

Vascular Testing

Peripheral arterial disease (also known as peripheral vascular disease or atherosclerosis) is caused by narrowing or blockage of arteries that decreases blood flow to extremities (arms/legs/head/neck). This decreased movement of blood can be caused by a narrowing of vessels related to hypertension, diabetes and smoking or due to a build up of plaque inside the vessels from cholesterol, calcium and other materials. The plaque buildup/narrowing leaves less room for the blood to flow through the vessel, consequently limiting oxygen and vital nutrients to the head, hands, feet and tissues. When the supply of oxygen is interrupted, damage can occur causing pain, numbness, tingling, claudication, severe limb complications and stroke. There is significant correlation between coronary artery disease (CAD) and peripheral vascular disease. Several tests are provided in our office to evaluate blood flow through veins and arteries.

There are many indications for vascular testing, which will be decided by your physician; however some of the common reasons are listed:

Peripheral Arterial Evaluation: Arterial Insufficiency, Limb Claudication, Aortic Aneurysm/Stenosis, Renal Artery Stenosis/Hypertension, Ischemic Lesions, non healing ulcers, Questionable Pseudoaneurysm, Reynaud's Disease, Thoracic Outlet Syndrome (TOS)

Peripheral Venous Evaluation: Possible Deep Vein Thrombosis, Suspected Pulmonary Embolism, Superficial Thrombophlebitis, Unexplained Limb Edema (acute or chronic), Venous Insufficiency.

Cerebrovascular Evaluation: Asymptomatic/Symptomatic Bruit, Focal Cerebral or Ocular Trans Ischemic Attack (TIA), Previous Cerebral Vascular Accident (CVA), Post Carotid Endarterectomy, Carotid Body Tumor or Aneurysm.

There are many vascular tests that are done in our office that are safe and noninvasive. The following is a list of the test, how it is performed and if there is any type of preparation for the test it will be indicated. If there is no indication, there is no preparation needed. Please wear comfortable, loose fitting clothing to your appointment, and plan to spend 30-45 minutes at our office.

Arterial Upper, Torso(Trunk) and Lower Extremity Testing:

Arterial Duplex/Doppler is a test that can be done on specific arteries lower and upper extremities, neck and torso, with or without exercise (ie subclavian, iliac, femoral). The test involves a Doppler ultrasound in which a technician uses a wand type instrument (transducer) to pass lightly over skin above a vessel that may be diseased. The transducer transmits sound waves from blood movement. The machine then produces graphs that represent the blood flow. The Duplex is usually done with particular focus on a specific site (ie pseudoaneurysm in groin after catheterization). Results indicate whether or not there is a decrease in blood flow through a specific artery.

Arterial/ Pulse Volume Recording Testing can be done on upper and lower extremities with blood pressure cuffs which are small and individual. There are cuffs for each arm, thigh, ankle, calve and foot taking pressure measurements all the way down. This can be done resting and/or with exercise. The results of pressures on the right and the left are then compared and it is determined if there are circulation problems or not. Pulse Volume Recordings can be done on several different areas of the body and include the following.

Arterial Segmental Testing is a test in which any of the above can be done separately or segmentally to obtain a conclusion about a specific portion of the extremity that may be in question.

Arterial/Ankle-Brachial Index is a test in which blood pressure cuffs are attached to the arm and the ankle. Pressures are taken both at rest and with exercise. If there is a drop in pressure when exercising, the results are positive.

Arterial Upper/Bilateral/Thoracic Outlet Syndrome is a test in which blood pressure cuffs are placed on the patients upper arms. The test is performed while sitting and arms of the patient are moved to different positions and measurements are taken with movement to determine circulation in arms.

Arterial Upper and Lower Digital Exam is a test in which circulation to the digits (finger and toes) is measured by placing sensors/cuffs on each digit and calculation is made from the sensors when comparing them to normal and each other.

Three other scans of the arteries can be performed which are not included in the above PVRs.

Carotid Artery Scan is an ultrasound scan of the carotid arteries (in the neck that supply blood to the brain). The scan consists of views of the structure of the arteries as well as blood flow through these vessels.

Renal Artery Scan is an ultrasound of the renal arteries (the arteries that supply blood to the kidneys). The scan can reveal structure and blood flow. This test can be done for several reasons, however the most common is

hypertension that remains difficult to control. Kidneys have a number of significant functions in blood pressure control. The preparation is nothing by mouth 8-12 hours prior to exam except for taking Gas-X the night before and morning of the test. Test should then be scheduled early in the AM and the patient should bring medication to take after the exam.

Aorta Scan is an ultrasound of the abdominal aorta (largest artery in the abdominal cavity which supplies blood from the heart to upper and lower extremities and abdominal organs). The preparation is nothing by mouth 8-12 hours prior to the exam except taking Gas-X the night before and morning of the test. The test should be scheduled early in the AM and the patient should bring medication to take after the exam.

Venous Testing:

Venous Lower Extremity Duplex is a doppler or ultrasound of the veins in the legs. The test can be done on one leg or both (bilateral). The scan will reveal structure and blood flow through the veins.

Venous Upper Extremity Duplex is a doppler or ultrasound of the veins in the arms. The test can be done on one arm or bilaterally. The scan can reveal structure of the veins as well as blood flow through them.