PROCEDURE

Brain aneurysm repair

Brain aneurysm repair closes a weak, bulging brain artery to prevent or stop bleeding.

PURPOSE
Prevent or stop bleeding from a brain aneurysm

PROCEDURE TYPE
Therapeutic-surgical clipping or minimally invasive endovascular repair

WHERE IT IS DONE
Operating theatre or interventional radiology suite

ANAESTHESIA
General anaesthesia

HOW LONG IT TAKES
About 1-5 hours, based on method and complexity

PREPARATION
Fasting, medication review, blood tests, and brain imaging

RECOVERY
Overnight to several weeks; no driving until cleared

MAIN RISKS
Stroke, bleeding, vessel injury, infection

RESULTS
Initial result known immediately; follow-up imaging checks durability

Overview

A brain aneurysm is a weakened, bulging area in an artery. Repair seals it from normal blood flow to prevent rupture or stop further bleeding.

There are two main approaches:

The best approach depends on whether the aneurysm has ruptured, its size, shape and location, your health, and the treating centre's expertise.

- Surgical clipping: A surgeon opens the skull and places a metal clip across the aneurysm's base.
- Endovascular repair: A specialist passes a catheter through an artery, usually from the groin or wrist, and treats the aneurysm with coils, a stent, a flow diverter, or a combination.

Why the procedure is performed

A ruptured aneurysm can cause bleeding around the brain, called a subarachnoid haemorrhage. Repair seals the aneurysm and reduces the risk of another bleed.

Repair may also be considered for an unruptured aneurysm, but not all need treatment. The team compares the future risk of rupture with the immediate risks of repair. Factors include:

- Aneurysm size, shape, location, and growth
- Previous bleeding from another aneurysm
- Age, general health, smoking, and blood pressure
- Family history or inherited conditions
- Pressure on nearby nerves or brain tissue

Who should and should not have it

Emergency repair is usually considered after rupture when treatment is medically possible.

For an unruptured aneurysm, repair may be appropriate when rupture risk is greater than treatment risk, particularly if the aneurysm is growing or has a higher-risk shape or location. Monitoring may be safer when rupture risk is low.

Elective repair may be delayed for an active infection or an unstable medical problem. Some endovascular devices require antiplatelet medicines and may be unsuitable if you cannot take them safely.

Anatomy may make an aneurysm suitable for clipping but not coiling, or the reverse. Severe illness or frailty can make either approach too risky. Your specialist team should explain its recommendation.

How to prepare

Follow your facility's instructions because preparation differs by procedure.

You will usually have brain and blood-vessel imaging, such as CT, MRI, or catheter angiography, plus blood tests and an anaesthetic assessment.

Tell the team about all medicines and supplements, especially anticoagulants and antiplatelet medicines such as aspirin. Do not stop them on your own. If a stent or flow diverter is planned, follow the specific antiplatelet instructions.

Also report allergies, previous contrast-dye reactions, kidney problems, pregnancy or possible pregnancy, and recent illness.

Follow the exact fasting instructions for general anaesthesia. For a planned procedure, arrange transport home and help during early recovery.

What happens during the procedure

You receive general anaesthesia and are monitored throughout.

For surgical clipping , the surgeon opens a small section of skull, reaches the aneurysm using a microscope, and places a clip across its neck. The skull section is replaced and the incision closed.

For endovascular repair , a catheter enters an artery through the groin or wrist. Using X-ray guidance and contrast dye, the specialist places coils, a supporting stent, or a flow diverter. A flow diverter redirects blood so the aneurysm gradually closes.

Imaging during or immediately after treatment checks blood flow and the initial result.

Recovery and what to expect afterward

Pain: Clipping may cause headache, scalp soreness, swelling, tiredness, and jaw discomfort. Endovascular repair usually causes mild tenderness or bruising at the catheter site.

Eating: You can usually eat and drink when awake and swallowing safely. Some people recovering from rupture need a swallowing assessment or temporary nutrition support.

