



**Deep Vein Thrombosis – A medical condition that requires deep consideration**

By Brenda Silva

Among the many serious medical conditions a patient can experience is anything that restricts or blocks blood from its natural and intended flow within the human body. Examples of this as related to arteries are peripheral artery disease (PAD) and critical limb ischemia (CLI), the more serious stage of PAD. However, there is also another serious condition called deep vein thrombosis (DVT) that affects the deep veins in the body, and can prove just as life-threatening if it goes undetected and untreated.

Deep vein thrombosis (DVT) occurs when a blood clot forms in one or more of the deep veins in the body, usually in the legs. Patients who are experiencing DVT may have pain or tenderness like cramping when standing or walking, and there may be some swelling in the affected leg. As the blood clot worsens, the skin around it often becomes red or discolored and feels warm to the touch. Deep vein blood clots typically form in your thigh or lower leg, but they can also develop in other areas of your body. The issue often goes unnoticed and dissolves on its own, but if someone is diagnosed with DVT, they will need immediate treatment to avoid serious complications such as pulmonary embolism (PE).

DVT blood clots can affect anyone, although some people have a higher risk than others. As such, if your risk is higher than normal, you need to be especially diligent about paying attention to the warning signs. Recognizing a DVT blood clot early and seeking prompt treatment can prevent potential complications. But it's not always easy to recognize DVT symptoms. In fact, some people experience mild symptoms and may not realize they have a potentially life-threatening disease. Because of that, here are the five symptoms you should never ignore if you suspect a DVT:

- Leg swelling
- Leg pain
- Muscle cramping
- Skin warmth
- Color changes

Many of the symptoms of DVT, such as redness, swelling and pain, are common to other conditions. However, a DVT blood clot is a medical emergency. It can lead to a life-threatening complication called a pulmonary embolism (PE), a condition caused by blood clots that travel from the legs or, rarely, other parts of the body.

According to the Mayo Clinic, DVT is a common medical condition with over 200,000 reported cases per year. However, when a blood clot goes unreported and untreated, approximately one in 10 people with DVT will develop a pulmonary embolism – a condition in which one or more arteries in the lungs become blocked by a blood clot. In most cases, a PE is caused by blood clots that travel from the legs or other parts of the body. Some of the symptoms of a PE include shortness of breath, chest pain, and cough – all of which may come on gradually or suddenly.

While there are many scenarios often cited as cause for DVT, the most common is prolonged sitting or lying down. When sitting for long periods of time, such as when driving or flying, your legs remain still for hours and your calf muscles don't contract. This can be detrimental to the body because muscle contractions normally help blood circulate. Statistics show that sitting still for four or more hours slows down the blood flow in your legs. This makes your blood more likely to clot. And for the next few weeks, your blood clot risk stays higher than normal.

Of the ways to prevent clots from forming in the first place is regular physical activity, the elevation of the affected leg, taking walks, and the wearing of compression socks. Once a clot forms, prompt treatment to break it up reduces its relocation elsewhere and the risk of death.

Once clots form, they can travel to the lungs and cause PE. The Centers for Disease Control and Prevention estimates that as many as 900,000 people may be affected by DVT/PE each year, resulting in 60,000 to 100,000 deaths. Currently, blood clots are removed when a catheter is inserted into a vein in the leg and carefully threaded through the vein with the help of x-ray imaging until it reaches the site of the blood clot. When the tip of the catheter reaches the clot, a clot-dissolving drug is infused into the clot through the catheter.

Ultimately, many people with DVT blood clots will recover completely. But up to 50 percent will develop post-thrombotic syndrome (PTS), a condition that can cause chronic pain, swelling, and discomfort that can permanently affect your quality of life.



## Peripheral Artery Disease – A common and costly vascular issue

By Brenda Silva

Much like many other common diseases, peripheral artery disease (PAD) shows no favorites among patients and can affect anyone and everyone. In fact, statistics from the American Heart Association (AHA) estimate that PAD affects over 8.5 million Americans and over 200 million people nationwide (not including a suspected large number of undiagnosed cases).

As one of the most common vascular diseases, PAD (also known as peripheral vascular disease or PVD) results from a progressive thickening of an artery's lining caused by a buildup of plaque, which narrows or blocks blood flow, reducing circulation of the blood to a specific organ or region of the body. This process, atherosclerotic occlusive vascular disease or atherosclerosis, is often called "hardening of the arteries."

