Treatment for Carotid Artery Disease: Carotid Endarterectomy and Stenting

There are 4 arteries in your neck. They supply blood to your brain. They are the right and left internal carotid arteries and the right and left vertebral arteries (see picture). The internal carotids supply most of the blood flow to the brain.

These arteries can become narrowed due to plaque buildup. This can block the blood flow to your brain. You may then be at risk for stroke.
Symptoms of blocked carotid arteries

- Trouble speaking
- Trouble walking
- Loss of control of an arm or leg
- Trouble understanding what you hear or read
- Loss of balance

If these symptoms come and go, you have had a Transient Ischemic Attack (TIA) or a mini-stroke. If the symptoms don’t go away, you’ve had a stroke. You should **always call your doctor** if you have any of these symptoms. It could lead to a stroke if you are not treated. The buildup of plaque in arteries is called atherosclerosis.

Risk Factors for atherosclerosis:

- Age
- High blood pressure
- Diabetes
- Smoking
- High cholesterol
- Obesity
- Lack of exercise
- Family history
- Irregular heartbeat, especially atrial fibrillation (a heart condition where the heart chambers quiver and beat ineffectively)

Some of these risk factors cannot be changed (age, family history, etc.). But there are some things you can do to reduce your risk:

- Stop smoking
- Start an exercise routine
- Get better control of hypertension, diabetes, and high blood cholesterol
- Lose weight
- Reduce stress
- Change your diet

Tests

You may have a number of tests before your doctor will decide the best treatment for your narrowed arteries. These may include:

- **Carotid Duplex Scan**: Doppler ultrasound is used to measure the blood flow in your carotid arteries.
- **CT scan (computerized tomography)**: A scan of your head and neck that creates an image of your arteries and brain.
- **Angiogram**: A series of x-ray pictures are taken using contrast (x-ray dye). It can pinpoint a blockage in your arteries.
- **Magnetic Resonance Angiogram (MRA)**: an imaging technique that uses a strong magnet, radio signal, and a computer to produce pictures of the blood flow from your arteries.
- **Magnetic Resonance Imaging (MRI)**: the same type of test except it produces pictures of your brain.

Treatment

The treatment will depend on the extent of your disease, where the narrowed arteries are located and how severe your symptoms are. The main concern is to prevent a stroke because the side effects may be permanent. Treatment options may be medical or surgical. Medical treatment includes anti-platelet medicines, statin drugs that lower your cholesterol, blood pressure medicines...
and other lifestyle changes listed above (see Risk Factors). Surgical treatment includes carotid endarterectomy and stent placement.

A carotid endarterectomy is surgery to remove the blockage in the blood vessels leading to your brain. An incision is made in the neck and the plaque is removed. The surgery takes about 2 hours.

Stent placement is an artificial device being placed in your artery. This helps keep the artery open and improve blood flow to the brain. It is inserted into a groin artery using guided x-ray until it reaches the narrowed artery. When it is in place the balloon is inflated, pushing the plaque against the artery wall. A metal stent is placed to keep the artery open.

Surgery Risks
There are risks with every surgery. It depends on your overall health and how severe your disease is. Your doctor will discuss your risks with you before you decide on a treatment option. Some risks include:

- Neck bruising, swelling and discolored skin if you have endarterectomy
- Groin bruising, swelling and discolored skin if you have a stent placed
- Damage to nerves in neck. This can result in a hoarse voice, numbness, or trouble swallowing. These symptoms often do not last. (endarterectomy only)
- Reaction to contrast dye
- Sore throat
- Blockage can reform over time.
- Rarely, a stroke can occur.

Care of the Incision
Most carotid endarterectomy incisions are closed under the skin so there are no sutures on the outside. You may shower, but do not soak in the bath. You may allow the water to flow gently over the area. Do not rub the incision. After your shower, gently pat dry. When shaving, be careful to avoid the incision.

Numbness
It is normal to have some numbness along your incision, neck, and earlobe. This numbness may decrease with time.

Pain Control
It is normal to have some pain at the incision and in your neck. Your doctor has prescribed medicine for you to use at home. This is often the same type you have been getting in the hospital. As time passes, the pain will decrease. Then you may use acetaminophen (Tylenol®) or ibuprofen (Advil®) if you have not had other problems with these medicines.

Activity
By the time you go home, you may be doing some of your normal routine. You may tire more easily than before surgery. This is normal. Your strength and energy level will increase as your body heals.

You should sleep with your head raised on at least 2 pillows. This will help decrease the swelling in your neck.
What to Avoid

- No lifting more than 10 pounds for 2 weeks.
- Avoid contact sports or heavy exercise.
- Your new scar will require sunscreen for the rest of your life. Start using sunscreen after 4 weeks. Protect your scar with a scarf or clothing before that time.
- Ask your doctor at your follow-up visit when you may return to work. Also ask when you can resume sexual activity.
- If you had a carotid endarterectomy, do not drive until advised by your doctor. It may be hard to turn your head due to neck pain. Do not drive after taking narcotic pain medicine.
- If you had a stent placed, you may drive when you no longer have pain in the groin for at least 3 days. Do not drive after taking narcotic pain medicine.

Diet

You may resume your normal diet when you return home. Drink plenty of liquids (8-10 8 oz. glasses of water per day) and eat foods high in fiber (whole grain breads and cereals, fresh fruits and vegetables). This will prevent constipation and straining to have a bowel movement. If this does not help, use a stool softener (such as Colace®) or a laxative.

Follow Up

You will be scheduled for a clinic visit a week or two after surgery. You will need continued exams of your carotid arteries with a carotid duplex scan. The first scan is usually scheduled for 3 months after your procedure.

When to Call 911

The symptoms below can be life-threatening. If you notice them, call 911 and go to the nearest emergency room right away even if they last only a few seconds or minutes. These are warning signs of a stroke and early treatment is vital.

- Sudden severe headache with no known cause.
- Unexplained dizziness, unsteadiness, or a fall.
- Sudden dimmed or lost vision, especially in one eye.
- Trouble speaking or trouble understanding speech.
- Sudden weakness or numbness of the face, arm, or leg on one side of the body.

When to Call your Doctor

Twice each day you should look at your incision. Watch for signs of infection. If you notice any of these signs or symptoms, please call your doctor.

- An increase in redness or warmth at the area of the incision.
- Red streaks on your skin coming from the wound.
- A bulging or swelling at the incision.
- Any new drainage or bleeding.
- If your incision opens.
- Fever greater than 100.5° F (38.1°C) by mouth. If it is still more than 100.5° F after 4 hours, call your doctor.
- Pain or numbness that worsens or numbness in a new area.
- Problems with constipation.

Phone Numbers

If you have more questions once you are home, please call the Vascular Surgery Clinic from 8:00 to 5:00 pm at (608) 263-8915.
After hours, nights, weekends, and holidays, this number will give you the paging operator. Ask for the PVS doctor on call. The doctor will call you back.

If you live out of the area, call 1-800-323-8942.