Activity: After endovascular repair, you may need to lie flat temporarily. Avoid strenuous activity and heavy lifting until cleared. Recovery after clipping is generally longer.

Driving: Do not drive home or resume driving until your specialist confirms that you meet local rules. Rupture, stroke, seizures, or neurological problems may extend the restriction.

Work: Return depends on the procedure, your work, and whether rupture occurred. Recovery after rupture may take weeks or months and require rehabilitation.

Risks and possible complications

Both approaches can cause stroke, brain bleeding, aneurysm rupture during treatment, artery injury or narrowing, weakness, speech or vision problems, memory changes, confusion, or seizures.

Clipping also risks wound infection, leakage of fluid surrounding the brain, and injury to nearby tissue or nerves.

Endovascular repair may cause bleeding or artery injury at the catheter site. Contrast dye can trigger an allergic reaction or affect kidney function. An aneurysm can reopen after coiling. Stents and flow diverters can develop clots, especially if prescribed antiplatelet medicine is interrupted.

General anaesthesia can cause breathing, heart, or medication-related problems. Your team will discuss your individual risks before consent.

Results and follow up

The initial result is usually known immediately, although complete closure after a flow diverter may take months.

Before discharge, follow instructions for medicines, wound or catheter-site care, activity, driving, and appointments. Take antiplatelet medicine exactly as prescribed after a stent or flow diverter. Do not stop it without contacting the treating team.

Follow-up imaging checks that the aneurysm remains closed and treated arteries remain open. Endovascular repairs often need ongoing scans because the aneurysm can refill. Clipped aneurysms may also need imaging, especially after incomplete closure or when other aneurysms are present.

After rupture, follow-up may address fatigue, mood, concentration, movement, speech, and return to daily activities.

Alternatives

Some unruptured aneurysms can be monitored with repeat imaging. This avoids immediate treatment risks, but the aneurysm remains and may grow or rupture.

Managing blood pressure and stopping smoking reduce vascular risk but do not close an aneurysm.

Clipping and endovascular repair may be alternatives to each other. Clipping is more invasive and recovery is longer, but closure may be durable. Endovascular repair avoids opening the skull but may require antiplatelet medicine, repeated imaging, or further treatment.

After rupture, leaving an aneurysm unsecured risks another bleed. Supportive care alone may be considered when repair is technically impossible or unlikely to provide meaningful benefit

because of severe illness or brain injury.

When to call your healthcare team

Contact your team about medication questions, persistent tiredness, delayed recovery, or a stable incision or catheter-site bruise.

Seek prompt medical advice for increasing pain, fever, wound redness or drainage, a growing catheter-site lump, repeated vomiting, or a new rash after starting medicine.

Call emergency services for:

Do not drive yourself for emergency care.

- A sudden, very severe headache
- New weakness, numbness, facial drooping, or trouble speaking
- A seizure, fainting, severe confusion, or difficulty waking
- New vision loss, severe balance problems, or inability to walk
- Catheter-site bleeding that does not stop with firm pressure

Common questions

Will I be asleep?

Yes. Clipping and most endovascular repairs use general anaesthesia.

Can I drive home?

No. Arrange transport after a planned procedure, and do not drive again until your specialist clears you.

How painful is brain aneurysm repair?

You should not feel the procedure. Clipping usually causes more pain afterward; endovascular repair commonly causes mild catheter-site soreness.

When will I know if it worked?

Initial imaging usually gives an immediate result. Flow diverters work gradually, and later scans confirm closure. Follow-up also checks for reopening after coiling.

Are clips and coils permanent?

Clips, coils, stents, and flow diverters are intended to remain in place. Tell future imaging staff about your device and obtain its details for MRI safety checks.

How long will I stay in hospital?

Uncomplicated elective endovascular repair may require an overnight stay. Clipping often requires several days. A ruptured aneurysm usually requires longer care and may involve intensive care and rehabilitation.

Sources

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