Often, people with PAD may not experience symptoms until the disease is advanced. Almost all symptoms are due to the leg muscles not having enough blood. Typically, people with PAD experience a painful cramping in the hips, thighs or calves with walking, climbing stairs or exercising that is relieved with rest and elevation of the legs.

While the symptoms of PAD can be temporarily alleviated with medication and rest, the cost in terms of disability and medical treatments is enormous. For example, healthcare costs related to PAD are estimated at more than \$21 billion annually in the U.S. alone. The costs continue to grow because so many vascular diseases are chronic with frequent complications. Because the vascular system is so complex, diseases can appear anywhere in the body in different forms and often occur along with other diseases such as diabetes or heart disease.

When it comes to recognizing the symptoms of peripheral artery disease, many people only experience symptoms when their PAD reaches an advanced state. At this point, warning signs of PAD could include any of the following:

- Cramping pain that does not go away when you stop exercising
- Decrease in the temperature of your lower leg or foot compared to the rest of your body
- Toe or foot wounds that do not heal or heal very slowly
- Shiny skin that is pale in color, or worse, gangrene in appearance

In addition to knowing the symptoms of peripheral artery disease, there are many risk factors that can cause or advance the development of PAD. The most important to remember are:

- High blood pressure
- Smoking
- Diabetes
- Obesity
- Lack of exercise
- High cholesterol

Along with paying close attention to the signs, symptoms and risk factors of PAD, there are two other areas that also need to be included in one's potential for developing this vascular disease – age considerations and genetics. Both men and women should strive to remain active after age 60 to stave off the possibility of developing PAD post-menopause, and genetics need to be included as a factor that can also be a cause of poor blood circulation in the legs, a condition which affects about 10 million people in the U.S., many who only become aware of the reason when the condition becomes advanced.

Ultimately, the best way to try to prevent developing PAD is to maintain a healthy, active lifestyle. This includes quitting smoking if you smoke, as well as working to control your blood pressure, cholesterol, and glucose levels. Exercising regularly is also important along with a low-fat, low-cholesterol diet and eating more fruits and vegetables. By making these changes, you can save the health of your legs and life overall.



## Critical Limb Ischemia – A serious complication of poor circulation

By Brenda Silva

In much the same way that rivers and streams often flow in an established pathway, so does the blood that flows throughout the body's arteries. And just like with nature's waterways, there is also the potential for blockages to form in our own arteries, which, if not addressed, can become detrimental to the affected extremity, as well as to the overall health of the body itself. Among the most common artery blockages is a condition known as critical limb ischemia (CLI), and as serious as it is, there are ways to avoid its occurrence.

Described using an example of cause and effect, the condition known as atherosclerosis is caused by a hardening of the buildup of fatty deposits in the arteries called plaque, which leads to a narrowing of the arteries that reduces blood flow. The reduced blood flow condition is referred to as advanced stage peripheral artery disease (PAD), and when the blockage in the arteries of the lower extremities becomes even more severe in reducing blood flow it's diagnosed as CLI.

Even though patients have no way of knowing where or how big an artery blockage may be without benefit of physician/surgeon interaction and diagnostic testing, there are some common symptoms that indicate the possibility of a blocked extremity. They include:

- Painful cramping in one or both of your hips, thighs or calf muscles after certain activities, such as walking or climbing stairs (claudication)
- Leg numbness or weakness
- Coldness in your lower leg or foot, especially when compared with the other side
- Severe pain in the feet or toes, even when resting

Serious complications of poor circulation can also include sores and wounds that won't heal in the legs and feet. If left untreated and worsened, critical limb ischemia has the potential of resulting in the amputation of the affected limb. To avoid both PAD and CLI, people should be aware of the symptoms that indicate poor circulation in the legs and feet, which include:

- Swollen veins and arteries (varicose or "spider" veins)
- Heaviness in legs and feet
- Skin discoloration
- Swollen legs and feet
- Split, weeping skin
- Skin ulcers
- Pelvic pain or discomfort
- Restless legs and feet / Cold feet
- Tingling or "pins and needles"
- Pain or aching

Unbeknownst to many patients, having poor circulation is not a named disease in and of itself. Instead, it is commonly the result of another, underlying and serious health issue, which is why it's crucial to treat the primary cause, rather than just the symptoms of poor circulation. For many people, this means that poor circulation can be reversed and fixed once the cause is found.

Among the most frequently listed ways to increase blood circulation in the legs is to stop smoking if you smoke, as smoking has a negative effect on blood circulation. It is also recommended to stay hydrated, as a well-hydrated body allows the heart to pump blood through blood vessels much easier. Other various suggestions for improved circulation put an emphasis on diet and exercise and include drinking tea, eating a balanced diet, maintaining a healthy weight, jogging, practicing yoga, and keeping your iron levels balanced.

