



SUPRAVENTRICULAR TACHYCARDIA

Patient Information Booklet

SUPRAVENTRICULAR TACHYCARDIA (SVT)

SVT is an abnormal rhythm of the upper pumping chambers of the heart.

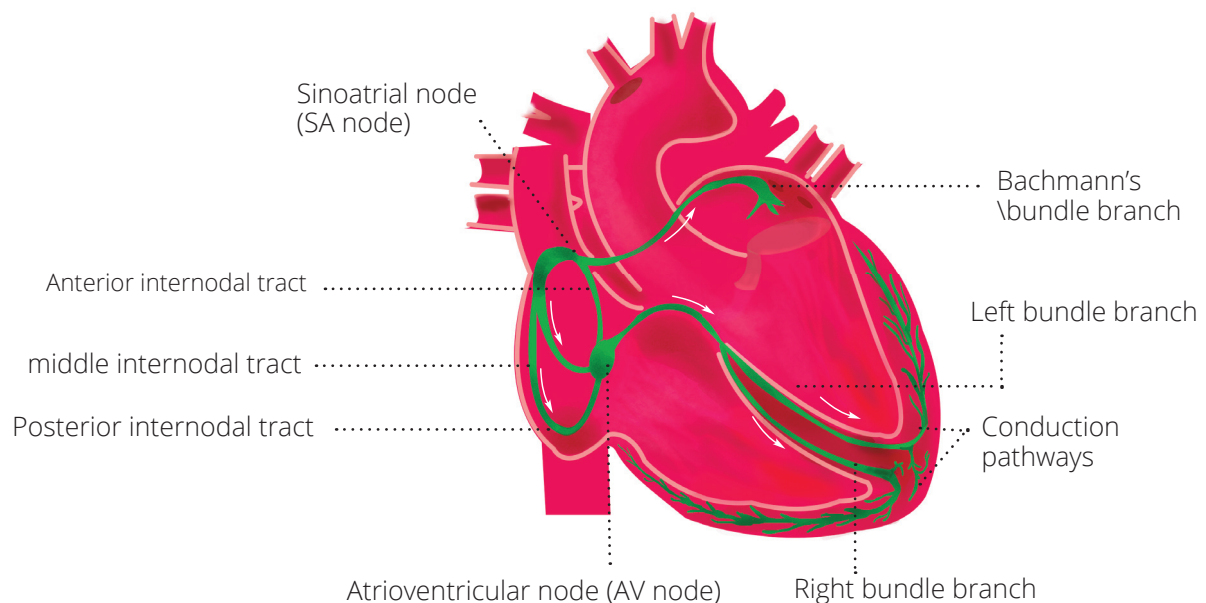
The heart usually beats around 40 - 90 beats per minute at rest and increases with exercise. A heart rate faster than 100 beats per minute is considered tachycardia. During SVT the heart beats so fast that the heart muscle cannot relax between contractions. This inefficient contraction of the heart decreases cardiac output (blood and oxygen circulation) and may cause blood pressure to drop.

SYMPTOMS

Symptoms may come on suddenly and may go away without treatment. They can last a few moments, minutes, hours or until treated. A patient can experience the following symptoms which are caused for a reason other than stress, exercise or emotion.

- Light-headedness
- Dizziness
- Chest pain
- Pounding heart
- Rapid breathing
- Shortness of breath
- Fainting episodes (syncope which is rare)

CARDIAC ELECTRICAL PATHWAY

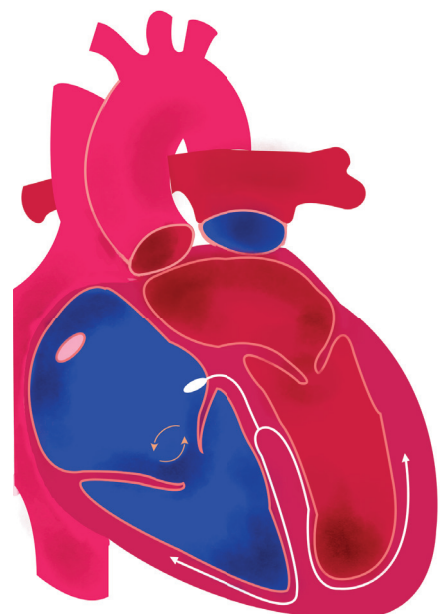


The heart is usually controlled by the sinoatrial node (SA node). Electrical impulses travel from the SA node to the atrioventricular node (AV node) before travelling down fibres which activate the ventricles. Sinus rhythm describes a normally beating heart.

