Aortic Dissection Awareness

The Patient Charity

Humber and North Yorkshire Health and Care Partnership

Understanding Thoracic Aortic Aneurysm

aorticdissectionawareness.org

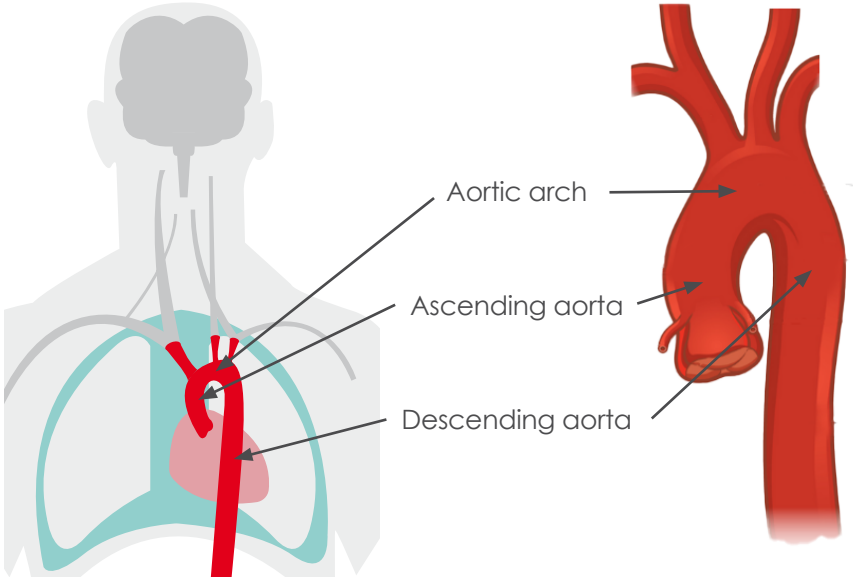
Endorsed by

British Cardiovascular Society

'The Voice of UK Cardiology'

What is the aorta?

The aorta is the largest artery in your body. It comes out of your heart and carries oxygen-rich blood to the rest of your body. A normal aorta is around 3-4cm wide where it exits the heart and can be influenced by several modifiable and non-modifiable risk factors. This includes, age, gender, physical activity levels, genetics and other medical conditions.

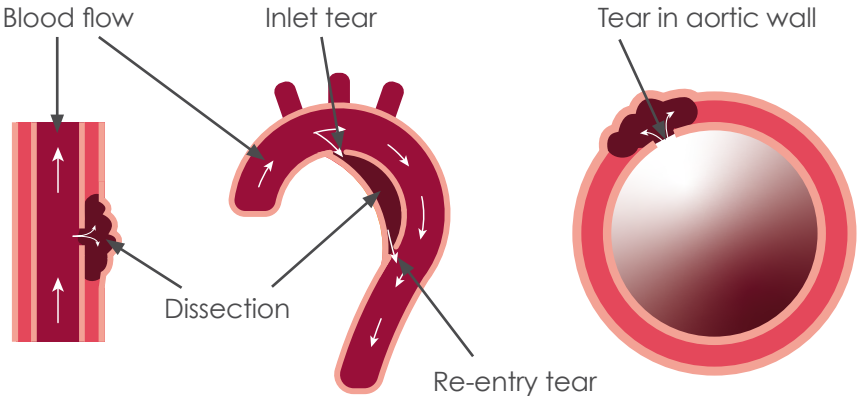


What is a thoracic aortic aneurysm?

A thoracic aortic aneurysm is a condition in which the main artery in the chest, called the thoracic aorta, becomes abnormally enlarged or bulges. This enlargement occurs because the wall of the aorta is weak, causing it to stretch under the pressure of the blood flowing through it. Over time, the aneurysm can grow and may become more severe, potentially leading to serious health risks if not monitored on a regular basis or treated in accordance with established guidelines.

Why early diagnosis matters?