While the list of ways to prevent poor circulation is lengthy, it also begs the question of what are the best ways to treat existing PAD or CLI once either has been diagnosed? Because PAD can go undiagnosed, and subsequently untreated, it remains dangerous in that it can lead to painful symptoms or loss of a leg. In addition, patients with PAD have an increased risk of coronary artery disease, as well as stroke and heart attack – both of which are related to an interruption of blood flow to either the brain (stroke) or heart (heart attack).

So how can blocked arteries become unblocked, and can PAD or CLI be reversed? When it comes to unblocking arteries, angioplasty and stent placement are two ways to open blocked peripheral arteries. Angioplasty is used to open narrowed or blocked blood vessels that supply blood to your legs. As a second option, the use of a stent can keep an artery open. As fatty deposits build up inside the arteries and block blood flow, a carefully placed stent is a small, metal mesh tube that keeps the artery open and allows increased blood flow.

Overall, treatment for peripheral artery disease and CLI focuses on reducing symptoms and preventing further progression of the disease. In most cases, lifestyle changes, exercise and medications are enough to slow the progression or even reverse the symptoms of both.



## Acute Aortic Dissection – Risk factors and how to avoid deadly side effects

By Brenda Silva

Just as the heart is arguably the most important organ in the human body, the aorta is just as important as the main blood vessel leaving the heart, supplying the body with oxygenated blood. As such, anything that impedes the blood flow from the heart also prevents blood from circulating properly and reaching areas of the body where it's needed to maintain cells, tissues, etc., in healthy human beings. Unfortunately, the aorta can be affected not only by factors that impede the blood flowing inside it, but also by factors that can weaken its outer walls, which can lead to an acute aortic dissection or worse, a rupture of the aorta.

Many people are at an increased risk for an acute aortic dissection and only become aware of this when they experience the results of years of unhealthy lifestyle choices such as smoking, poor diet and lack of exercise. An acute aortic dissection occurs when a weakness in the wall of the aorta causes it to tear, allowing blood to leak into the passage between the layers of its wall. This condition is less severe than an aortic rupture – a catastrophic blowout of the aorta – in that the weakening happens over time versus all at once; however, it can be just as deadly in its effect with many people unable to have life-saving surgery in time to survive the dissection.

Risk factors for an acute aortic dissection are typically lifestyle-related and can include years of alcohol abuse and smoking, as well as high blood pressure (hypertension), which all play a responsible role for weakening in the aortic wall. Alcohol makes the blood vessels relax, causing a drop in blood pressure. The result of this is the heart has to work harder to maintain blood flow to essential organs, which ultimately increases the blood pressure.

When considering the affect of cigarettes on the aorta, it's the chemicals in the cigarettes that damage the structure of the aorta. This structural damage can increase the risk of atherosclerosis – a disease in which a waxy substance called plaque builds up and leads to more resistance in the arteries. This disease, along with a direct effect of the cigarette chemicals, accelerates hypertension and can result in an acute aortic dissection.

In addition to an acute aortic dissection, ischemic strokes are also symptomatic of being a heavy smoker. Ischemic strokes are the most common kind of strokes and occur when blood clots block the flow of blood and oxygen the brain. These blood clots typically form in areas where the arteries have been narrowed or have degenerated over time. Heavy smokers often experience angina – a pain or discomfort felt in the chest – which is caused by poor blood flow to the heart.

People who are fortunate enough to survive a diagnosis of an acute aortic dissection at a hospital often report feeling a tearing sensation in their back and chest. Unaware of what's wrong, these symptoms are an indication that the aorta is breaking down, making life-saving surgery a priority. Depending on the damage to the aorta and the age of the patient, surgeons may concentrate on repairing the key parts/sections of the aorta. During surgery, the surgeons can assess the effects and deterioration of the aorta, and may only replace areas with the most damage. Post-surgical treatment may continue with further therapy – such as blood pressure medication – and can give the fragile aortic wall time to heal.

In the deaths of people with a diagnosis of acute aortic dissection, there can be another contributing factor listed on the death certificate, cystic medial necrosis, which is the breakdown of muscle, collagen and elastin in the large blood vessels throughout the body. When the blood vessels lose this elasticity and support, it makes them more liable to tear and ultimately rupture. Hence the reason cystic medial necrosis is listed as contributing to the person's death.

