



*Circulating the Facts About
Peripheral Vascular Disease*

Carotid Artery Disease

*Brought to you by the Education Committee
of the Society for Vascular Nursing*

SVN SOCIETY OF
VASCULAR
NURSING

Circulating the Facts About *Carotid Artery Disease*

This booklet will give you and your family general information about **carotid artery** disease and surgery.

Many people will be involved in the diagnosis and treatment of **carotid artery** disease, but you are the most important. Doctors, nurses and vascular technologists will be studying blood vessels.. However, you are key in controlling the disease by working to change the risk factors involved.

The information in this booklet:

- Describes the blood vessels involved
- Describes blood vessel disease
- Describes possible warning signs/symptoms for a stroke or transient ischemic attack (TIA, mini stroke)
- Describes treatment and surgery available for carotid artery disease
- Provides information about what to expect after surgery and discharge from the hospital

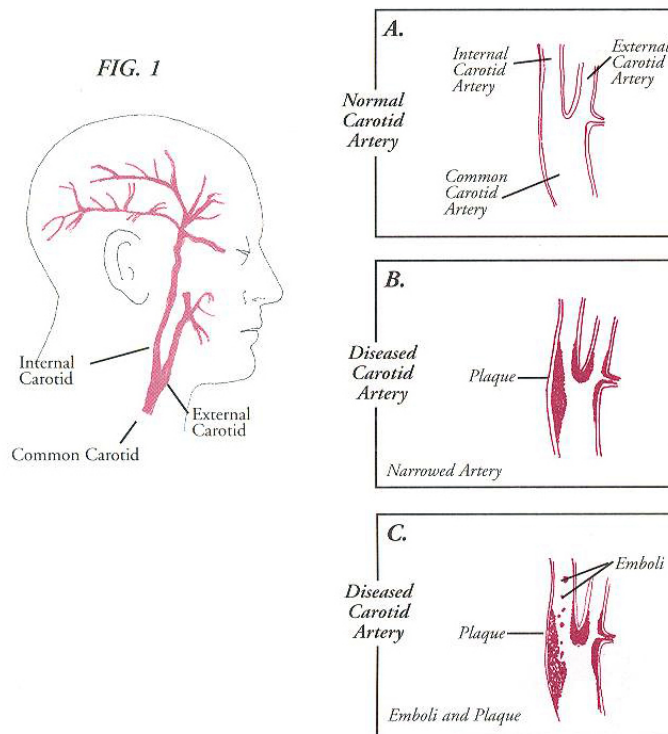
Boldface type is used to point out words that may not be well known, and are defined on the last page of this booklet.

What Is

Carotid Artery Disease?

The carotid arteries are blood vessels in the neck, on either side of the windpipe. They carry the major supply of blood to the head and brain (FIG. 1). The arteries may become thickened and blocked due to **atherosclerosis** or “hardening of the arteries.” This buildup of **plaque** in the neck arteries is referred to as **carotid artery** disease. Ulcers, which have rough edges, may also form inside the **plaque**. From these ulcers, particles of **plaque** or blood clots may move into the bloodstream causing **symptoms**.

Even though you may not have any **symptoms** to suggest **carotid artery** disease your physician may be able to hear a sound, known as a **bruit**, in your neck, which may indicate a narrowing in your **carotid artery**.



What Is A

Transient Ischemic Attack?

Normally, the inner walls of an **artery** are smooth, and blood flows freely. In the blood are special cells called **platelets**. If there is any injury to a blood vessel, the **platelets** help to repair it by forming a clot. With **atherosclerosis**, fatty material called **plaque** collects inside the **artery** and the **artery** becomes more easily injured increasing the chance of clots forming. These can at times be dangerous. If a piece of the **plaque** or platelet clot breaks off (**embolus**), it may travel to smaller arteries beyond it causing a temporary blockage of blood to the brain. This is called a **transient ischemic attack** (TIA) or mini **stroke**. (Transient means temporary, and ischemic means lacking blood supply.) Thus, a TIA is a temporary interruption of blood supply to a part of the brain. A TIA usually lasts from a few seconds to a few hours, but seldom more than 24 hours. It is important that you know the warning **signs**, and report them to your doctor at once. Although no permanent damage to the brain occurs with a TIA, it is your body's number one warning that a **stroke** could occur. A person may have one or more **signs** at the same time.