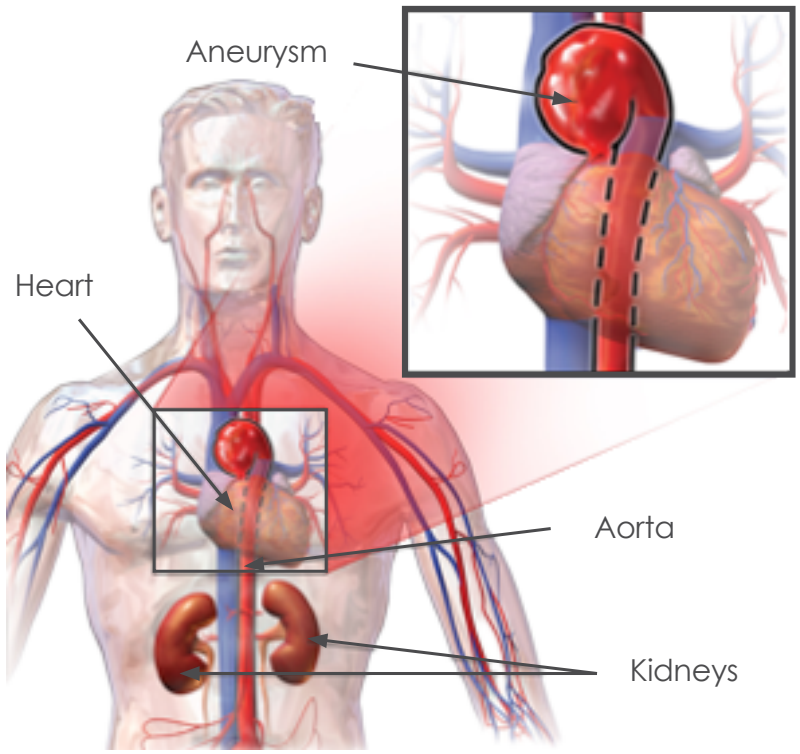
Over time, the weakened area may expand further and eventually tear, leading to a life-threatening condition known as “aortic dissection.”. Blood can then leak through the torn layers, worsening the tear and causing severe pain, while reducing the flow of oxygenated blood to the whole body. The dissected aortic wall is at high risk of bursting, leading to life-threatening internal bleeding that usually needs emergency surgery to fix.



Diagnosis of a thoracic aortic aneurysm is vital, especially if there is a family history of the condition, so that we can aim to prevent aortic dissection. Thoracic aortic aneurysm is often a silent disease, meaning that you may not have noticeable symptoms until serious or even fatal complications arise.

Early detection and treatment of an aneurysm through screening in at risk individuals when identified can significantly improve long-term outcomes and reduce the risk of complications.

What causes a thoracic aortic aneurysm?



Several factors can contribute to the development of a thoracic aortic aneurysm such as:

- **Advancing age:** the risk increases as you get older.
- **Hardening of the arteries (atherosclerosis):** when the arteries become stiff and narrowed, it can weaken the aorta.
- **High blood pressure (hypertension):** chronic high blood pressure puts added stress on the aortic wall
- **Genetic disorders** like Marfan syndrome or Ehlers-Danlos syndrome can increase the risk.
- **Infection** weaken the aortic wall, though this is uncommon.
- **Inflammation of the arteries (vasculitis):** conditions either directly or indirectly associated with inflammation in the arteries can also affect the aorta.
- **Smoking** damages the blood vessels in the body, particularly the coronary arteries that supply the heart muscle and also the aorta which results in weakening of the aortic wall.
- **Traumatic injury:** a serious injury to the chest, such as from a car accident, can damage the aorta and may lead to changes in its structure over time.

Symptoms:

Thoracic aortic aneurysms often have no symptoms, but they may cause pain in the jaw, neck, chest, or back. Rarely, an aneurysm may cause a persistent cough, hoarseness, or difficulty breathing.

Genetic Testing and Important Information for Families:

Patients diagnosed with aortic dilatation will be assessed on a case-by-case basis for eligibility for genetic testing, in accordance with national guidelines.

Genetic testing looks for changes in your genes that may cause aortic aneurysms or tears. These changes are linked to conditions like Marfan syndrome, Loeys-Dietz syndrome, or Ehlers-Danlos syndrome. Finding these changes can help your doctor plan your treatment and decide if your close family members need tests too.

If aortic dilatation is suspected to have an inherited component, even if genetic testing does not identify a faulty gene, first-degree relatives (parents, siblings, and children) will still undergo imaging-based screening. This typically involves a heart ultrasound (echocardiography) to detect early signs of aortic disease. Regular scans as part of a surveillance strategy are important to monitor your aorta and anticipate changes early on

Combining genetic testing with imaging screening enables early detection and targeted intervention, ensuring at-risk individuals receive personalized and timely care.

