HEART
RHYTHM
CLINIC

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 any physical activity and exercise. During SVT the heart rate suddenly beats much faster than usual and this makes it difficult for the heart muscle to relax between contractions. This inefficient contraction of the heart decreases cardiac output (blood and oxygen circulation) and may cause blood pressure to drop.

SVT can be experienced by people of all ages. Most people who experience SVT live a normal life without restrictions. SVT usually occurs with periods of normal rhythm in between.

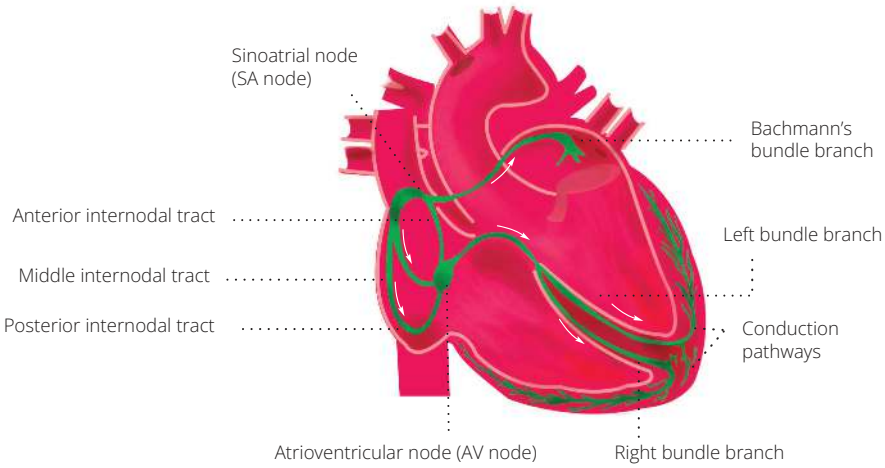
In general SVT is not life threatening, however episodes should be treated or prevented.

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-transient loss of consciousness and postural tone. This is rare)*

Cardiac Conduction Pathway



The cardiac conduction system is made up of specialised group of cells in the heart that generate and transmit electrical impulses. These impulses coordinate the contraction of the heart muscle, ensuring that the heart beats in a regular, synchronised manner to pump blood efficiently. The cardiac conduction system is made up of 3 main components.

Sinoatrial node (SA node) - dominant pacemaker located at the high right atrium.

Atrioventricular node (AV node) - secondary pacemaker located at the low right atrium, electrically connecting the atria to the ventricles.

His Purkinje system - a ventricular structure and is the conduction pathway of the ventricles

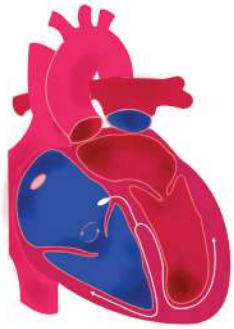
The heart is usually controlled by the sinoatrial node (SA node). When the conduction is initiated in the sinus node and has taken a normal route to activate the ventricles (via the AVN, His Purkinje system) without interruption along the way, it is called sinus rhythm. This is the normal rhythm of the heart.

SVT occurs when an abnormal rhythm (arrhythmia) originates from an area other than the SA node, typically in the atria or the atrioventricular (AV) node.

Types Of SVT

SVT is categorised based on the origin and mechanism of the abnormal electrical activity in the heart. SVT can be sub-divided into 3 main groups.

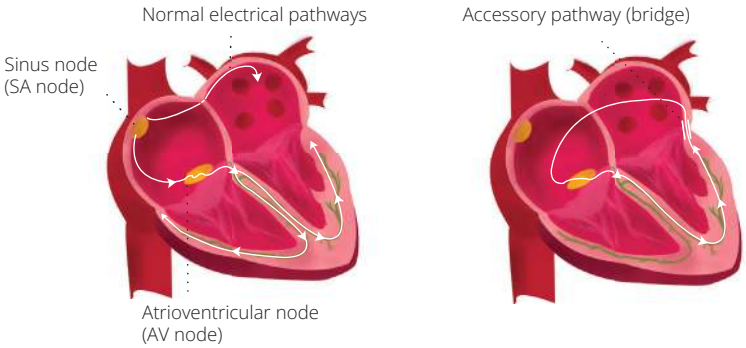
1. AV Junctional Re-entry Tachycardia (AVJRT)



Sometimes referred to as AV Node Re-entry Tachycardia (AVNRT), this is the most common type of SVT. It occurs due to a re-entrant circuit within or around the atrioventricular (AV) node, causing the heart to beat rapidly and regularly.

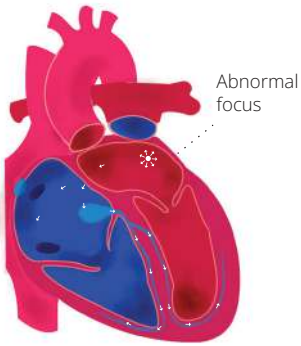
2. Accessory Pathway

Atrioventricular Re-entrant Tachycardia (AVRT) is a type of SVT that occurs due to an abnormal additional pathway connecting the atria and ventricles electrically, outside the normal AV node-His-Purkinje system. It allows electrical signals to bypass the AV node, creating a re-entrant circuit that causes a rapid heartbeat.