What Is A *Stroke?*

A **stroke** is also referred to as a **cerebrovascular accident** or **CVA**. There are two types of strokes, hemorrhagic and ischemic.

Hemorrhagic strokes occur when there is bleeding in the brain, typically from a ruptured blood vessel or injury. This type of **stroke** is not due to **carotid artery** disease.

An ischemic **stroke** occurs when the brain does not receive oxygen and nutrients carried by the blood. Ischemia causes brain cells to die. This may occur if blood clots from the heart or other parts of the body travel to the brain. **Carotid artery** disease may cause an ischemic **stroke** if small pieces of **plaque** or **thrombus** (blood clot) in the **carotid artery** break loose and blocks a smaller **artery** in the brain or if the **carotid artery** itself becomes completely blocked by a **thrombus** or **plaque**.

A **stroke** occurs when **symptoms** last more than twenty-four hours. A **stroke** can occur without warning, may be mild to severe, and usually occurs very suddenly. At other times, a person may have warning **signs** that a **stroke** may occur, such as the **transient ischemic attack** (TIA) mentioned before. A **stroke** may involve one or more **symptoms**.

It is important that you recognize the following warning signs and symptoms and call 911 right away:

1. Sudden numbness, weakness, and/or loss of coordination or inability to use one side of the body. Unsteadiness or falling for no apparent reason.
2. Drooping on one side of the mouth or face.
3. Blindness or loss of part of the vision in one eye. Inability to speak and/or understand written or spoken words or thick and garbled speech.
4. Episodes of memory loss: brief periods of time that you cannot recall.
5. Loss of consciousness.
6. Sudden, severe headache with no apparent cause
7. Inability to speak and/or understand written or spoken words or thick or garbled speech

What Treatments Are Available For *Carotid Artery Disease?*

The treatment for **carotid artery** disease depends upon the stenosis, or degree of blockage, found in the **carotid artery**, on the **symptoms** you may have experienced, and your overall state of health. Mild or moderate carotid stenosis may be treated with medication and by reducing as many of your risk factors as possible to slow the growth of the stenosis. Your doctor will discuss the importance of reducing your risk factors and regular medical follow-up.

More severe **carotid artery** stenosis may be treated with an operation known as carotid **endarterectomy** or carotid stenting. Some people are candidates for **carotid artery** “angioplasty and stenting” which involves an **angiogram** with placement of a wire mesh tube that is expanded at the area of the narrowing to relieve the narrowing and hold the **artery** open. If this cannot be done the stenosis can be treated by an operation known as carotid **endarterectomy**.

What Is Involved In *Carotid Angioplasty and Stenting?*

Carotid angioplasty, or ballooning and stenting is a relatively new technique used in carefully selected patients. This procedure is performed in conjunction with an **angiogram** in the radiology suite or operating room. The care following the procedure is similar to that following an **angiogram**, except you will probably stay overnight in the hospital. You may also be started on new medication(s) to help keep the **artery** and **stent** open.

To perform carotid stenting, a small incision is made in the groin and a long, thin tube is placed in the groin **artery**. It is through this tube that the wire mesh tube is advanced up to the **carotid artery** and expanded. The **stent** is left there to keep the **artery** expanded, the catheter is removed and a dressing is applied.

What Is Involved In

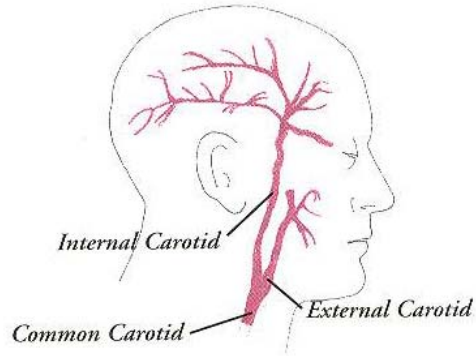
Carotid Endarterectomy?

Carotid **endarterectomy** is a surgical procedure in which the **plaque** and inner lining of the **artery** is removed. The surgeon, nurses, and **anesthesiologist** will provide you with the information needed to prepare for the surgery. If you have any questions, please call your surgeon's office prior to the surgery. Anesthesia may be general or local. In most cases patients are able to come into the hospital the morning of surgery and are dismissed within 24 to 48 hours after surgery. You are encouraged to ask questions if anything is unclear.