A disease that has also been considered as a contributing factor in the deaths of people with diagnosed acute aortic dissections stems from having a strep infection many years prior. A link between Rheumatic fever and heart problems later in life has been shown to have some validity with a direct effect on the aorta and aortic valve. It's thought that having Rheumatic fever could cause the aortic valve to be deformed, creating a turbulent blood flow inside the aorta. Over time, this could weaken the aortic wall and increase the likelihood of a rupture that could lead to death.

Because the aorta is such a dominant blood vessel in the body, any tearing creates the potential for a rupture, which would bleed heavily into the abdominal cavity. With the body starved of blood and oxygen, organs would begin to shut down, leading to cardiac arrest and, if resuscitation efforts are unsuccessful, death. Faced with this possible reality, people at high risk should take steps toward prevention, including quitting smoking and managing hypertension as minimal life-extending efforts.



## Carotid Artery Disease – The dangerous build up and deadly let down

By Brenda Silva

In much the same way that dental plaque can build up on teeth, another type of plaque can build up within carotid arteries. The main difference, however, is that dental plaque can be seen and removed at regular check-ups, whereas carotid artery plaque can silently build up until it causes a transient ischemic attack (TIA) or stroke.

According to the Mayo Clinic, carotid artery disease (CAD) is defined by the narrowing or blockage of the carotid artery due to the build-up of plaque, which is a deposit of cholesterol, calcium, and other cells in the artery wall. The carotid arteries are the blood vessels that carry oxygen-rich blood from the heart to the head and brain. Located on each side of the neck, the carotid arteries are essential as they supply blood to the large front part of the brain. Another smaller set of arteries, the vertebral arteries, is located along the back of the neck adjacent to the spine, and supply blood to the back of the brain.

In carotid artery disease, the process that blocks these arteries, called atherosclerosis, is basically the same as that which causes coronary artery disease and peripheral artery disease (PAD). The build-up of plaque is caused by high blood pressure, diabetes, tobacco use, high blood cholesterol and other risk factors. Over time, this narrowing may eventually become so severe that a blockage decreases blood flow to the brain and may cause a stroke. A stroke can also occur if a piece of plaque or a blood clot breaks off from the wall and travels to smaller arteries of the brain. Stroke may also be caused by heart valve problems, heart failure or atrial fibrillation, or if bleeding occurs in brain tissue. Nevertheless, carotid artery disease is one of the most common causes of stroke. In fact, according to the National Stroke Council, more than half of the strokes in the United States occur because of carotid artery disease.

Similar to other types of artery diseases, there are no advance warnings of CAD. For many patients, the first sign of CAD is a mini-stroke, in which symptoms may include:

- Blurring, dimming or loss of vision in one eye
- Tingling around the mouth
- Difficulty with speech
- Inability to move extremities
- Numbness in a part of the body
- Sudden severe headache

The risk factors for carotid artery disease are the same as they are for PAD, as well as for coronary heart disease, and have the potential to create an outcome that is just as deadly. The main risk factors include:

- Family history of atherosclerosis
- Age (men have a higher risk before age 75, women have a higher risk after age 75)
- Smoking
- Hypertension
- Diabetes
- High cholesterol (especially high amounts of low density lipoprotein or LDL).

Because there are no outwardly visible signs of CAD, the diagnosis of carotid artery disease is usually based on an ultrasound exam of the neck arteries. If need be, this can be confirmed by performing a CT angiogram or standard angiogram to examine the carotid arteries. Once CAD has been diagnosed in a patient, treatment initially consists of controlling the risk factors that are responsible for causing artery blockages. Physicians agree that anyone with any degree of narrowing of a carotid artery, or with any history of stroke, should quit using all tobacco products, control their blood pressure and diabetes, normalize their blood cholesterol and exercise regularly.

People with severe blockages of the carotid artery (greater than 70 percent blockage) and those who have suffered a TIA or stroke, may be recommended for a carotid endarterectomy. During this procedure, the plaque from inside the artery wall is surgically removed and the blood flow is restored to normal. Carotid endarterectomy is successful because the plaque is usually limited to a very small area in the mid-portion of the artery in the neck. This allows the procedure to be performed through a small incision in the neck. Most patients go home the morning after surgery, and quickly resume normal activities without restrictions.

Anyone who has risk factors for CAD should consult with a healthcare professional and make these risk factors known in medical records. For anyone experiencing symptoms of carotid artery disease, never hesitate in seeking help, as every minute is critical and can be the deciding factor between life and death.