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## Aneurysm

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### Summary

- An aneurysm is an abnormal swelling or bulge in the wall of a blood vessel, such as an artery.
  - Aneurysms can occur anywhere throughout the circulatory system, but most commonly develop along the aorta (the body's main artery that runs the length of the trunk) and in blood vessels of the brain.
  - Aneurysms are potentially fatal if they rupture.
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An aneurysm is an abnormal swelling or bulge in the wall of a blood vessel, such as an artery. It begins as a weak spot in the blood vessel wall, which balloons out of shape over time by the force of the pumping blood. Usually, aneurysms develop at the point where a blood vessel branches, because the 'fork' is structurally more vulnerable.

Aneurysms can occur anywhere throughout the circulatory system, but most commonly develop along the aorta (the body's main artery that runs the length of the trunk from the heart) and in blood vessels of the brain. Aneurysms are potentially fatal if they rupture. Death can occur within minutes.

### Symptoms of an aneurysm

An aneurysm may have no symptoms (asymptomatic) until it is either very large or it ruptures. Symptoms depend on which blood vessel is affected.

### Types of aneurysms

Different types of aneurysms include cerebral aneurysms, thoracic aortic aneurysms and abdominal aortic aneurysms.

#### Cerebral aneurysm

A cerebral aneurysm occurs in a blood vessel in the brain. An aneurysm in the brain has no relationship to other aneurysms in the body, but in a small number of people, there is a family history. Cerebral aneurysms are more common over the age of 60.

The aneurysm may appear like a tiny blood-filled grape attached to the blood vessel by a stalk. This is known as a saccular or berry aneurysm. These can sometimes form in clusters.

Symptoms of a ruptured cerebral aneurysm include severe headache with rapid onset, neck pain and stiffness, increasing drowsiness, paralysis, seizures, impaired speech and visual problems. An unruptured cerebral aneurysm may have no symptoms related to it at all and may be discovered incidentally.

#### Thoracic aortic aneurysm

A thoracic aortic aneurysm affects the aorta in the chest. Symptoms of a ruptured thoracic aortic aneurysm include pain in the chest, back and neck, coughing, breathlessness, swallowing difficulties, hoarseness of the voice, swelling of the arms, and a constricted pupil and drooping of the eyelid affecting one eye.

In many cases, a thoracic aortic aneurysm doesn't cause any symptoms and is discovered by accident during

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medical examinations for an unrelated condition.

### **Abdominal aortic aneurysm**

An abdominal aortic aneurysm affects the aorta in the abdomen. Symptoms include pain in the lower back, abdominal swelling, nausea, vomiting, rapid heart rate (tachycardia), sweating and the sensation of a pulse in the abdomen.

### **Causes of aneurysms**

Some of the causes of aneurysms include:

- a weakness in the blood vessel wall that is present from birth (congenital aneurysm)
- high blood pressure (hypertension) over many years resulting in damage and weakening of blood vessels
- fatty plaques (atherosclerosis) resulting in a weakness of the blood vessel wall
- inherited diseases that may result in weaker than normal blood vessel walls
- trauma, such as a crush injury to the chest
- the sexually transmitted infection (STI) syphilis, if untreated, targeting the aorta and weakening its walls
- polycystic kidney disease increasing the risk of cerebral aneurysm
- very occasionally, an infection targeting and weakening a section of blood vessel.

The cause sometimes remains unknown.

### **Complications with aneurysms**

Depending on the location of the aneurysm, some of the possible complications of an untreated aneurysm include:

- blood clots within the aneurysm
- compression of nearby nerves, if the aneurysm is large enough
- blood leaking out of the intact aneurysm into the walls of the artery (dissecting aneurysm)
- impaired blood circulation beyond the point of the aneurysm
- haemorrhage in the layers of tissue surrounding the brain (subarachnoid haemorrhage)
- water on the brain (hydrocephalus)
- stroke
- epilepsy
- paralysis
- congestive heart failure
- heart attack
- kidney failure
- sudden death.

### **Diagnosis of an aneurysm**

An aneurysm is diagnosed using a number of tests including:

- physical examination
- x-rays
- ultrasound scans
- computed tomography (CT) scans or CT angiograms
- magnetic resonance imaging (MRI) or MR angiograms

- digital subtraction angiograms
- examination of cerebrospinal fluid (for a diagnosis of a subarachnoid haemorrhage).

## Treatment for an aneurysm

Treatment for an aneurysm depends on its location and severity, but may include:

- **Cerebral aneurysm** – is repaired either by coils or stent insertion, or by surgery where the aneurysm has been clipped. If the aneurysm has ruptured, then you will need to stay in hospital for up to 21 days because of potential complications, including vasospasm and hydrocephalus. Around one third of all people who experience a ruptured cerebral aneurysm die, and less than 30 per cent get back to a pre-rupture state.
- **Thoracic aortic aneurysm** – requires drugs to control high blood pressure and surgery to repair the aneurysm if necessary. Sometimes, the nearby heart valve may also need fixing during the operation. Most people with a ruptured thoracic aortic aneurysm die within minutes.
- **Abdominal aortic aneurysm** – requires drugs to control high blood pressure and surgery to repair the aneurysm if necessary. The mortality rate is more than 50 per cent if the aneurysm ruptures.

## Surgical repair of aneurysms

If the aortic aneurysm is less than five cm wide, it is usually left untreated, but closely monitored (in case it gets bigger). If it is larger than five cm, the aneurysm is surgically repaired. In most cases, the aneurysm is cut out and the hole is plugged with an artificial graft.

Depending on the location of the cerebral aneurysm, it will be treated either surgically with clipping, or by using fine platinum coils inserted in the aneurysm via an angiogram, which is a radiological procedure used, in this case, to close the aneurysm and preserve the normal flow of blood in the brain.

Treatment of a ruptured cerebral aneurysm is an urgent procedure, but treatment of an unruptured aneurysm can be performed semi-electively.

## Where to get help

- Your doctor
- Emergency department of your nearest hospital
- In an emergency, always call triple zero (000)

## Things to remember

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- Aneurysms are potentially fatal if they rupture.

**This page has been produced in consultation with and approved by:**

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