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Angioplasty: a procedure used to widen vessels using catheters containing balloons that are inflated to widen the vessel and/or stents. There are various types of these procedures and their names are associated with the type of vessel entry and equipment used. For example, percutaneous transluminal angioplasty (PTA) describes entry through the skin (percutaneous) and navigates to the area of the vessel of interest through the same vessel or one that communicates with it (transluminal).

Anticoagulant: Drugs used to prevent clot formation or to prevent a clot that has formed from enlarging. Anticoagulant drugs inhibit clot formation by blocking the action of clotting factors or platelets. Anticoagulants do not break up blood clots. They only help stop the body from making more/bigger ones while it breaks any existing clot down. Anticoagulant drugs fall into 4 groups:

- Factor Xa inhibitors are anticoagulants that block the activity of clotting factor Xa and prevents blood clots developing or getting worse. They include Xarelto, Eliquis, and Arixtra.
- Inhibitors of clotting factor synthesis: These anticoagulants inhibit the production of certain clotting factors (vitamin K) in the liver. One example is warfarin (Jantoven or Coumadin).
- Inhibitors of thrombin: These drugs interfere with blood clotting by blocking the activity of thrombin. They include heparins, Pradaxa, and lepirudin (Refludan).
- Antiplatelet drugs. These drugs interact with platelets, which is a type of blood cell, to block platelets from sticking together into harmful clots. They include aspirin, ticlopidine (Ticlid), clopidogrel (Plavix), tirofiban (Aggrastat), and eptifibatide (Integrilin). These are often prescribed for a short period of time after something has been implanted in the body.

Antithrombin (AT): A small protein molecule that inhibits blood clotting. AT deficiencies can lead to clotting. The type most likely to cause problems is inherited, and a blood test of AT levels can diagnosis it. It should be noted that warfarin can increase AT levels, so any test done to rule it out should not be done while taking warfarin.

Artery: a muscular vessel that carries oxygen and nutrient rich blood under high pressure from the heart to other parts of the body.

Blood Thinners-see Anticoagulant

Chronic Venous Insufficiency-see Post Thrombosis Syndrome

Chronic Venous Limb Disorder-see Post Thrombosis Syndrome

Clot: a clump of platelets and blood proteins (also known as a thrombus) that form a plug at the site of an injured blood vessel to prevent excessive bleeding. A clot may also form inside a blood vessel and block that vessel, which is called a thrombosis or a blood clot.

Collateral Veins: When there is an area in a vein that is blocked, the body responds by trying to bulk up tiny blood vessels to go around it. As the collateral vessels grow more muscular and interconnected, they begin to reroute some of the blood flow around the blockage. Cardiovascular exercise helps them grow quicker and larger. Overstressed collaterals can become painful. If they are superficial, they can be visible under the skin.

Compression Stocking: a specialized socks, knee highs, thigh highs, or panty hose that provide graduated compression where most of the squeeze or pressure is at the foot and the least amount is at the top of the stocking. Therefore, the degree of compression is described by a range, example 20-30. The higher number is the amount of pressure or squeeze at the foot and the lower number is the pressure at the top of the sock. This helps control swelling or edema (fluid) in the legs and feet. Compression stockings help treat symptoms but not really the underlying cause of the fluid accumulation. The edema can be a result of a very wide variety of conditions, and often the result of Post Thrombosis Syndrome (PTS). There is some research that shows they help reduce PTS, but the results are mixed on that at this time.

*It is important to note that athletic compressions and TED type garments are generally not graduated and/or strong enough to help PTS and are not what is generally recommended by doctors following DVTs.

Coumadin/Warfarin: an anticoagulant that inhibits the production of certain clotting factors (vitamin K) in the liver. Requires monitoring, by way of INR levels, to adjust dosage to stay in therapeutic range. See INR.

Coumadin Induced Skin Necrosis-see Warfarin Induced Skin Necrosis

CT Scan: Computerized tomography scan combines a series of X-ray views taken from many different angles and computer processing to create cross-sectional images of the bones and soft tissues inside your body. For visualizing blood vessels a contrast material has to be injected first. The contrast material blocks X-rays and appears white on images. There is a higher exposure to radiation than in a standard x-ray, so CT scans are not a routine procedure.

D-Dimer: a blood test that measures a substance that is released when a blood clot breaks up. Doctors order the d-dimer test, along with other lab tests and imaging scans, to help check for blood-clotting problems. A d-dimer test can also be used to check how well a treatment is working. A higher-than-normal d-dimer level might mean that there is a blood-clotting problem, but a higher level might be caused by some other health problem or by a normal healing process.