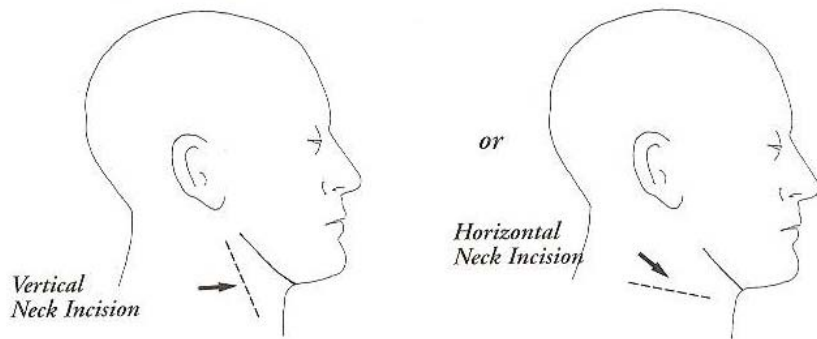
The day before surgery, you may be asked to take a shower with a special soap, and shampoo your hair. You may eat your usual diet the day before surgery, but do not eat or drink anything after midnight, or as instructed, before surgery. If you smoke, you are advised to stop at this time. Your health-care team should tell you if there are certain medications you should not take before surgery. Likewise, you should be told which of your medications you are to take before you come to the hospital.

The morning of surgery, you will need to wear a hospital gown and remove any jewelry, glasses, dentures, etc. The nurse may give you an injection or other medication to help you relax. This injection/medicine may make you feel drowsy. Empty your bladder before the medication is given, and then remain in bed. Soon, you will be taken to the operating room on a stretcher. If you have family or friends with you, the nurse can direct them to the waiting room.

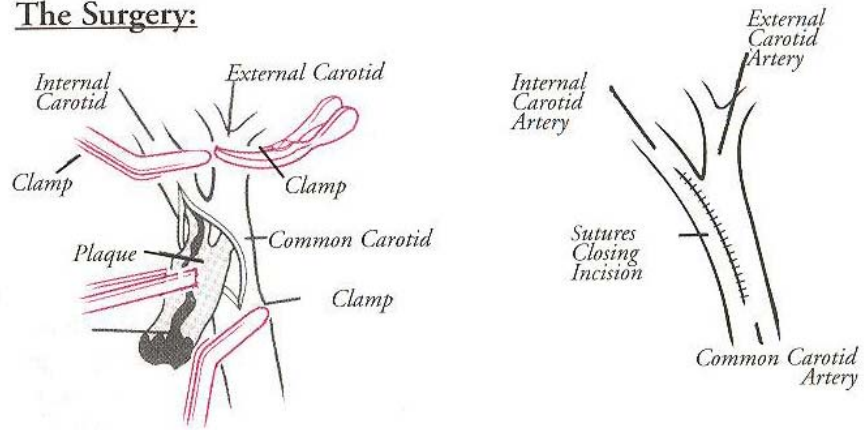
During a carotid endarterectomy, the **artery** is located and clamps are placed above and below the area of the blockage. Sometimes a shunt is inserted to allow bloodflow to continue to the brain. The incision is made in the **artery** and the **plaque** is carefully removed. The **artery** is then closed, the incision is closed with **sutures** or staples and a dressing is applied.



The Incision (*Surgeon's choice*)



The Surgery:



Carotid Endarterectomy

What Happens

After Surgery?

After surgery, you will be taken to the Post-anesthesia Care Unit or a monitored care unit until your condition is stable. It is routine for the nurses to check your dressing, your pulse, and blood pressure frequently. The nurses will shine a flashlight at your eyes to check your pupil response, ask you simple questions, and ask you to grip their hands and move your arms and legs. This is done to check how the right and left sides of the brain are working, and that you are thinking clearly.

You will be asked to cough, turn, and take deep breaths while you are in bed in order to prevent pneumonia or other breathing problems. Later in the day or the day after surgery, you will be able to get out of bed. Usually you will be able to eat your usual diet the day after surgery and you will likely be able to transfer from the monitored care unit to a regular room.

