



## Diagnostic Tests and Treatment for Brain Aneurysm

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### DESCRIPTION

A brain aneurysm is a bulge in a weak section of a blood vessel in or near the brain. The constant flow of blood forces the weakest area outward, generating a blister-like protrusion. However, due to the small amount of blood that may flow, symptoms may emerge prior to a rupture. This is also called as "sentinel hemorrhage" in the brain. Some aneurysms create symptoms by pressing on surrounding structures such as nerves to the eye. Even if the aneurysm does not rupture, it can cause visual loss or decreased eye movements.

### DIAGNOSTIC TESTS

#### Computerized Tomography (CT)

A CT scan, which is a form of specialized X-ray, is usually the first test used to detect the brain hemorrhage or another type of stroke. The test generates images of 2D "slices" of the brain. This injection of a dye allows for easier observation of blood flow in the brain and may identify the presence of an aneurysm. This type of test is known as a CT angiography.

#### Cerebrospinal fluid test

There will almost certainly be red blood cells in the fluid surrounding the brain and spine with a subarachnoid hemorrhage (cerebrospinal fluid). The symptoms of a ruptured aneurysm but no signs of bleeding on a CT scan, a cerebrospinal fluid test can help. A lumbar puncture is a technique that uses a needle to extract cerebrospinal fluid from the spine.

#### Magnetic Resonance Imaging (MRI)

It is an imaging technology that employs a magnetic field and radio waves to obtain detailed images of the brain either in 2D or 3D. MR angiography is a type of MRI that examines the arteries in great detail and can detect the existence of an aneurysm.

#### Angiogram of the brain

A thin, flexible tube (catheter) is introduced into a major artery, commonly in the groin or wrist, during this surgery. The catheter is threaded into the heart and into the arteries in the brain. A specific dye is placed into the catheter and travels to the arteries in brain.

### TREATMENT

An aneurysm is closed off through surgical clipping. To access the aneurysm, the neurosurgeon removes a portion of the skull and locates the blood supply that feeds the aneurysm. The neurosurgeon next puts a tiny metal clip around the aneurysm's neck to restrict blood flow into it.

Endovascular therapy is a less intrusive method of treatment than surgical clipping. The surgeon threads a catheter through the body to the aneurysm by inserting it into an artery, commonly in the wrist or groin. The surgeon next employs a device, such as a flow diverter, an intraluminal flow disrupter, a stent or coils, or a combination of devices to destroy the aneurysm from within the blood vessel.

#### Flow diverters

Tubular stent-like implants (flow diverters) are newer therapies for brain aneurysms that function by redirecting blood flow away from an aneurysm sac. The diversion blocks blood flow within the aneurysm and stimulates the body to mend the location, allowing the parent artery to be rebuilt. Flow diverters may be especially effective in bigger aneurysms that cannot be treated safely with other alternatives.

Excess cerebrospinal fluid or hydrocephalus linked with a ruptured aneurysm can be relieved *via* ventricular or lumbar draining catheters and shunt surgery. To drain the extra fluid into an external bag, a catheter may be inserted in the fluid-filled regions inside the brain or in the area surrounding the brain and spinal cord.

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