



# Clinical Practice Procedures: Cardiac/Modified Valsalva manoeuvre

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<b>Date</b>	February, 2021
<b>Purpose</b>	To ensure a consistent procedural approach to modified valsalva manoeuvre.
<b>Scope</b>	Applies to Queensland Ambulance Service (QAS) clinical staff.
<b>Health care setting</b>	Pre-hospital assessment and treatment.
<b>Population</b>	Applies to all ages unless stated otherwise.
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# Modified Valsalva manoeuvre

February, 2021

The Valsalva manoeuvre should be the first line of treatment for the management of narrow complex supraventricular tachycardia (SVT) in the haemodynamically stable patient.<sup>[1]</sup>

The modified Valsalva manoeuvre with supine repositioning and legs elevated has been shown to be significantly more likely to restore sinus rhythm than the standard Valsalva manoeuvre.<sup>[2]</sup>

Given the greater likelihood of success, the modified Valsalva manoeuvre should be performed over standard Valsalva, whenever possible.

Although there are other vagal stimulation methods available, the Valsalva manoeuvre is the safest and most effective technique for terminating SVT of unknown mechanism<sup>[1,3]</sup> and is the only QAS approved vagal stimulation method.

## Valsalva manoeuvre phases of blood pressure responses

The sinusoidal blood pressure response in normal subjects is divided into four phases:<sup>[4]</sup>

1. An increase in intrathoracic pressure occurs at the onset of straining. The resulting compressive effect on the aorta increases systolic blood pressure by  $\geq 15$  mmHg for approximately five seconds.
2. Due to a decrease of venous return, there is a return of systolic blood pressure back to baseline for the remainder of the straining period and an increase in systemic vascular resistance.
3. After the strain is released, the acute decrease in intrathoracic pressure causes an abrupt fall in systolic blood pressure below baseline, and a compensatory increase in heart rate.
4. An increase in venous return causes cardiac output to rise and a corresponding sudden increase in blood pressure that may trigger a reflex bradycardia.

Patients taking beta-blockers typically show a blunted blood pressure response to the Valsalva manoeuvre.

## Valsalva manoeuvre heart rate responses for patients with SVT

For a patient with paroxysmal SVT in whom the Valsalva manoeuvre is performed, the potential heart rate and rhythm response outcomes include slowing of sinoatrial nodal activity, block at the atrioventricular node unmasking atrial activity, termination of the SVT, or no response.

### Indications

- Haemodynamically stable Supraventricular tachycardia (SVT)

### Contraindications<sup>[2]</sup>

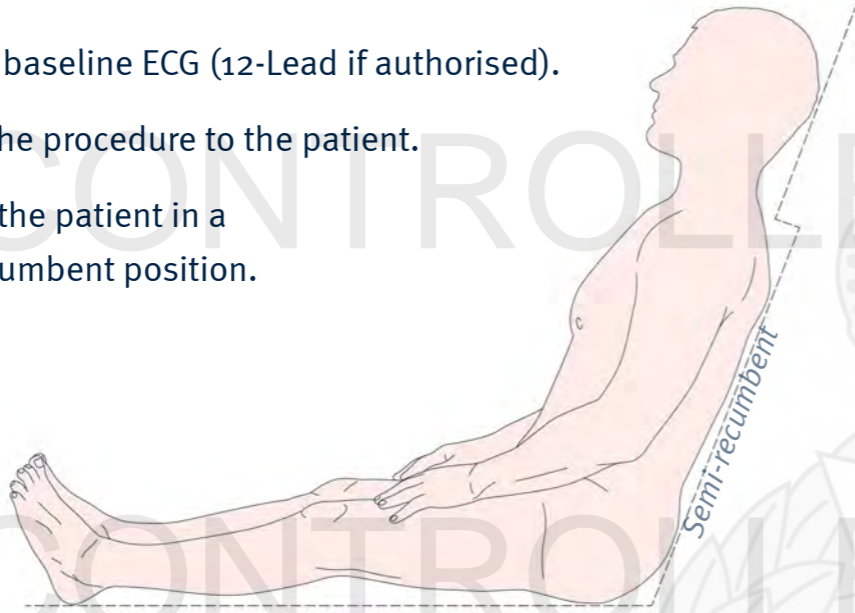
- Requirement for immediate cardioversion
- Hypotension (SBP  $< 90$  mmHg)
- Atrial fibrillation/flutter
- Aortic stenosis
- Recent myocardial infarction (within 3 months)
- Glaucoma
- Retinopathy
- Third trimester of pregnancy

### Complications

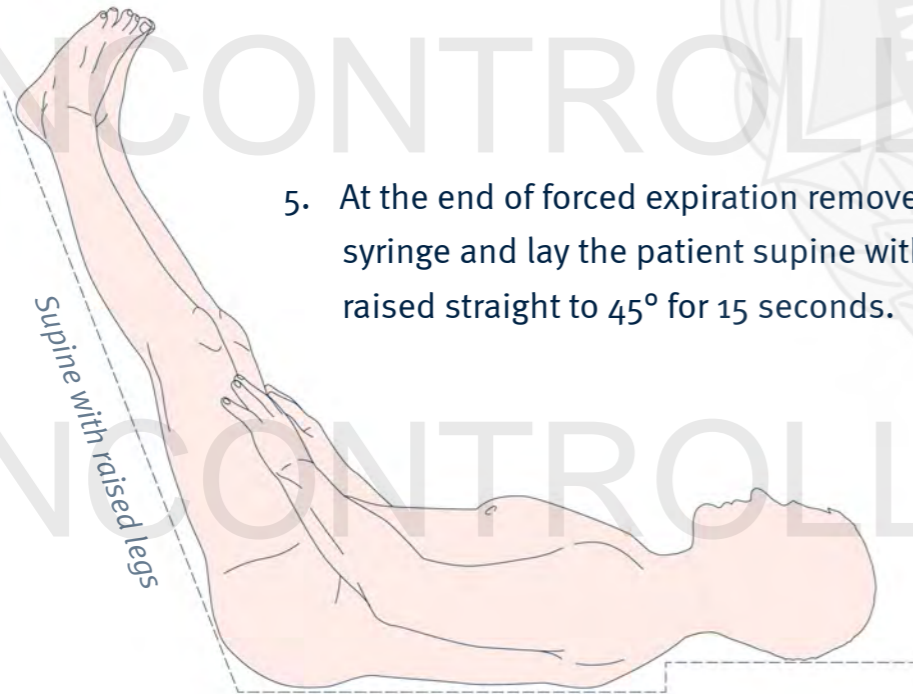
- Syncope
- Prolonged hypotensive state

## Procedure – Modified Valsalva manoeuvre

1. Obtain a baseline ECG (12-Lead if authorised).
2. Explain the procedure to the patient.
3. Position the patient in a semi-recumbent position.



4. Instruct the patient to perform a forced expiration into a sterile 10 mL syringe<sup>[2]</sup> for 15 seconds.



5. At the end of forced expiration remove the syringe and lay the patient supine with legs raised straight to 45° for 15 seconds.

6. Reposition the patient to a semi-recumbent position for 45 seconds.
7. Repeat 12-Lead ECG.
8. Confirm the modified Valsalva has been successful. If the patient's SVT has failed to revert, consider repeating the procedure to a maximum of 3 attempts.

### Additional information

- If repeated modified Valsalva attempts are required, ensure the patient has returned to a haemodynamically stable SVT presentation prior to repeating.
- The modified Valsalva manoeuvre is the only vagal stimulation technique approved for QAS ambulance clinicians.