SVT is caused when the electrical impulses take a different pathway. There are three different types of SVT:

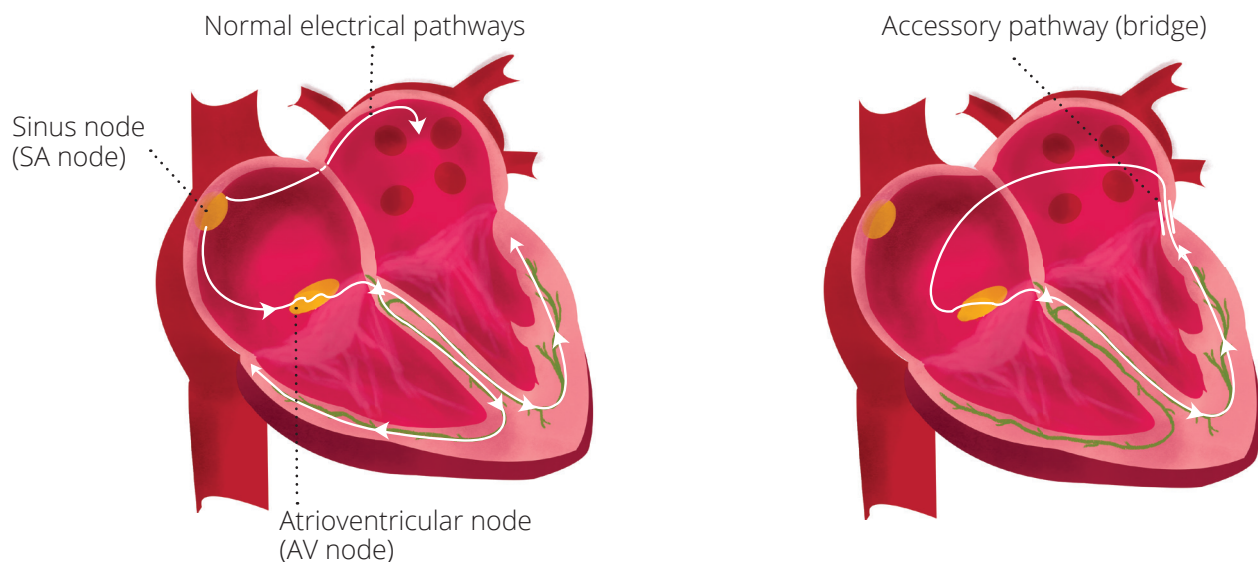
1. AV Junctional Re-entry Tachycardia (AVJRT)

Sometimes referred to as AV Node Re-entry Tachycardia (AVNRT), this type of SVT is caused when the electrical impulse travels through a pathway close to the AV node using extra fibres in and around the AV node. The electrical impulse finds its way back into the atria, upsetting the heart's natural rhythm.



2. Accessory Pathway

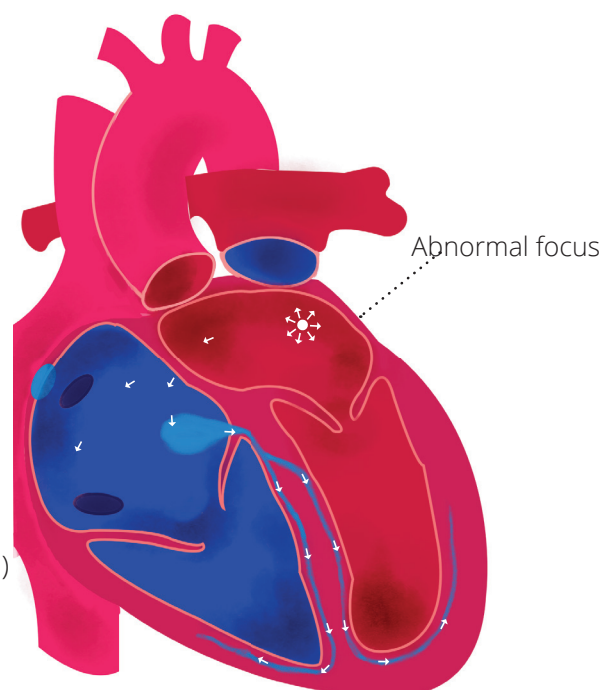
This type of SVT is caused as a result of electrical conduction via extra fibres between the atria and the ventricles. These extra fibres create an unnecessary additional connection between the atria and the ventricles. This pathway may not only cause the ventricles to contract prematurely, but also at times allows the electrical impulse to travel back to the atria, upsetting the hearts natural rhythm.



