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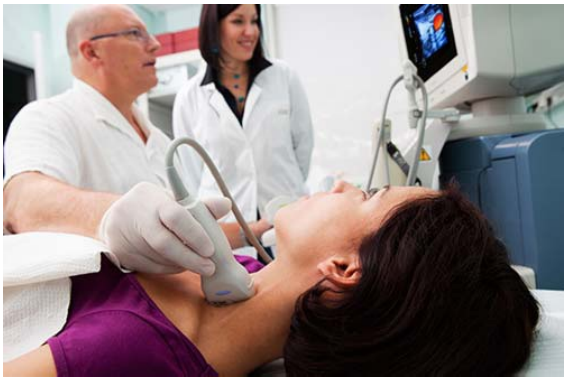
For patients

Carotid Artery Stenosis



Carotid artery stenosis is a narrowing of the large arteries on either side of the neck. These arteries carry blood to the head, face, and brain. This narrowing is usually the result of a build-up of plaque within the arteries, a condition called atherosclerosis. Stenosis can worsen over time to completely block the artery which may lead to stroke.

Your doctor may use carotid ultrasound, CT angiography (CTA), magnetic resonance angiography (MRA), or cerebral angiography to determine the presence, location, and severity of stenosis. Treatment to improve or restore blood flow may include angioplasty and vascular stenting or, in severe cases, surgery.

What is carotid artery stenosis?

Carotid artery stenosis is a narrowing in the large arteries located on each side of the neck. These arteries carry blood to the head, face, and brain. The narrowing usually results from atherosclerosis (http://www.radiologyinfo.org) , or a build-up of plaque (http://www.radiologyinfo.org) on the inside of the arteries. Over time, stenosis can advance to complete blockage of the artery.

Risk factors for carotid artery stenosis include age, smoking, high blood pressure, diabetes, obesity, and an inactive lifestyle.

Some people with carotid artery stenosis may experience dizziness, fainting, and blurred vision. These may be signs that the brain is not receiving enough blood. In many cases, the first symptom is a *stroke (https://www.radiologyinfo.org/en/info/stroke)* or transient ischemic attack (http://www.radiologyinfo.org) (TIA). A small blood clot can form in the artery narrowed by atherosclerosis. The clot can become dislodged and travel into the brain. Once there, it can plug up a smaller artery that the brain depends on to function and survive. Symptoms of a TIA and stroke are similar: paralysis or numbness on one side of the body, blurred vision, headache, trouble speaking, and difficulty responding to others. A TIA is usually brief and leaves no lasting damage. It is due to a temporary occlusion of a small artery. This is often a warning sign. A stroke is often associated with permanent injury of a part of the brain due to loss of blood supply. This can result in mild-severe disability or death.

How is carotid artery stenosis diagnosed and evaluated?

Carotid artery stenosis sometimes causes an abnormal sound, or bruit (http://www.radiologyinfo.org) , in the artery that your doctor can hear with a stethoscope. Imaging tests to diagnose, localize and measure stenosis include:

- Carotid ultrasound (https://www.radiologyinfo.org/en/info/us-carotid) (including Doppler ultrasound): This test uses sound waves to create real-time pictures of the arteries and locate blockages. Doppler is a special ultrasound technique that can detect areas of restricted blood flow in the artery.
- Computed tomography angiography (https://www.radiologyinfo.org/en/info/angioct) (CTA): CTA uses a CT scanner to produce detailed views of the arteries anywhere in the body – in this case, in the neck. The test is particularly useful for patients with pacemakers or stents who may not be able to undergo MR imaging.
- Magnetic resonance angiography (https://www.radiologyinfo.org/en/info/angiomr) (MRA): This noninvasive (http://www.radiologyinfo.org) test gives information similar to that of CTA without using ionizing radiation.

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- Cerebral angiography (https://www.radiologyinfo.org/en/info/angiocerebral) *:* Also known as intra-arterial digital subtraction angiography (IADSA), cerebral angiography is a minimally invasive test in which a catheter (http://www.radiologyinfo.org) is guided through an artery in the groin to the area of interest in the brain. Contrast material (http://www.radiologyinfo.org) is injected through the tube and images are captured with x-rays.

How is carotid artery stenosis treated?

If blockage is mild to moderate, lifestyle modification and certain medications may be recommended to slow the progression of atherosclerosis:

- ***Lifestyle changes:*** Recommendations include quitting smoking, losing weight, dietary modifications to include healthy foods, reducing salt and exercising regularly.
- ***Medication to control blood pressure or lower cholesterol:*** Your doctor may also recommend taking a daily aspirin or other blood-thinning medication to prevent blood clots.

If blockage is severe, surgical treatment may be recommended:

- ***Carotid endarterectomy:*** Severe cases of stenosis often require carotid endarterectomy (http://www.radiologyinfo.org) . A surgeon makes an incision to remove plaque and any diseased portion of the artery while the patient is under general anesthesia (http://www.radiologyinfo.org) .
- *Carotid artery angioplasty and stenting (https://www.radiologyinfo.org/en/info/angioplasty)* **:** A less invasive option used for severe stenosis. During this procedure, the doctor threads a catheter from an incision in the groin to the site of the blockage. Once there, they inflate a balloon to open the artery. The doctor may place a stent in the artery to expand it and maintain open.

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