CONDITION

Aneurysm

Learn what an aneurysm is, where it can occur, possible warning signs, how it is diagnosed, and how monitoring or treatment may reduce complications.

WHAT IT IS
Abnormal bulge or widening in a blood vessel wall

BODY SYSTEM
Heart and circulation

MAIN SYMPTOMS
No symptoms, chest or back pain, abdominal pain, vision changes

WHAT CAUSES IT
Weakened or damaged artery wall

HOW IT IS DIAGNOSED
Ultrasound, CT, MRI, or angiography

MAIN TREATMENT
Monitoring or surgical or endovascular repair

CAN IT BE CURED?
Sometimes - repair can treat the aneurysm

IS IT AN EMERGENCY?
Sometimes - sudden severe pain or headache

LONG-TERM OUTLOOK
Often stable for years, but rupture may be life-threatening

Overview

An aneurysm is an abnormal bulge or widening in the wall of a blood vessel. It develops when part of the vessel wall becomes weakened or damaged. As blood pushes against that area, the vessel may slowly enlarge.

Aneurysms can form in many arteries, but some locations are more common and clinically important:

Many aneurysms cause no symptoms and are found during imaging performed for another reason. Some remain small and stable for years. Others grow, press on nearby structures, form blood clots, or rupture.

A rupture causes internal bleeding and may be life-threatening. Aneurysm care therefore

focuses on estimating the chance of a complication and comparing it with the risks of treatment. Location, size, shape, growth, symptoms, family history, and overall health all help guide that decision.

- Aortic aneurysms affect the aorta, the large artery that carries blood from the heart. A thoracic aortic aneurysm is in the chest, while an abdominal aortic aneurysm is in the abdomen.
- Brain aneurysms , also called cerebral or intracranial aneurysms, develop in arteries within the brain.
- Peripheral artery aneurysms affect arteries outside the heart, aorta, and brain. They may occur behind the knee, in the groin, or in organs such as the spleen.

Symptoms

Most small aneurysms do not cause symptoms. Symptoms that do occur depend on where the aneurysm is located and whether it is pressing on nearby tissue, leaking, or rupturing.

A thoracic aortic aneurysm may cause chest or upper back discomfort, hoarseness, coughing, or difficulty swallowing or breathing. An abdominal aortic aneurysm may cause persistent abdominal, side, or back pain. Some people notice a pulsing sensation in the abdomen, although this does not confirm an aneurysm.

An unruptured brain aneurysm may cause no symptoms. A larger aneurysm can sometimes cause pain around an eye, changes in vision, a drooping eyelid, facial numbness, or other nerve-related symptoms.

A peripheral artery aneurysm may cause a lump that pulses, limb pain, numbness, or reduced blood flow. A clot inside the aneurysm can break loose and block circulation farther down the arm or leg.

Seek emergency medical care for symptoms that could indicate rupture, major bleeding, aortic dissection, or blocked blood flow. These include:

These symptoms have several possible causes. They still require immediate assessment rather than waiting for a routine appointment.

- A sudden, extremely severe headache, especially if it reaches maximum intensity within seconds or minutes
- Sudden chest, back, or abdominal pain that is severe, persistent, or described as tearing
- Fainting, severe weakness, confusion, or loss of consciousness

- Sudden trouble speaking, seeing, walking, or moving one side of the body
- A seizure with a sudden severe headache
- Coldness, numbness, severe pain, or loss of movement in an arm or leg
- Severe pain accompanied by shortness of breath, sweating, or signs of shock

Causes and risk factors

An aneurysm usually results from a combination of stress on the artery and changes that weaken its wall. Atherosclerosis, which is the buildup of fatty plaque in arteries, is often associated with aortic and peripheral aneurysms. It is not the only cause.

Smoking is a major modifiable risk factor for abdominal aortic aneurysm. High blood pressure can place additional strain on blood vessel walls. Age also matters because arteries change over time.

Risk factors vary by aneurysm location but may include:

Sex-related patterns differ by aneurysm type. Abdominal aortic aneurysms are diagnosed more often in men, while brain aneurysms are more common in women. Individual risk cannot be determined from one factor alone.

Aneurysms are not usually caused by ordinary exercise or a single stressful event. However, uncontrolled blood pressure and tobacco exposure can contribute to long-term vessel damage. People with a known aneurysm should ask their clinician whether any activity limits are appropriate for its size and location.

- Current or past tobacco use
- High blood pressure
- Older age
- A family history of aortic or brain aneurysm
- A previous aneurysm in another blood vessel
- Atherosclerosis and other cardiovascular disease
- Certain inherited connective tissue conditions that affect the strength of body tissues
- A bicuspid aortic valve, meaning the heart's aortic valve has two flaps instead of the usual three
- Some inherited diseases, including polycystic kidney disease

- Serious injury, inflammation, or infection affecting an artery, although these are less common causes

Diagnosis

An aneurysm may be discovered during a physical examination, screening test, or scan obtained for another health concern. Imaging is needed to confirm its location and measure it accurately.

An ultrasound uses sound waves to create images. It is commonly used to look for and monitor abdominal aortic aneurysms because it does not involve radiation.

