

# What is a vascular malformation?

Vascular malformations result from abnormal development of one type of vessel or several types of vessels. Vessels include capillaries, veins, arteries, and lymphatic channels and they carry blood and other fluids around the body. Vascular malformations are present at birth but sometimes cannot be seen or do not cause problems until later in life.

## WHAT CAUSES VASCULAR MALFORMATIONS?

Why these malformations form is not completely understood, but we are learning more about them. We now know that some might be the result of genetic changes. Sometimes these can be part of rare syndromes with names such as Klippel-Trenaunay, Sturge-Weber, or Proteus syndrome. Most children with a vascular malformation do not have a syndrome. However, when vascular malformations are part of a syndrome, other problems may also be seen.

## WHAT ARE THE DIFFERENT KINDS OF VASCULAR MALFORMATIONS?

### CAPILLARY MALFORMATIONS

Capillaries are the smallest (hair-size) and most abundant vessels in our bodies. Capillary malformations occur when capillaries form differently in an area of the skin. There are two types of capillary malformations:

- » **Nevus Simplex** (also called "salmon patch") is very common. These are seen in almost half of all newborns. The most common locations are between the eyebrows and on the eyelids (often called "angel's kiss") and on the back of the neck (often called "stork bite"). They tend to be pink or red and sometimes stand out more when babies cry. Most of the ones on the face disappear by age one or two. Those on the back of the scalp and neck often do not disappear but are usually covered by hair.
- » **Port-Wine Stain** is a capillary malformation that does not fade. These are most common on the face but can be anywhere on the body. For additional information about this type of capillary malformation, please see the Society for Pediatric Dermatology's Port-Wine Stains handout: <https://pedsderm.net/for-patients-families/patient-handouts/#PWS>

### VENOUS MALFORMATIONS

A venous malformation is a group of extra or enlarged veins that are connected to the body's circulation but are not part of the regular blood flow. Like the other malformations, these are present at birth but are sometimes not noticed until later in life. Venous malformations can occur anywhere on the body. These can be on the top of the skin or deeper. Venous malformations often look blue and usually feel soft. When they are deeper, they may not be felt or seen. Sometimes venous malformations will stand out more after exercise or when the affected part of the body is hanging down. They can sometimes ache but are often painless.

### **LYMPHATIC MALFORMATIONS**

Normal lymphatic channels are thin tubes that are present throughout your body near the blood vessels. They are part of our immune system. Malformations of lymph vessels can form as an abnormal group of channels. These look like soft swellings on the skin that can be large or small. These can also be anywhere on the body. Like other malformations, these are present at birth but are sometimes not noticeable until later in life. They often have no symptoms. Sudden increase in pain, size, or redness may mean bleeding or infection. Sometimes small red blebs on the skin can bleed slightly.

### **ARTERIOVENOUS MALFORMATIONS**

An arteriovenous malformation is a group of arteries that are connected directly to veins. In our normal circulation, arteries do not connect to veins. The tiny vessels called capillaries connect them together. However, arteriovenous malformations have arteries and veins that connect right to each other. These often start out looking like a red mark on the skin, but over time, they get bigger. They cause fast blood flow in that area and can lead to pain, bleeding, skin warmth, and other symptoms.

### **COMBINED VASCULAR MALFORMATIONS**

Vascular malformations are sometimes a mix of different vessels, often veins and lymphatics. Sometimes it is hard to know what types of vessels are involved by just examining a patient.

## **DIAGNOSIS & TREATMENT**

### **HOW DO WE DIAGNOSE VASCULAR MALFORMATIONS?**

Some vascular malformations can be diagnosed by examining the skin. Doppler ultrasound, a painless test that uses sound waves to show flow of blood and lymph through vessels, can aid in diagnosis. Sometimes an MRI (magnetic resonance imaging) is needed to see more detail. These tests can also help to figure out the types of vessels in the malformation.

### **HOW DO WE TREAT VASCULAR MALFORMATIONS?**

Many vascular malformations do not need treatment. When treatment is needed (large malformation, complications, etc.), there are usually different choices depending on the type, size, and location of the malformation. Some treatments used are laser, surgery, medications, and injections. Sometimes it is helpful to talk about the choices with a doctor who specializes in vascular malformations. Many pediatric hospitals have Vascular Anomalies Centers.



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