Doctors use different tests to check for a thoracic aortic aneurysm and many of these tests are utilised as part of a surveillance strategy should a dilated aorta be identified:

Heart ultrasound (echocardiogram)

This test uses sound waves to create moving pictures of your heart, similar to the scans used during pregnancy.

CT scan

A special X-ray that shows detailed pictures of your aorta. A dye is injected into your arm to make the aorta easier to see.

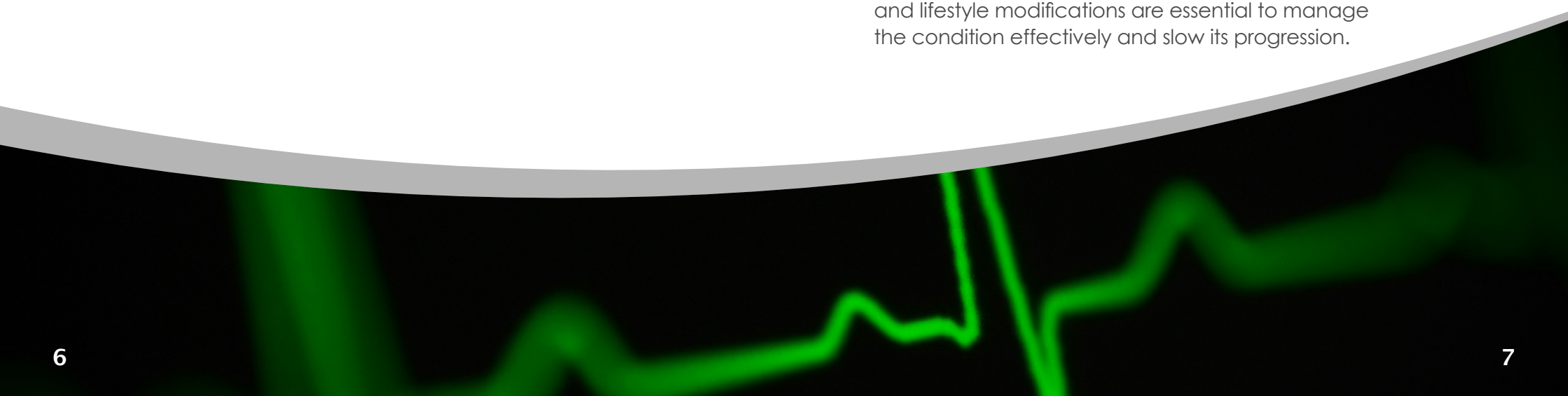
MRI scan

This test uses magnets and radio waves to take very clear pictures of your heart and aorta, helping your doctor see how well they are working.

Treatment options

Treatment depends on many factors, such as the size and location of the aneurysm, your age and underlying health. It may include regular monitoring, medication, surgery when the aneurysm gets to a certain size, or "endovascular" treatment – a less invasive repair where a "stent" is placed inside the aorta to repair the aneurysm.

Regular monitoring, good blood pressure control, and lifestyle modifications are essential to manage the condition effectively and slow its progression.



General lifestyle recommendations

The most important things you can do is to keep your blood pressure within a healthy range, typically around 120/80 mmHg, with guidance from your doctor.

- Stop smoking.
- Follow a heart-healthy diet low in sodium, saturated fat, and cholesterol.
- Attend regular appointments with your doctor to monitor your aneurysm and overall health.
- Encourage your first-degree relatives (parents, siblings, and children) to get screening for their risk of thoracic aortic aneurysm if advised by the doctor.
- Address mental health concerns
- Avoid constipation.
- Avoid stimulants such as ephedra, cocaine, or amphetamines.
- Avoid taking fluoroquinolone antibiotics such as ciprofloxacin and levofloxacin. If prescribed these antibiotics, consult your provider for an alternative medication

Exercise Advice for Patients with Aortic Conditions: :

Why exercise matters

Regular Exercise offers many benefits, including:

- Improving physical fitness
- Boosting mental well-being
- Enhancing social interaction
- Helping control high blood pressure (hypertension)
- Reducing future risks, such as aortic dissection

Exercise and Aortic Health: What You Need to Know

Most individuals with aortic disease benefit from a dedicated exercise program and can safely enjoy recreational sports activities. However, certain types of aortic problems are not compatible with intense endurance training or competitive sports because of the risk of serious complications like aortic dissection or rupture.