Deep Vein Thrombosis (DVT): a type of blood clot that forms in a major vein of the leg or, less commonly, in the arms, pelvis, or other large veins in the body. More likely to cause problems or result in a PE than a superficial clot.

Distal DVT: Affects veins below the knee.

Doppler Ultrasound-See Ultrasound

Ecchymosis: Bleeding that occurs under the skin, a type of hematoma; larger than 1cm.

Edema (Dropsy): A condition of excess fluid volume in the circulatory system. Results in swelling and discomfort or pain depending on severity. Can be caused by a variety of medical conditions (heart, kidney, liver, lymph node), medication, pregnancy, sunburn, salt intake, etc.

Embolism: a condition where an object called an embolus is created in one part of the body, circulates throughout the body, and then blocks blood flowing through a vessel in another part of the body. Emboli are not to be confused with thrombi, which are clots that are formed and remain in one area of the body without being carried throughout the bloodstream. Emboli can be made up of many different materials including blood, clots, air, gas, amniotic fluid, fat, bacteria, or cholesterol.

Factor V Leiden Thrombophilia: an inherited a specific gene mutation that causes thrombophilia, which is an increased tendency to form abnormal blood clots that can block blood vessels. It leads to a higher than average risk of developing DVTs. It is generally treated with lifetime anticoagulation medication.

Fibrin/Fibrinogen: Fibrin (also called Factor Ia) is a threadlike protein that supports the formation of blood clots and provides the initial structure upon which new tissue can form at the site of an injury. Fibrinogen levels are high when there are active clots. They reduce as the clot goes down or stabilizes.

Fragmin: a type of low molecular weight heparin injection.

Hematologist: a physician who specializes in researching, diagnosing, and treating blood disorders.

Hematoma (bruise/contusion): A solid swelling of clotted blood that forms in the tissues or organs of the body as a result of a broken blood vessel. The types of hematoma depend on their size and location. Epidural hematomas are on the outside of the brain, subdural and intracerebral are on the inside. See petechial (tiny), purpura (small) and ecchymosis (bigger) for descriptions on size.

Heparin: a blood thinner that interferes with blood clotting by blocking the activity of thrombin. Full strength (unfractured) heparin is generally administered in the hospital via IV. When broken down into a lower molecular weight, it is often self-administered at home. See Low Molecular Weight Heparin.

Hypercoagulability: An increased tendency of the blood to coagulate (thicken) more rapidly than is normal. Can be due to things like pregnancy, medications, clotting disorders, sepsis, or cancer to name a few.

Idiopathic DVT/PE (Unprovoked DVT/PE): Formation of venous blood clot with no known cause.

Iliac Vein: The common iliac vein starts in the abdomen region of the fifth lumbar vertebrae. It divides into two branches. The internal iliac vein supplies blood to organs in the pelvic region. The external iliac connects to the femoral veins. Both veins join together to form the inferior vena cava. The external iliac vein is located in the lower leg.

Inferior Vena Cava Filter (IVC filter): a small cone-shaped device that is implanted using a catheter in the inferior vena cava just below the kidneys. The filter is designed to capture blood clots that have broken loose from one of the deep veins in the legs on its way to the heart and lungs. IVC filters can be either permanent or "optionally removable" (temporary). Not all temporary ones end up being removable and it is considered safe to leave them in.

INR (international normalized ratio): is a way of standardizing the results of prothrombin time tests, no matter the testing method. Generally used in the context to testing ranges for administering warfarin/Coumadin. Normal INR is generally 0.8-1.1. The warfarin (Coumadin) dose is changed so that the prothrombin time is longer than normal (by about 1.5 to 2.5 times the normal value - INR values 2 to 3).

Intravascular Ultrasound (IVUS): an invasive procedure where a miniature sound probe (transducer) on the tip of a catheter is threaded through the vein or artery and, using high-frequency sound waves, produces detailed images of the vein walls and any clots or compression. This is the gold standard of imaging techniques for MTS. It is the only way to really know if there is compression or not. It will show compression that was not visible on a venogram, CT or regular external ultrasound.

Intervention Radiology (IR): a medical sub-specialty of radiology that uses minimally-invasive image-guided procedures to diagnose and treat diseases in nearly every part of the body.

Interventional Radiologists: Doctors who diagnose and treat patients using the least invasive techniques to minimize risk to the patient and improve outcomes.

IVUS-see Intravascular Ultrasound

Lovenox (enoxaparin): a quick acting, short lasting blood thinner (a LMWH), generally administered through injections. Safe during pregnancy.

