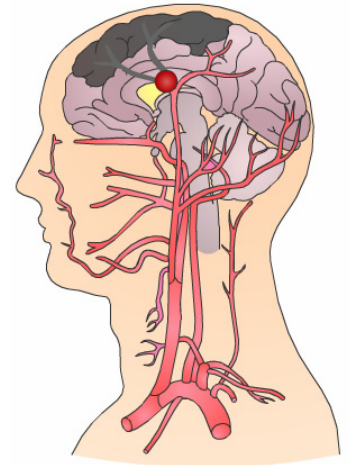


Introduction

Brain aneurysms are a very serious condition that can cause devastating strokes or can even be fatal.

Depending on the age of the patients, health care providers usually recommend surgery for brain aneurysms. If your health care provider recommends surgery for you, the decision whether or not to have surgery is also yours.

This reference summary explains craniotomy for aneurysms. It talks about the signs and symptoms of aneurysms. It also explains the benefits and risks of this surgery.



Anatomy

The brain is the control center of the body. The brain is inside of and protected by the skull. The brain is fed by many blood vessels.

An aneurysm is an abnormality of the blood vessel causing it to balloon. No one knows exactly why aneurysms occur. This ballooning causes the walls of the vessel to become thin and more likely to bleed.

Symptoms and Their Causes

A brain aneurysm may create pressure on and compress the brain. This can cause weakness, blindness, and other neurological symptoms. An aneurysm may also cause a brain bleed, or hemorrhage, around the brain or into it. A high percentage of people who suffer from aneurysm rupture and bleeding do not survive. Many of the survivors go to nursing homes for the rest of their lives because of severe neurological problems.

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An aneurysm may be discovered when a brain CT scan or MRI is done for the above-mentioned symptoms or for other reasons.

Alternative Treatments

Other treatments have been developed to treat the aneurysms with small coils and balloons. These small coils and balloons are used to block off the aneurysm and prevent it from rupturing. They are placed inside or near the aneurysm through special catheters threaded through the main arteries of the brain. This type of treatment is known as endovascular treatment.



The endovascular procedure is not for everyone. Your health care provider will consider many factors, including:

- The size and location of the aneurysm.
- If the aneurysm has bled.
- If bleeding has happened, where in the brain it is located.
- Your age.
- Your overall medical condition.

Very small aneurysms that have not ruptured may need no immediate treatment, just careful follow up.

Surgical Treatment

An operation to clip the aneurysm may prevent further bleeding. This operation can take anywhere from 2 to 6 hours depending on where and how big the aneurysm is. The clip isolates the aneurysm from the blood stream allowing it to deflate. This prevents further bleeds and also takes the pressure off the surrounding brain.

The operation itself is not meant to reverse the effect of any bleeding that may have occurred. It is instead meant to prevent any further bleeding. The operation consists of opening up the skull and clipping the aneurysm. Some of the blood clot may also be taken out.



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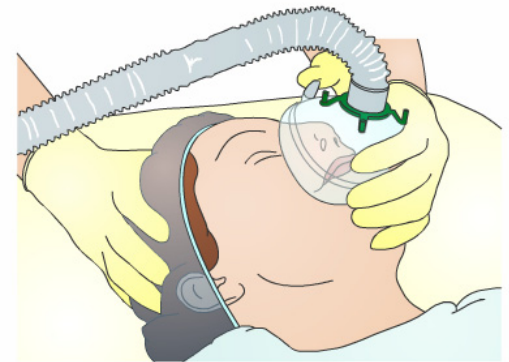
Usually the hair on the proposed site of the head is clipped before the skin incision is made. Holes are made in the skull and a piece of bone is taken out. The brain covering is then entered and the aneurysm is clipped. At the end of the operation, the piece of skull is placed back and the skin is closed. Your doctor will tell you how long you are likely to stay in the hospital. This depends on several factors, such as your age and medical condition.

Risks and Complications

This operation is relatively safe. But there are several possible risks and complications. You need to know about them just in case they happen. By being informed you may be able to help your health care provider detect complications early. The risks and complications include those related to anesthesia and those related to any type of surgery.

Risks of general anesthesia include:

- Nausea.
- Vomiting.
- Urinary retention.
- Cut lips.
- Chipped teeth.
- Sore throat.
- Headache.



