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Brain aneurysm repair

Brain aneurysm repair is surgery to correct an aneurysm in or near the brain. This is a weak area in a blood vessel wall that causes the vessel to bulge or balloon out and sometimes burst (rupture). It may cause:

- Bleeding into the cerebrospinal fluid (CSF) around the brain (also called a subarachnoid hemorrhage)
- Bleeding into the brain that forms a collection of blood (intracerebral hemorrhage with hematoma)
- Mass effect on nerves

Description

There are two common methods used to repair an aneurysm:

- Clipping is done during an open craniotomy.
- Endovascular repair (surgery), most often using a coil or coiling and stenting (mesh tubes), is a less invasive and more common way to treat aneurysms.

During aneurysm clipping:

- You are given general anesthesia and a breathing tube.
- Your scalp, skull, and the coverings of the brain are opened.
- Your brain is gently retracted to reach the aneurysm.
- A metal clip is placed at the base (neck) of the aneurysm to prevent it from breaking open (bursting).

During endovascular repair (surgery) of an aneurysm:

- You may have general anesthesia and a breathing tube. Or, you may be given medicine to relax you, but not enough to put you to sleep.
- A catheter is guided through a small cut in your groin into and through the femoral artery and then guided through your arteries until it reaches the artery in your brain where the aneurysm is located.
- Contrast material is injected through the catheter. This allows the surgeon to view the arteries and the aneurysm on a monitor in the operating room.
- Thin metal wires are put into the aneurysm. They then coil into a mesh ball. For this reason, the procedure is also called coiling. Blood clots that form around this coil prevent the aneurysm from breaking open and bleeding. Sometimes stents (mesh tubes) are also put in to hold the coils in place and make sure the blood vessel stays open.

- During and right after the procedure, you may be given a blood thinner, such as heparin, clopidogrel, or aspirin. These medicines prevent dangerous blood clots from forming in the stent.

Why the Procedure is Performed

If an aneurysm in the brain breaks open (ruptures), it is an emergency that needs medical treatment in a hospital. Often a rupture is treated with surgery, especially endovascular surgery.

A person may have an unruptured aneurysm without any symptoms. This kind of aneurysm may be found when an MRI or CT scan of the brain is done for another reason.

- Not all aneurysms need to be treated right away. Aneurysms that have never bled, especially if they are very small (less than 3 millimeters or 0.12 inch at their largest point), do not need to be treated right away. These very small aneurysms are less likely to rupture.
- Your surgeon will help you decide whether it is safer to have surgery to block off the aneurysm before it can break open or to monitor the aneurysm with repeated imaging until surgery becomes necessary. Some small aneurysms will never need surgery.

Risks

Risks of anesthesia and surgery in general are:

- Reactions to medicines
- Breathing problems
- Bleeding, blood clots, or infections

Risks of brain surgery are:

- Blood clot or bleeding in or around the brain
- Brain swelling
- Infection in the brain or parts around the brain, such as the skull or scalp
- Seizures
- Stroke

Surgery on any one area of the brain may cause problems that may be mild or severe. They may last a short while or they may not go away.

Signs of brain and nervous system (neurological) problems include:

- Behavior changes
- Confusion, memory problems
- Loss of balance or coordination
- Numbness
- Problems noticing things around you
- Speech problems
- Vision problems (from blindness to problems with side vision)

- Stroke-like symptoms such as muscle weakness on one side of the body

You may need another surgery to further treat the aneurysm or to treat a complication.

Before the Procedure

This procedure is often done as an emergency.

If it is not an emergency, tell your surgeon or nurse if:

- You are or could be pregnant
- You are taking any medicines, including medicines, supplements, or herbs you bought without a prescription

During the week before your surgery:

- You may be asked to temporarily stop taking medicines that keep your blood from clotting. These medicines are called blood thinners. This includes over-the-counter medicines and supplements such as aspirin, ibuprofen (Advil, Motrin), naproxen (Aleve, Naprosyn), and vitamin E. Some other prescription medicines are also blood thinners.
- Ask your surgeon which medicines you should still take on the day of surgery.

On the day of surgery:

- Follow instructions about when to stop eating and drinking.
- Take the medicines your surgeon told you to take with a small sip of water.
- Arrive at the hospital on time.

After the Procedure

A hospital stay for endovascular repair of an aneurysm may be as short as 1 to 2 days if there was no bleeding before surgery.

The hospital stay after craniotomy and aneurysm clipping is usually 4 to 6 days. If there is bleeding or other problems, such as narrowed blood vessels (vasospasm) in the brain or a buildup of fluid in the brain, the hospital stay can be 2 weeks, or longer.

You will probably have imaging tests of the blood vessels (angiogram) in the brain before you are sent home, and possibly once a year for a few years.

Follow instructions on caring for yourself at home.

Ask your surgeon if it will be safe for you to have imaging tests such as angiogram, CT angiogram, or MRI scans of the head in the future.

Outlook (Prognosis)

After successful surgery for a bleeding aneurysm, it is uncommon for it to bleed again.

The outlook also depends on whether brain damage occurred from bleeding before, during, or after surgery.

Most of the time, surgery can prevent a brain aneurysm that has not caused symptoms from becoming larger and breaking open.

You may have more than one aneurysm or the aneurysm that was coiled might grow back. After coiling repair, you will need to be seen by your surgeon every year.

Alternative Names

Aneurysm repair - cerebral; Cerebral aneurysm repair; Coiling; Saccular aneurysm repair; Berry aneurysm repair; Fusiform aneurysm repair; Dissecting aneurysm repair; Endovascular aneurysm repair - brain; Subarachnoid hemorrhage - aneurysm

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