Low Molecular Weight Heparin (LMWH): LMWH is produced by chemically splitting heparin into one-third of its original size. It has fewer side effects than heparin and produces a more predictable anticoagulant response. Administered under the skin through a small needle, can be done at home. LMWHs include dalteparin (Fragmin), enoxaparin (Lovenox), tinzaparin (Innohep), and a few others.

Lupus Anticoagulant: A clotting disorder, Lupus anticoagulants are antibodies against substances in the lining of cells. Those with these antibodies may have an abnormally high risk of blood clotting. It is generally treated with lifetime anticoagulation medication.

May-Thurner Syndrome (MTS): when the left iliac vein is compressed by the right iliac artery. Also known as Iliac Vein compression Syndrome and Cockett's syndrome. Non-DVT MTS patients tend to have nonthrombotic iliac vein lesions (NIVL). Rarely this can occur on the right side, although the left side is much more common.

MRI/MRA/MRV- Magnetic Resonance Imaging: a test that uses a magnetic field and pulses of radio wave energy to make pictures of organs and structures inside the body. Using MRI to look at blood vessels and the flow of blood through them is called **Magnetic Resonance Angiography (MRA), or Magnetic Resonance Venography (MRV)**, which can find problems of the arteries and veins, such as an aneurysm, a blocked blood vessel, or the torn lining of a blood vessel (dissection). Sometimes contrast material is used to see the blood vessels more clearly, and will be administered through an IV.

Note: for those with metal stents or filters, MRIs may not be recommended or they may have to be done with slightly different calibrations. Make sure you let your health care professions know you have a stent or filter if they mention MRI/MRA. There are no known harmful effects from the strong magnetic field used for MRI as long as you have no metal implants. More expensive than a CT, x-ray, or ultrasound and not available at all hospitals. MRIs may not always show compression from MTS.

Nonthrombotic Iliac vein lesions (NIVLs): Lesions in the iliac vein, such as webs and spurs, which have not led to thrombosis. However, this compression of the iliac vein may cause symptoms of venous obstruction for some people, who may require stenting of the iliac vein to relieve symptoms. Are common in the general population but clinically significant in people with MTS.

Nutcracker Syndrome (NCS) (Left Renal Vein Entrapment): compression of the left renal vein, most commonly between the aorta and the superior mesenteric artery, with impaired blood outflow often accompanied by distention of the distal portion of the vein. NCS is associated with hematuria (which can lead to anemia) and abdominal pain/left flank pain. Since the left gonad drains via the left renal vein it can also result in left testicular pain in men or left lower quadrant pain in women. Nausea and vomiting can result due to compression of the splanchnic veins.

Petechia(e): Bleeding that occurs under the skin, a type of hematoma; less than 3mm in diameter.

Phlebitis-see Thrombophlebitis

Platelet: a small cell fragment (also known as a thrombocyte) involved in the blood's clotting process

Plethysmography: An instrument used to measure changes in volume in parts of the body. This can help check blood circulation and check for the presence of blood clots in arms and legs, or how much air you can hold.

Post-Phlebitic Syndrome-See Post Thrombosis Syndrome

Post Thrombosis Syndrome (PTS): Post-thrombotic syndrome (PTS), Post-phlebitic syndrome (PPS), Venous stasis syndrome (VSS), Chronic venous insufficiency (CVI), Venous stress disorder, or Chronic venous limb disorder is a condition that occurs in up to 40% of leg DVT patients following original DVT, and is severe in 4%. Onset is usually within 6 months of DVT, but may not start for up to 2 years. Symptoms include chronic extremity swelling, chronic (or waxing and waning) pain, unspecific discomfort of the extremity, diffuse aching, heaviness, tiredness and cramping of extremity, dark skin pigmentation, bluish discoloration of toes/fingers, foot/hand or diffusely of leg/arm, skin dryness, eczema, hardening of the skin, formation of varicose veins, skin ulcer (stasis ulcer), "atrophie blanche" or "white atrophy" (scar tissue forms in the skin without the development of ulcers, areas of white skin) and dermatoliposclerosis (the tightness of the swollen leg leads to destruction of the skin and fat tissues). Damaged valves or valve reflux may play a part in PTS. Treatment is elevation of extremity at rest and at night, compression stockings, grade 2, weight loss, increased exercise with strengthening of extremity muscles, pain management, compression pump, interventional radiology procedures: balloon opening and stenting of narrowed vein.

*Some studies have shown that true graduated compression stockings worn for at least 2 years post-DVT may reduce the likelihood of PTS, however there is not enough clear research to state that definitely.