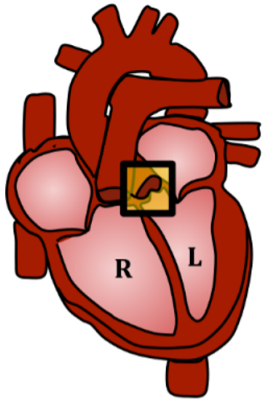
Exercise recommendations should be individualised, taking into account the size of your aorta (aortic diameter), underlying diagnosis, family history of aortic dissection or sudden cardiac death, as well as the individual's current fitness level, prior exercise experience, and personal aspirations. This approach ensures safe participation in physical activity whilst minimising cardiovascular risk.

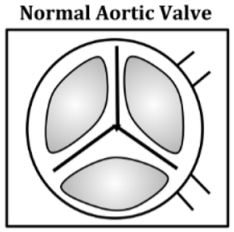
Before beginning an exercise program, it is recommended to undergo advanced imaging of the aorta (such as a CT scan or cardiac MRI) and exercise testing to assess how your blood pressure responds to physical activity.

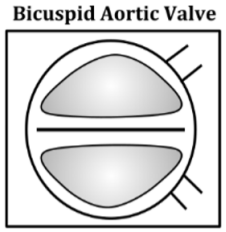
Competitive sports and high intensity training are not recommended for individuals who are considered high risk. Regular follow-up visits are essential to monitor your aortic health. Risk assessments should be updated over time to adjust exercise recommendations as needed. Finally, expert consultation before starting or changing your exercise routine is advisable as part of a shared decision-making model of care.

There are certain conditions associated with higher risk of thoracic aortic aneurysm:

Bicuspid Aortic Valve (BAV):







A bicuspid aortic valve is a congenital heart defect where the aortic valve, which regulates blood flow from the heart into the aorta, has two flaps (leaflets) instead of the typical three.

How common is it?

- Bicuspid aortic valve is a common congenital heart defect which affects 1–2% of the population.
- It is more prevalent in males than females.

What happens to patients with bicuspid aortic valve?

- Patients with a bicuspid aortic valve often experience premature degeneration of their valve, which can result in narrowing or leaking of the valve.
- There is also an increased risk of developing a thoracic aortic aneurysm.
- Both conditions require monitoring and, in some cases, intervention to prevent complications.

Connective tissue disease:

- These are conditions that make the body's support tissues, like the aorta, weaker.
- Diseases, such as Marfan, Loeys-Dietz, Ehlers-Danlos syndromes, and other conditions caused by a faulty gene, affect the strength and integrity of your connective tissues, including those in the aorta. The faulty gene can be passed from parent to child, or it can happen out of the blue (sporadically), so there is no one else in the family with the condition.
- These genetic conditions increase the likelihood of developing thoracic aortic aneurysms, because they weaken the aortic wall.
- If you are diagnosed with a connective tissue disorder, your doctor will provide additional information and resources specific to your condition.

Further information and support

Obtain information from reputable sources, such as the British Heart Foundation or relevant patient support organizations.

- www.bhf.org.uk/informationsupport/conditions/thoracic-aortic-aneurysm
- The THINK AORTA, THINK FAMILY campaign: www.thinkaorta.net/family
- Aortic Dissection: The Patient Guide, specifically pages 83-87: www.tinyurl.com/ADPtGuide
- https://www.marfantrust.org
- https://www.loeysdietz.org/en/medical-information
- https://www.ehlers-danlos.org
- 2020 ESC Guidelines on sports cardiology and exercise in patients with cardiovascular disease available at: https://www.escardio.org/Guidelines/Clinical-Practice-Guidelines/sports-cardiology-and-exercise-in-patients-with-cardiovascular-disease
- 2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease available at: https://www.ahajournals.org/doi/10.1161/CIR.0000000000001106
- 2025 AHA/ACC Guidelines on Sports Participation for Athletes with Cardiovascular Conditions: Clinical Considerations for Competitive Sports Participation for Athletes with Cardiovascular Abnormalities – A Scientific Statement from the American Heart Association and American College of Cardiology. Published February 2025. Available at: https://www.acc.org/Guidelines/Guidelines/2025/02/20/11/32/Athletes-With-CV-Abnormalities-Scientific-Statement

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Aortic Dissection Awareness UK & Ireland is a registered charity in England and Wales (number 1198617).