens during an EP Study or Radiofrequency ablation procedure?

The procedure may be performed under local anaesthetic with sedative medication or under general anaesthetic.

The doctor will inject the anaesthetic to the area in the groin where the catheters are to be placed. After that, you may feel pressure as the doctor inserts the catheters but you should not feel pain. If there is any discomfort you should tell the nursing staff so that more local anaesthetic and sedative medication can be given.

The catheters are positioned in your heart using X-Ray guidance. Once the catheters are in place you may feel your heart being stimulated and usually your abnormal heart rhythm will be induced. The type of abnormal rhythm has been identified and the abnormal tissue localised, the radiofrequency ablation will be applied to this spot. This may cause a transient warm discomfort in the chest.

The radiofrequency ablation procedure average duration is approximately 1 to 2 hours.

What to expect before the procedure

1. You will receive a letter/email from the booking office outlining:

- Procedure date and details
- Pre-admission telehealth date
- Pathology request and instructions

2. Please ring 9342 8583 to contact the 'cardiology booking office' to officially accept the dates you have been given.

3. You will receive a phone call from one of the nurses before your Telehealth Pre-Admission Clinic appointment. This is to get you ready for your upcoming appointments and ask you a few questions.

Questions that you will be asked include:

- Go through your list of medications and create a medication plan

- What is the name of the pathology lab/company that you had your bloods taken with?
- Who will be your support person to drive you home?
- COVID-19 screening questions.
- Answer any questions you may have.

4. Telehealth Pre-admission clinic (PAC) appointment, you will log on to Telehealth www.theRMH.org.au/telehealth at your nominated date and time. This appointment will take 1-2 hours.
If you are unable to do telehealth we suggest you ask a family/friends/GP to help if needed.

At PAC the doctor will go through:

- Consent
- Medication
- Past medical history
- Details of the procedure
- Discuss blood results

At PAC the nurse will go through:

- What to expect pre & post procedure
- Where to arrive on the day of procedure
- Fasting instructions
- Your height and weight
- Preparation of site i.e. shave etc
- Transport details and support person
- Discharge Planning – ensuring you have correct medication and support.

What to expect day of procedure

1. Before you leave home:

- Please pack a small bag as there is limited amount of cupboard space at the bedside.

- Toiletries & a change of clothes for the next day.
- There is a TV that can be hired for a small fee.
- Ensure you have followed instructions to shave your groin area.
- Fast from midnight if your admission time is 7am.
  - Fast from 7am if your admission time is 10am
  - No food, No drinks after these times
- Please take the correct medications at home with a sip of water. This should be strictly as per your medication plan that was set in the pre-admission clinic appointment.

2. While in Hospital:

- Please arrive 15 minutes before the admission time to allow for the COVID screening questions at the main entrance.
- Arrive at 2SE at your specified admission time to check in with the ward clerk.
- Nurse will take you through to the ward where you will get into a hospital gown and fill out relevant paper work to get you ready for your procedure.

What to expect – After the procedure

After the procedure you will be moved to the recovery area. When you are completely awake you will be transferred to the cardiology ward.

- You will have to lie flat for approximately 4-6 hours after the procedure to avoid any bleeding from the vein in the groin. It is important to keep

your leg straight and your head relaxed on the pillow.

- You may have a compression clamp on the groin area which stays in place for 2-6 hours. When removed, a small clear plastic dressing will be applied to the wound. For patients who experience difficulty passing urine while lying flat, a urinary catheter may be inserted.

How long will I be in hospital?

- The type of ablation and the time your procedure is completed will determine whether you need to stay overnight in hospital or be discharged on the same day. Patients having their procedure in the morning can frequently go home later the same day.

- You should make a plan to have someone available to pick you up late afternoon / early evening in case you are discharged on the same day. You should also have a plan that someone is also able to pick you up the next day around 10am. We cannot always predict whether you will need to stay overnight, so it is suggested you are prepared for both scenarios.

- If you live in the country / interstate you should plan to stay in Melbourne with your support person the night of your procedure

- Before going home, ensure you have the correct medication plan. Some patients need to have a blood thinning injection medication called Clexane for a few days after the procedure. We will provide you with this medication and instructions on how to use it.

- If you need travel forms signed or medical / carer's certificates you must get these before you leave the hospital.

What to expect – When I get home

- Do not drive for 3 days after the procedure.
- Normal activities can be resumed one week after discharge & gradually increase exercise over the following week. In general, avoid strenuous exercise for 2 weeks.
- Avoid heavy lifting and vigorous physical activating such as gym, pushing and pulling for 2 weeks
- It is normal to have bruising and feel a pea sized lump in the groin.
- Some people get mild discomfort after the procedure
- If you have a 'light job' where you sit most of the time, then 1 week of leave should be sufficient. However, if you have a 'heavy job' where you stand a lot and do lifting, pushing or pulling, then you may require 10-14 days.
- People who have had a general anaesthetic you are likely to have a mildly sore throat.
- After an ablation some people can feel the sensation that their heart is about to start racing but doesn't quite get there. This is usually short lived.

If your groin bleeds

1. In the unlikely event that you develop some bleeding or swelling in the groin after discharge, make a fist or roll up a face washer and apply firm pressure to the site for 10 minutes. If someone is with you, get them to apply the pressure.
   - If the bleeding stops, see your GP as soon as possible to assess the site.
   - If bleeding continues, continue to apply pressure and Call 000

2. If you develop new shortness of breath, chest discomfort, fast and irregular heartbeats or dizziness you must seek medical attention or call an ambulance.

Finally,

For animations/videos of SVT ablation and further learning, please visit the cardiovascular library on our website: www.MelbourneHeartRhythm.com.au and search Learn about – our procedures – supraventricular tachycardia.

The Cardiology Team, RMH