Post-Thrombotic Syndrome-See Post Thrombosis Syndrome

Pradaxa: a newer blood thinner that blocks the activity of thrombin.

Protein C deficiency: disorder characterized by an increased tendency to form blood clots.

Protein S deficiency: disorder characterized by an increased tendency to form blood clots.

Prothrombin G20210A: A genetic risk factor that doubles or triples the risk of forming blood clots in the veins.

Prothrombin Time Test (PT or PTT): a blood test that measures how long it takes blood to clot. A prothrombin time test can be used to check for bleeding problems. PT is also used to check whether medicine to prevent blood clots is working. Normal PT is 11-13 seconds.

Provoked DVT: A DVT with clear possible cause(s). See Virchow's triad for more information.

Proximal DVT: Affects veins above the knee.

PTA-see angioplasty

Pulmonary Embolism (PE): A clot in a vein that has detached from the blood vessel in which it formed and traveled through the heart to the lungs where it becomes wedged, preventing adequate blood flow. Can lead to major damage to lung tissue, preventing the transmission of oxygen to the body, up to the point of death.

Purple Toe Syndrome: A rare adverse effect of warfarin characterized by painful blue or purple toes. Usually noticeable in the first weeks of warfarin therapy. This adverse reaction usually indicates the need to stop warfarin and find an alternative treatment option.

Purpura: Bleeding that occurs under the skin, a type of hematoma; between 3mm and 1cm in diameter

Rivaroxaban-See Xarelto

Spider Veins: Enlargement of capillary blood vessels leading to the formation of red or blue threadlike lines visible on the surface of the skin. They are the same

as varicose veins, but on the smaller capillaries. Spider veins can be caused by the backup of blood. They can also be caused by hormone changes, exposure to the sun, and injuries.

Spur (fibrous spur/venous spur): This is a fibrous obstructive lesion within the Left Common Iliac Vein that can develop from the chronic pulsatile compressive force of the Common Iliac Artery. This causes May-Thurner Syndrome and predisposes patient to thrombosis.

Stent: small mesh tubes that usually are made of metal, but sometimes fabric, that are inserted into narrowed veins or arteries to widen them. Fabric stents, also called stent grafts, are used in larger arteries. Some stents are coated with medicine to prevent them from becoming blocked again, which is slowly and continuously released into the blood vessel. These stents are called drug-eluting stents.

Superficial Clot/Thrombus: This is a blood clot forming in one or more veins located in the fatty tissue lying directly below the skin. These are usually rather small veins and the clot stops within these veins. If the blood clotting stops before it gets to the largest part of the major superficial vein (the saphenous vein) or before it goes to the deep veins, it generally will not cause much more than local pain, swelling, and redness over the vein.

Thrombectomy: removal of a blood clot. There are two different ways to do it:

- Mechanical thrombectomy** is the surgical removal of a blood clot using a long catheter tipped with a tiny suction cup, rotating device, high-speed fluid jet, or ultrasound device that physically breaks up the clot.

- Pharmacomechanical catheter-directed thrombolysis** is a combination of the mechanical procedure with infused medications used to break up a clot.

Thrombolysis: involves breaking up a clot using medication administered either in an IV, or through a catheter at or near the site of the clot. The most commonly used clot-busting drugs Eminase (anistreplase), Retavase (reteplase), Streptase (streptokinase, kabikinase), tPA (class of drugs that includes Activase), TNKase (tenecteplase), Abbokinase, Kinlytic (rokinase).

Thrombophlebitis (Phlebitis): inflammation in a vein in an area where a blood clot has formed.

Thrombosis: excess clotting, which may block veins or arteries.

Thrombus/Thrombi: a clump of platelets and blood proteins (also known as a clot) that form a plug at the site of an injured blood vessel to prevent excessive bleeding. They can also form at sites of compression or where blood flow is slowed or reduced.

tPA (Tissue Plasminogen Activator, also known as IV rtPA): a medication that breaks up clots and is given through an IV in the arm or directly onto the clot through a catheter. Very expensive, not often used, but more and more studies are advocating for its use in DVT treatment. It may be something you have to ask for. Most often used when the DVT has extremely limited blood flow and patient presents with serious symptoms of pain and swelling.