The length of time you will be in the hospital varies, but is usually less than 48 hours. If visible **sutures** or staples have been used, they will be removed before leaving the hospital or a few days later in the doctor's office. Your doctor or nurse will inform you about when you may shave, shower, and bathe near your incision.

What Should I Expect After I Go

Home From the Hospital?

Expect that you may feel a little weaker and more tired at home. This is normal, and it may take a few weeks for you to feel like yourself again. Your doctor or nurse will inform you of your activity restrictions and the time period for those restrictions. Typically, you will be asked to avoid heavy lifting and driving. If you are employed, your physician will help you determine when you may return to work. As you resume your usual activities at home allow for rest periods.

If you have questions or problems at home, feel free to contact your doctor or nurse between check ups. Slight dizziness, mild headache, mild swelling and/or numbness around the incision are common, and need not be worrisome. However, do report a fever, excessive redness or drainage from the incision (usually more than one teaspoon), weakness or numbness of an arm or leg, changes in vision, severe headaches, difficulty breathing, difficulty swallowing, or difficulty talking.

It is important for you to follow-up with your primary care physician and surgeon on a regular basis or at least yearly. Medical management of your risk factors and continued evaluation of your carotid arteries are necessary to prevent and/or delay further health problems due to **atherosclerosis**.

In Conclusion...

With the recent advances in vascular surgery and interventional radiology, carotid angioplasty and stenting or surgery can be performed with low risk of complication. Your procedure may prevent **stroke**, and possibly prolong your life. Remember, regardless of the type of procedure you have, the atherosclerotic disease process is still present. In order to control this, a firm commitment to keep regular follow up appointments with your doctor, and to change your lifestyle to reduce as many risk factors as possible will help to prevent further disease.

For A

Better Understanding

ANESTHESIOLOGIST: A doctor trained in giving drugs or agents that take away pain and sensation for a procedure / operation.

ARTERY: A blood vessel carrying blood from the heart to the rest of the body.

ARTERIOSCLEROSIS: A condition resulting in thickening and hardening of the arterial wall.

ANGIOGRAM (ARTERIOGRAM): A x-ray picture of an artery obtained by the injection of dye into an artery.

ATHEROSCLEROSIS: A form of arteriosclerosis; it is caused by cholesterol and fat deposits inside an artery.

BALLOON ANGIOPLASTY: Dilation of a narrowed artery by inflation of a balloon catheter.

BRUIT: A sound heard over an artery that may indicate a narrowing in the artery.

CAROTID ARTERY: A major artery leading to the brain on each side of the neck, which if blocked partially or completely, may cause temporary or permanent stroke.

CHOLESTEROL: A fatty substance in animal tissues, which if used in excess in the diet, may be a factor in the development of atherosclerosis.

CVA: Cerebrovascular accident; another name for stroke.

EMBOLUS: A piece of blood clot or plaque that breaks away from the wall of an artery. More than 1 embolus = emboli.

ENDARTERECTOMY: Removal of atherosclerotic plaque from the inner wall of an artery by operation.

HYPERTENSION: High blood pressure.

MINI STROKE or Transient Ischemic Attack (TIA). A decrease of blood to a part of the brain, resulting in symptoms that “come and go” *lasting less than 24 hours*; a temporary condition.

PLAQUE: A build up of cholesterol and fatty materials deposited on the inner lining of an artery.

PLATELETS: Special cells in the blood that help to repair an injured blood vessel.

SIGNS: Any concrete evidence of disease; indicators of the presence of disease.

STENT: A wire mesh tube that is expanded at the site of stenosis in order to relieve the stenosis and hold the artery in its expanded state.

SUTURES: A stitch or series of stitches that secure the edges of a surgical wound.

STROKE: A condition resulting from the interruption of blood supply to the brain, and causing which may include paralysis, loss of consciousness, inability to speak, inability to understand written or verbal words, visual disturbances, facial drooping, difficulty swallowing, or shock, *and lasting more than 24 hours*.

SYMPTOM: Any functional evidence of disease.

THROMBUS: A blood clot

TRANSIENT ISCHEMIC ATTACK (TIA) or MINI STROKE: A decrease of blood to a part of the brain, resulting in symptoms that “come and go” *lasting less than 24 hours*; a temporary condition.

For More Information

American Stroke Association (www.strokeassociation.org)
Society for Vascular Nursing (www.svnnet.org)



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