A CT scan provides detailed cross-sectional images. CT angiography uses injected contrast material to show blood vessels and is often used when detailed planning or rapid emergency assessment is needed.

An MRI uses a magnetic field to create images. MR angiography can examine blood vessels without radiation, although some studies use contrast material.

A catheter angiogram involves passing a thin tube through an artery and injecting contrast material. It provides detailed vessel images and may be used when brain or peripheral aneurysm treatment is being considered.

The clinician may also review blood pressure, smoking history, previous imaging, family history, and symptoms. Echocardiography, an ultrasound examination of the heart, may be used to evaluate the aortic root, nearby ascending aorta, and heart valves.

If an aneurysm could be related to an inherited condition, genetic counseling or testing may be discussed. Close relatives may sometimes be offered imaging, depending on the type of aneurysm and family history.

For abdominal aortic aneurysm, the U.S. Preventive Services Task Force recommends one-time ultrasound screening for men ages 65 to 75 who have ever smoked. Screening decisions for other groups depend on factors such as sex, smoking history, family history, and overall health.

Treatment and management

Treatment depends on the aneurysm's location, size, shape, growth rate, symptoms, and estimated risk of rupture or other complications. Age, other medical conditions, anatomy, and the risks of a procedure also matter.

A small aneurysm that is not causing symptoms may be managed with surveillance , meaning repeat imaging at planned intervals. The timing is individualized. Follow-up scans show whether the aneurysm is stable or growing.

Risk-factor management may include stopping smoking, controlling blood pressure, managing cholesterol, staying physically active within advised limits, and treating related cardiovascular disease. These measures support overall blood vessel health but cannot be assumed to make an existing aneurysm disappear.

Medicines may be prescribed to manage blood pressure or other cardiovascular risks. No medicine reliably repairs an aneurysm that has already formed. A clinician should review over-the-counter medicines, supplements, and prescription drugs in the context of the person's complete health history.

Repair may be considered when an aneurysm is causing symptoms, growing quickly, has reached a size associated with greater risk, or has other concerning features. The point at which treatment is advised differs by location and by the individual.

For an aortic or peripheral aneurysm, repair may involve:

For a brain aneurysm, options may include:

Each approach has potential benefits and risks. Some aneurysms are better suited to one procedure because of their shape or location. Decisions about an unruptured brain aneurysm may involve a neurologist, neurosurgeon, and interventional neuroradiologist. Aortic aneurysm decisions may involve cardiology, vascular surgery, cardiothoracic surgery, or a specialized aortic team.

A ruptured aneurysm requires emergency hospital care. Treatment may include urgent repair, control of bleeding, blood pressure support, and management of effects on the brain, heart, kidneys, or other organs.

- Open surgery , in which the weakened artery is replaced or reinforced with a synthetic graft
- Endovascular repair , in which a graft is guided through an artery, often from the groin, and placed inside the aneurysm to redirect blood flow
- Surgical clipping , which places a small clip across the aneurysm's base
- Endovascular coiling , which fills the aneurysm with small coils to reduce blood flow into it
- Flow diversion or other endovascular devices , which redirect blood along the main artery

Complications

The most serious complication is rupture. A ruptured aortic aneurysm can cause major internal bleeding. A ruptured brain aneurysm usually causes bleeding into the space around the brain, known as a subarachnoid hemorrhage .

Brain bleeding can lead to stroke, seizures, fluid buildup, or reduced blood flow caused by narrowing of nearby arteries. These problems may require intensive monitoring even after the aneurysm has been secured.

An aortic aneurysm may be associated with aortic dissection , in which a tear allows blood to separate layers of the aortic wall. Dissection and rupture are different conditions, but both require emergency assessment.

Blood may move slowly inside an aneurysm and form a clot. Part of the clot can break away and block a smaller artery. In a limb, this may suddenly reduce circulation and threaten tissue.

A large aneurysm may also press on nerves, organs, airways, or veins. The possible effects depend on its location. Complications can also occur after repair, including bleeding, infection, reduced blood flow, movement or leakage around an endovascular graft, or the need for another procedure. Recommended surveillance helps detect some of these problems before they cause symptoms.

Follow up

Routine follow-up is important even when an aneurysm causes no symptoms. Keep scheduled imaging appointments and, when possible, use the same imaging method and center so measurements can be compared accurately.

Ask how large the aneurysm is, how it was measured, and when the next scan is due. Contact the treating clinician before that visit if new persistent pain, new nerve-related symptoms, or a noticeable change in health develops.

After endovascular or open repair, follow-up may include imaging and checks of the incision, circulation, blood pressure, kidney function, or implanted graft. Endovascular repairs often require long-term imaging because leaks or device-related changes may develop without obvious symptoms.

Routine care may also include support to stop smoking and management of blood pressure, cholesterol, diabetes, and other cardiovascular risks. Family members should not assume they need screening, but they can ask their clinicians whether the aneurysm type or family history makes screening appropriate.

Emergency warning signs should not wait for a follow-up appointment. Sudden severe headache, severe chest or back pain, fainting, stroke-like symptoms, or a suddenly cold and

painful limb require immediate emergency care.

Sources

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