3. Focal

This type of SVT occurs when one or more localized regions in the atria develop the ability to fire rapidly on their own. These are also called ectopic foci and they can upset the hearts natural rhythm.

Focal Tachycardia
(Illustrated in the left atrium)



TREATMENT

SVT can be found in people of all ages. Most people who experience SVT live a normal life without restrictions. SVT usually occurs with stretches of normal rhythm in between. In general SVT is not life threatening, however episodes should be treated or prevented.

Episodes of SVT can be treated with medication (anti arrhythmic drugs and AV nodal blocking agents), radio frequency ablation or cryo ablation. In some patients these episodes can be prevented using vagal manoeuvres (physical manoeuvres involving the vagus nerve).

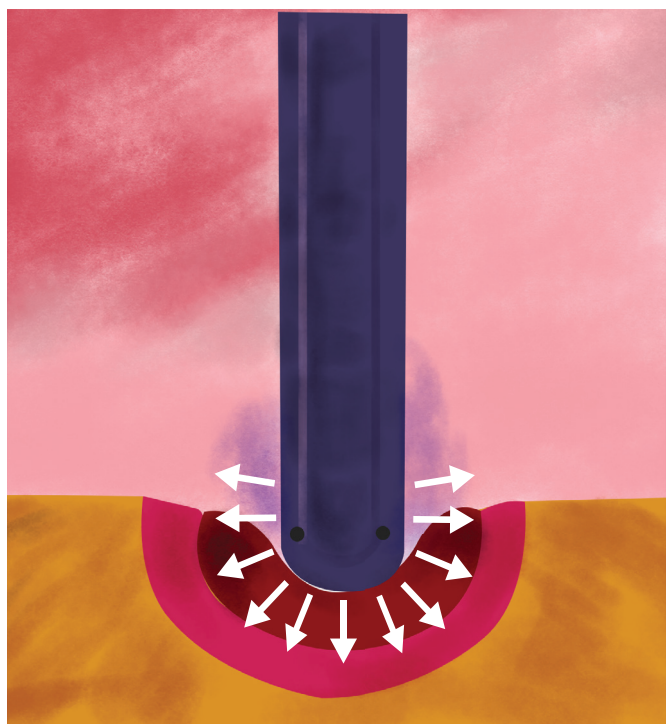
Radio Frequency Ablation

Radio frequency ablation for SVT is a curative treatment available in the catheterization laboratory (cath lab). The aim of this procedure is to locate and create a small area of scar tissue in the abnormal electrical pathway or focus.

This is achieved by introducing cardiac catheters into the right atrium, through the right femoral vein at the patient's groin. Radio Frequency energy is then delivered through the ablation catheter, to create lesions to block the abnormal electrical pathway or focus initiating the arrhythmia.

If the cause of the arrhythmia is located in the left side of the heart a transseptal puncture is required to access the left atrium. During transseptal puncture a hole is created between the top chambers of the heart. This hole is usually healed four weeks post procedure.

