

Vascular Anomalies Center



A coordinated team approach
to vascular anomalies in infants,
children, and adolescents

filled blisters may develop on top of the skin and may possibly weep. The size of lymphatic malformations may change with infection and/or trauma that results in bleeding into the malformation, and increased lymph flow through the region. Lymphatic malformations often may be treated with a special procedure that is done by an interventional radiologist; this involves the injection of a medicine into the lymph vessel to help decrease the flow. Following this therapy, surgery to decrease the size of the malformation often is an option. For lymphatic malformations of the arms and legs, compression garments may provide a benefit.

Arterial malformations often appear as a combined arterial-venous malformation. The lesion is usually purple with a palpable fullness beneath the skin. Often warmth and vibrations can be felt from the high blood flow. Unfortunately, arterial malformations can cause pain, bleeding, and ulceration for which treatment is required. Arterial malformations are often pre-surgically treated with a special radiology procedure to decrease flow in the vessels; this is done by an interventional radiologist, and surgical removal follows.

Expert Treatment



The specialists at Children's Hospital's Vascular Anomalies Center are trained to address all aspects of your child's diagnosis, treatment, and recovery. Management of vascular anomalies includes a variety of

health care professionals because the skills of many different specialties are needed to help treat each aspect of the problem depending on the severity of the lesion. The team's specialists include the following:

Dermatologists: Dermatologists help to diagnose vascular malformations as well as to help formulate a treatment plan. They often help in executing parts of the treatment in coordination with the rest of the team.

Hematologists: Hematologists help to address the potential bleeding disorders which may go along with the child's vascular anomaly or its treatment. These physicians help to follow blood counts and to make recommendations regarding possible therapies.

Otolaryngologists: Vascular malformations often may involve the airway. ENT surgeons help to make recommendations regarding the management of the airway and the surgical intervention that might be needed to remove compromising lesions.

Pathologists: Pathologists help to diagnose the lesion after it is biopsied or removed. They can provide critical information that helps in ongoing treatment.

Pediatricians: The team's pediatricians help to monitor the child in terms of his or her growth and development. Sometimes children with vascular anomalies are on steroids and propranolol and the pediatricians help to monitor the side effects of this medication.

Pediatric Surgeons: Vascular lesions may present in many locations on the body. If a child has an anomaly that extends internally, these surgeons help in planning and executing the treatment.

Plastic Surgeons: Plastic Surgeons help to treat the vascular anomalies using techniques such as laser and staged excision. They utilize various methods for reconstruction if needed.

Radiologists: The interventional radiologist uses minimally invasive techniques to help assess the extent and exact nature of a complex vascular lesion. The interventional radiologist can provide procedures which can be used adjunctively to other treatments. They also can therapeutically treat certain lesions.

Referrals

Pediatricians, primary care physicians, obstetricians, and other health professionals, as well as parents and patients can make referrals to the Vascular Anomalies Center. Contact the team coordinator at 412-692-8942.



Vascular Anomalies Center at
Children's Hospital of Pittsburgh of UPMC
4401 Penn Avenue
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Vascular Anomalies Center

When your child is born with a birthmark or vascular malformation, the specialists at Children's Hospital of Pittsburgh of UPMC can provide a coordinated team approach to his or her vascular anomaly.

Our specialists are trained to care for children with a wide spectrum of birthmarks, including hemangiomas and the complications that accompany them, as well as vascular malformations, which can be made up of veins, arteries, capillaries, and lymph vessels.



What should you expect during your initial visit to the Center?

During your initial visit to the center, you will meet with a coordinator who will be your primary contact during the course of treatment. The coordinator determines which specialists are best suited to meet your child's needs. Once the team is identified, they will perform a complete evaluation of your child in order to make a clear diagnosis and develop a treatment plan. The findings and treatment will be communicated to you and the referring physicians during and after the visit.

The team coordinator is an excellent resource for you and your child. He or she can answer questions, make appointments, and coordinate any necessary diagnostic testing.

What are vascular anomalies?

Vascular anomalies are birthmarks of the skin that are made up of various kinds of blood vessels and are characterized by shades of red or purple. They may be raised or flat. These birthmarks are classified into two major groups:

- **Hemangiomas** (or vascular tumors that grow) typically appear shortly after birth, undergo a period of rapid growth, and shrink during childhood
- **Vascular malformations** are usually present in the newborn and "grow" with the infant. Sometimes they actually expand (with infection, puberty, or pregnancy).

The differentiation of a hemangioma from a vascular malformation is made by a thorough history and physical exam. Rarely is a radiographic study or biopsy needed to help in the diagnosis.



What are hemangiomas and how are they treated?

Hemangiomas are the most common birthmark of infancy.

- The lesion is usually seen at about 2 weeks of life.
- Typically it manifests as a pink to light red area on the superficial skin.
- The growth phase starts around 2 months of age and the lesion grows rapidly and becomes red and raised until about age 1 when it then begins to shrink.
- Deeper lesions may appear purple in color with the skin being less raised.
- Hemangiomas shrink approximately 50 percent by age 5 and nearly 70 percent by age 7.

Visually, the lesions typically fade in color and the skin takes on a "crepe-paper" look. When the lesions fade and shrink, approximately 50 percent of children have normal appearing skin.

Hemangiomas that are large, ulcerated, distort facial structures (eye or nose), or involve the airway, are often treated with a course of oral steroids or propranolol.

Who are more vulnerable to hemangiomas?

- Preterm infants are much more likely to have hemangiomas with an incidence of about 23 percent.
- There is a 3 to 5:1 ratio of females to males affected.
- They are seen in approximately 10 to 12 percent of Caucasians (1 in 300).

What are vascular malformations and how are they treated?

Vascular malformations are named based on the type of vessel that makes up the lesion. There are capillary, arterial, venous, and lymphatic malformations. Sometimes, vascular malformations occur as combined lesions, such as Klippel-Trenaunay Syndrome (lymphatic, venous, and capillary malformation).

Capillary malformations, previously referred to as port-wine stains, appear as flat pink or red stains on the skin. They are present at birth and typically remain throughout life (often becoming wart like in nature) unless they are treated. Pulsed dye laser therapy often is effective at removing or lightening the discoloration. This is best done in infancy and often requires multiple treatments spaced several months apart.

Venous malformations may affect the skin, muscle, and bone. They often appear as soft, easily compressive masses that have a blue tint. They often enlarge when placed in a dependent position. As the child grows, the malformation grows with them. The venous malformation often can be pre-surgically treated with a special radiology procedure that decreases the venous flow; this is done by an interventional radiologist. Surgery is another option for certain venous malformations.

Lymphatic malformations have been referred to as cystic hygromas. They often involve the underlying muscle and/or bone and may cause swelling and bony overgrowth. Occasionally, clusters of very small fluid-



vascular malformation



capillary malformation



venous malformation



lymphatic malformation