More serious risks of general anesthesia can include:

- Heart attacks.
- Strokes.
- Pneumonia.

Your anesthesiologist will talk to you before your surgery about these risks. He or she will ask about any medicines you are currently taking.

Blood clots in the legs can occur due to inactivity during and after the surgery. These usually show up a few days after surgery. They cause the leg to swell and hurt. Blood clots can become dislodged from the leg and go to the lungs where they can cause shortness of breath, chest pain and death. It is extremely important to let your health care providers know if any of these symptoms occur.

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Sometimes the shortness of breath can happen without warning. Getting out of bed shortly after surgery may help decrease the risk of blood clots in the legs.

Some of the risks are seen in any type of surgery. These include:

- Infection, deep in the brain or at the skin level.
- Bleeding either during or after the operation, possibly necessitating another operation and potentially leading to death. A blood transfusion may be necessary.
- Skin scar that may be painful or ugly.



Other risks and complications are related specifically to this aneurysm surgery. These are unlikely. But it is important to know about them. How likely these complications are depends on where and how big the aneurysm is. The bigger the aneurysm and the deeper it is in the brain, the greater the risk of complications.

These complications include:

- Stroke.
- Paralysis.
- Weakness.
- Inability to understand or speak.
- Blindness.
- Personality changes.
- Seizures.
- Death.



Infections may also occur. Infections can be limited to the skin only or can be deep. If the bone flap is infected, it must be removed and replaced with plastic material months after the surgery. The infection can also involve the brain itself, requiring long-term antibiotics and possibly another operation. These are the risks and complications of the operation itself.

A craniotomy for aneurysms is performed to prevent further bleeding. It is not intended to reverse damage already caused by bleeding or compression of the brain.

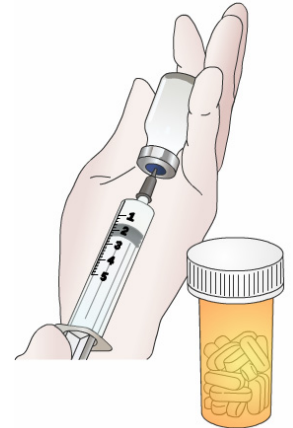
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There are two other possible problems after bleeding from aneurysms: vasospasm and hydrocephalus. But these are highly unlikely when an aneurysm has not ruptured.

Vasospasm is a condition where the blood vessels in the brain narrow because of the initial bleed. This can cause strokes that can be devastating. Sometimes, the strokes from vasospasm are worse than the bleed itself.

Vasospasm may be treated with medication to relax the blood vessels. Other medications are available to increase the blood pressure and force blood into the blood vessels. This treatment for vasospasm is relatively safe if the aneurysm has already been clipped. Even with medication, vasospasm may not improve.

The bleed can also cause the fluid that is normally seen in the brain to build up. This condition is called hydrocephalus. If left untreated, it can cause coma and death.



The symptoms of hydrocephalus include the following:

- Severe headache.
- Sleepiness.
- Weakness.

Hydrocephalus is treated by draining the fluid.

After the Surgery

After the surgery you will probably spend a day or two in the intensive care unit, or ICU. How long you stay depends on how well you are doing. The nurses in intensive care will carefully watch you. This involves repeated checking of your neurological status as well as close watch over your heart and blood pressure. Later you may receive physical therapy, occupational therapy, and other therapies to aid your recovery.



Whether or not you will be able to resume your usual activities depends on how well you are doing at the time of your follow-up. Your health care provider will tell you how long it will take before you are healed and when you can go back to work. This depends on your age, type of work and medical condition, as well as other factors.

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Summary

Brain aneurysms are a very serious condition that may lead to a stroke or to death.

The outcome of an aneurysm is worse after a bleed. It is recommended in many cases to operate on them prior to a bleed.

Even with treatment, the outcome of aneurysms that have bled is uncertain.

Surgery for brain aneurysms that have not yet bled can relieve a variety of serious symptoms. It can even be life saving.

Brain surgery has become safer than before thanks to advances in technology and anesthesia. Complications from surgery may still happen. Knowing about them will help you detect them early if they happen.



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