Ultrasound: (sonography or diagnostic medical sonography) an imaging method that uses high-frequency sound waves to produce relatively precise images of structures within your body. Doppler ultrasound tests use reflected sound waves to see how blood flows through a blood vessel. It helps doctors evaluate blood flow through major arteries and veins, such as those of the arms, legs, and neck. It can show blocked or reduced blood flow through narrowing veins or arteries. It is performed by a handheld instrument (transducer) that is passed lightly over the skin above a blood vessel. The transducer sends and receives sound waves that are amplified through a microphone. The sound waves bounce off solid objects, including blood cells. The movement of blood cells causes a change in pitch of the reflected sound waves. If there is no blood flow, the pitch does not change.

Valve Reflux (also known as Venous Reflux Disease, Valvular Incompetency or Venous Insufficiency): a condition that develops when the valves (tiny flaps in the veins that open and close to keep blood from flowing backwards) that usually keep blood flowing out of your legs become damaged or diseased. These valves that normally force blood back towards the heart no longer function, causing blood to pool up in the legs, and the veins to the legs become distended. Superficial valve reflux can cause spider veins, varicose veins, and if left untreated, lead to other conditions such as leg swelling (edema), skin changes (hyperpigmentation), and open sores (venous ulcers). Common symptoms of superficial venous reflux include pain, swelling, leg heaviness and fatigue, as well as varicose veins in your legs. Superficial valve reflux can be treated surgically. Deep venous reflux occurs if the valves become damaged after a deep vein blood clot. It can lead to Post Thrombosis Syndrome. Deep venous reflux is not treatable, but symptoms can be managed. Pictures and links to video at: http://www.veinsveinsveins.com/venous_reflux.html

Valvular Incompetency-see Valve Reflux

Varicose Vein: enlarged veins that can be blue, red, or flesh-colored. They often look like cords and appear twisted and bulging. They can be swollen and raised above the surface of the skin. Symptoms can also include aching pain that may get worse after sitting or standing for a long time, throbbing or cramping, heaviness, swelling, rash that's itchy or irritated, darkening of the skin (in severe cases) and restless legs. They can lead to sores or skin ulcers, bleeding, superficial thrombophlebitis, or DVTs.

Vascular Surgeon: Those who specialize in the diagnosis and management of disorders of the arterial, venous and lymphatic systems (but not intracranial vessels and the heart). In addition to experience with dissection and control of blood vessels that general surgery trainees gain vascular surgeons have significant experience with all aspects of treating patients with all types of vascular disease.

Vein: a vessel that carries blood low in oxygen away from the body's organs and back to the heart.

Vena Cava: two large veins (venous trunks) that return deoxygenated blood from the body, into the heart. The inferior vena cava travels up alongside the abdominal aorta with blood from the lower part of the body. The superior vena cava is above the heart, and forms from a convergence of the left and right brachiocephalic veins that contain blood from the head and the arms.

Vena Cava Filter-see Inferior Vena Cava Filter

Venous Insufficiency-see Valve Reflux

Venous Reflux Disease-see Valve reflux

Venous Stasis Syndrome-see Post Thrombosis Syndrome.

Venous Stress Disorder-see Post Thrombosis Syndrome.

Venous Thromboembolism: a clot that forms within a vein and may obstruct the flow of blood.

Venogram: an X-ray test that takes pictures of blood flow through the veins in a certain area of the body. During a venogram, a special dye (contrast material) is put into your veins so they can be seen clearly on an X-ray picture. A venogram looks at the condition of your veins and the valves in your veins. It can show the veins in your legs, pelvis, or arm; the veins leading to the heart; or the veins leaving your kidneys. While venograms can show veins and blood flow and are often used as tool to diagnose MTS, they cannot always definitively show MTS related compression. False negatives for MTS are possible.

Virchow's Triad: This describes the three broad factors that can lead to thrombosis: stasis (blood not moving, e.g. varicose veins, being bedbound, atrial fibrillation), hypercoagulability (blood disorder, pregnancy, hormones, etc.) and injury to the blood vessel.

Warfarin-See Coumadin

Warfarin Induced Skin Necrosis (WISN) (Coumadin Induced Skin Necrosis-CISN, Coumarin-Congener-Associated Skin Necrosis, Warfarin

Dermal Gangrene): A rare adverse effect of warfarin therapy characterized by a painful rash and usually noticeable in the first ten days of warfarin therapy. Occurs in .01-0.1% of Coumadin based medication users. In such rare cases, warfarin therapy is immediately discontinued.

Xarelto (rivaroxiban): a newer blood thinner that that blocks the activity of clotting factor Xa.

Most entries are a combination of multiple sources. References include but aren't limited to: Web MD, MedlinePlus, drugs.com, United States National Institutes of Health, Mayo Clinic, Cleveland Clinic, and the following:

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