3. Focal Atrial Tachycardia

Focal Atrial Tachycardia (FAT) is a type of SVT that originates from a single ectopic focus in the atria, outside the sinoatrial (SA) node. It is less common than AVNRT or AVRT and can be either paroxysmal (sudden onset and termination) or persistent.



Focal Tachycardia
(Illustrated in the left atrium)

SVT Management Options

Lifestyle Adjustments

Although for many people moderate amounts of caffeine and alcohol won't trigger episodes of SVT, for some individuals caffeine and alcohol may trigger episodes. If it is a trigger, limiting or avoiding caffeine and alcohol maybe beneficial in reducing SVT episodes.

Vagal Manoeuvres

SVT episodes can be terminated using vagal maneuvers. Vagal maneuvers are physical techniques you can use to help slow down a rapid heart rate during an episode of SVT. They work by stimulating the vagus nerve, which helps slow your heart rate. Not everyone with SVT will benefit from these maneuvers.

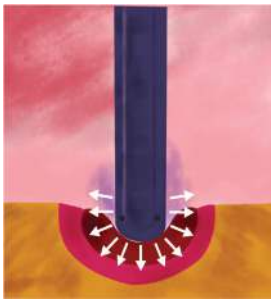
Instructions:

1. **Find a Comfortable Position:** Lie down in a comfortable position before starting the maneuver.
2. **The valsalva maneuver:** Take a deep breath, close your mouth and pinch your nose shut. Try to exhale forcefully as if you're blowing up a balloon or straining during a bowel movement. Hold this for about 10-15 seconds. Breathe normally and wait a few minutes to see if your heart rate slows down. An alternative version is to lie down and ask someone to very firmly press your tummy with the palms of their hand while you push as hard and long as you can against them
3. **Try the Cold Water Face Immersion:** Fill a basin with cold water and ice or a bag of frozen peas from your freezer. The colder the water, the better this works. Lean forward and immerse your face in the water for a few seconds. This may stimulate the vagus nerve and help slow your heart rate. Fun fact, this is a mammalian diving reflex.
4. **Monitor Your Symptoms:** After performing these maneuvers, monitor your symptoms. If your heart rate doesn't slow down or if you experience chest pain, dizziness, or shortness of breath, call an ambulance immediately.

Chemical Cardioversion

Episodes of SVT can be treated with medication (anti arrhythmic drugs and AV nodal blocking agents). Adenosine is a commonly used first-line pharmacologic agent for the rapid termination (cardioversion) of certain types of supraventricular tachycardia (SVT), especially those involving the AV node as part of a re-entrant circuit. This medication is often used at hospital emergency departments. The use of another medication called Midazolam prior to administration of adenosine can help to reduce anxiety and discomfort sometimes associated with adenosine's rapid onset of side effects.

Radio Frequency Ablation



Radio frequency ablation for SVT is a curative treatment available in the catheterisation laboratory (cath lab). The aim of this procedure is to locate and define the abnormal electrical circuit 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.

Before The Procedure

After a consultation with Professor Weerasooriya, the patient may be asked to have some blood tests. 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 clinical team 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, an electrophysiology technician and a mapping specialist.

During the procedure a team approach is required and the technicians 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 4 hours. Most patients are discharged from hospital the following day.

Following the procedure, it's important to take good care of yourself to ensure a smooth recovery and the best possible outcome. Below are some instructions to guide you during this post-procedure period:

1. Rest and Recovery

- It's normal to feel a bit tired and fatigued after the procedure. Allow yourself time to rest and recuperate.
- Avoid strenuous activities, heavy lifting, and intense exercises for the first 2 days after the procedure. Gradually resume your normal activities.

2. Incision Care

- Keep the groin puncture sites clean and dry.
- Remove the dressing the day following your procedure
- Please note that there are no stitches to remove.
- If you notice any signs of infection such as redness, swelling, warmth, or drainage from the incision site, contact Professor Weerasooriya on 9386 4782.
- It is normal to see bruising at the puncture sites for a few weeks following procedure.

3. Medication Management

- In most cases, you will remain off antiarrhythmic medications following a successful SVT ablation procedure as the procedure is usually curative.

4. Hydration and Diet

- Drink plenty of fluids to stay hydrated, unless otherwise advised by your healthcare provider.
- Follow a heart healthy diet – see the National Heart Foundation of Australia website for recommendations.

5. Monitoring and Follow-up

- Keep track of your symptoms and any changes you experience post-procedure.
- A follow-up appointment will usually be made at 6 weeks following ablation. This is usually by teleconference.
- If you experience any concerning symptoms such as chest pain, shortness of breath, dizziness, or palpitations, seek medical attention immediately at the Hollywood Hospital emergency department.

6. Emotional Support

- It's normal to have mixed emotions following a medical procedure. If you're feeling anxious, worried, or overwhelmed, don't hesitate to reach out to Professor Weerasooriya's team or a trusted support person for emotional support.

7. Driving Restrictions

- Don't drive a vehicle for 24 hours after

Risks Associated With SVT Ablation

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.

SVT ablation is a low risk procedure. 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)

Remember that everyone's recovery process is unique, and it's important to follow the specific instructions provided by your healthcare provider. If you have any questions or concerns during your recovery, don't hesitate to reach out for assistance.

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