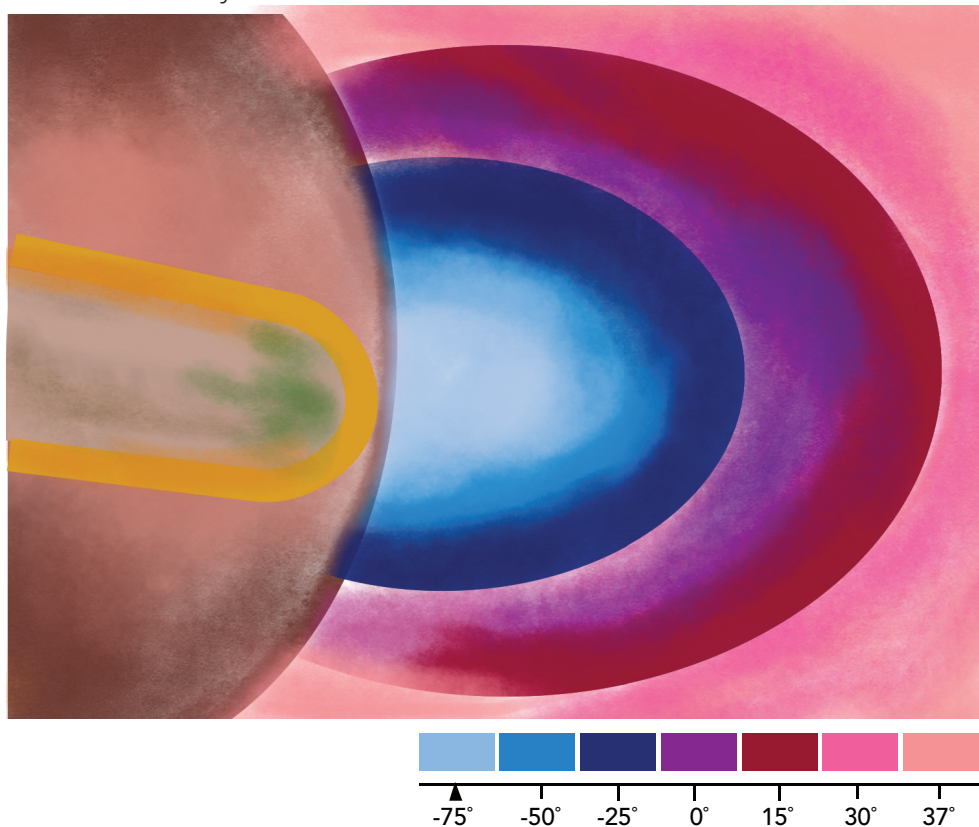
The successful ablation of the pathway will prevent the recurrence of SVT. The major goal of this procedure is to restore normal heart rhythm without the need for medications.



Cryo Ablation

Cryo ablation is a newer treatment available for SVT in the cath lab. This procedure is used for patients with SVT involving pathways close to the AV node. If the ablation target is very close to the AV node there is a danger of accidentally damaging it, meaning the patient would then require a permanent pacemaker.

During Cryo ablation a supercool catheter is used to freeze the tissue to -30°C . If the targeted area is too close to the AV node the operator is able to halt freezing the tissue and allow the tissue to spontaneously rewarm. The tissue will be the same as if it has never been touched before. If after freezing the tissue to -30°C and the target is correct the operator is then able to freeze the tissue down further to a temperature of -80°C and permanently ablate the tissue. This provides a similar result as radio frequency ablation but does not carry the same risk. The overall success rate of cryo ablation is lower and therefore it is not routinely used.



BEFORE THE PROCEDURE

After a consultation with Professor Weerasooriya, the patient may be asked to have some blood tests.

During the procedure the patient will be under a general anaesthetic. The patient will have the opportunity to speak with the anaesthetist prior to the procedure, as the level of anaesthesia required can be individualised according to the patient's requirements.

The patient will be asked not to eat or drink for 6 hours prior to the procedure.

DAY OF THE PROCEDURE

The patient will be admitted to hospital and will be asked to change into a surgical gown in preparation for the procedure. A Patient Service Assistant (PSA) or nurse will wheel the patient to the cath lab where the procedure will take place.

They will then be introduced to the team of medical staff who will care for them during the procedure including Professor Weerasooriya, a specialist anaesthetist, an anaesthetic technician, a radiographer (who assists the cardiologist with the use of x-ray equipment), a nurse, an assistant physician and a cardiac technician.

During the procedure a team approach is required. Technicians and the assisting physician help to interpret and record electrical signals from the patient's heart. The specialist anaesthetist and anaesthetic technician keep the patient comfortable, and the other nurses assist Professor Weerasooriya.

The procedure takes 1-2 hours.

DISCHARGE FROM HOSPITAL AND POST OPERATIVE CARE

Typically the patient is returned to the cardiac ward after the procedure and is expected to be walking within 5 hours. Most patients are discharged from hospital the following day.

It is important to rest for 2-3 days following the ablation. Exercise should then be gradually re-commenced after the first post operative week.



Professor Rukshen Weerasooriya

RISKS ASSOCIATED WITH SVT ABLATION

SVT ablation is a low risk procedure. The most common problem is pain and bruising at the site of the groin which will usually disappear after 4-6 weeks without treatment. If oozing, swelling or pain of the groin site occurs, please contact Professor Weerasooriya.

However, as with any procedure complications can occur. These can be summarised as follows:

- Bleeding into the pericardial sac surrounding the heart (cardiac tamponade)
- Pulmonary embolism
- Accidental damage to the conduction system of the heart
- Death (1 in 5000 cases)



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