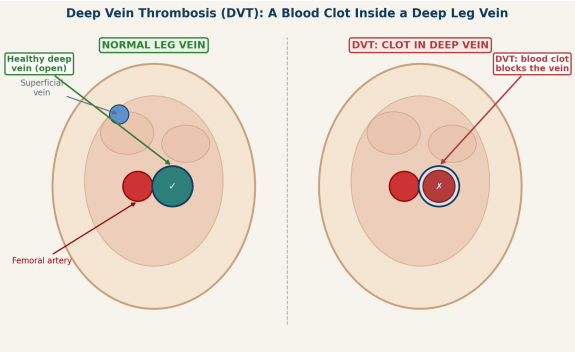
Deep Vein Thrombosis

DVT — a blood clot in a deep vein, usually in the leg

DVT is treatable. Starting anticoagulation quickly prevents the clot from reaching your lungs.



Online: https://go.riasalimd.com/dvt-guide

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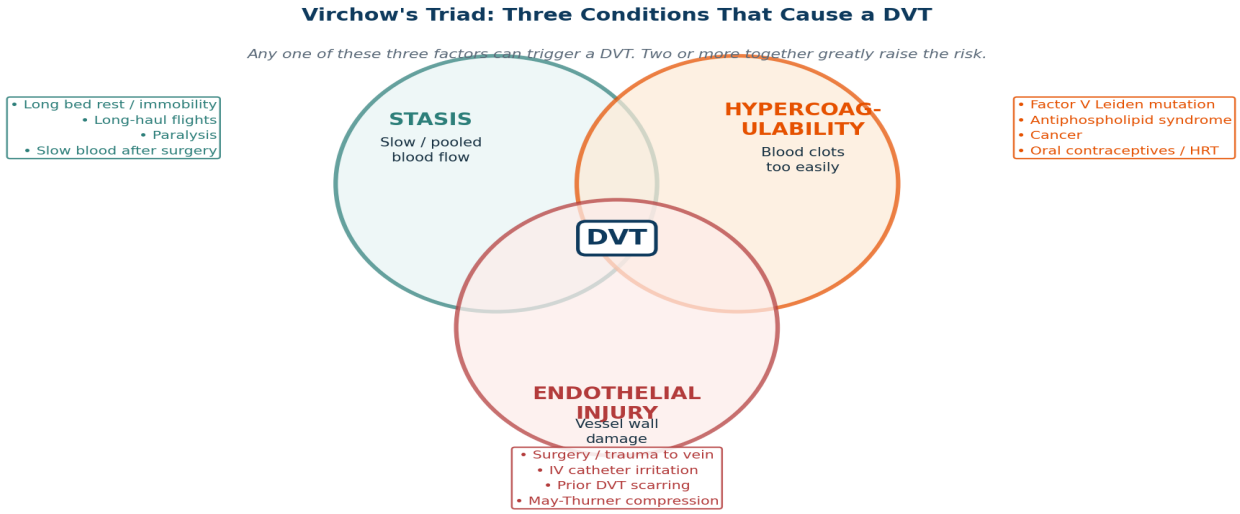
Names & Terms You Will Hear

Term	Meaning
Deep vein thrombosis (DVT)	A blood clot that forms inside a deep vein, most often in the leg or pelvis.
Venous thromboembolism (VTE)	The umbrella name for DVT and pulmonary embolism (PE) together. Doctors use this term when discussing risk, treatment duration, and recurrence.
Proximal DVT	A clot in the upper leg (popliteal, femoral, or iliac vein). Carries the highest risk of a clot breaking free and traveling to the lungs.
Distal DVT	A clot in the calf veins below the knee. Lower PE risk, but it can extend upward ('propagate') into the proximal veins if left untreated.
Pulmonary embolism (PE)	What happens when a DVT clot breaks free and travels to the lung arteries. A medical emergency.
May-Thurner syndrome (MTS)	An anatomic compression where the right iliac artery presses down on the left iliac vein. A structural reason why left-leg DVT is more common than right-leg DVT.
Post-thrombotic syndrome (PTS)	Chronic leg pain, swelling, and skin changes that can develop months to years after a DVT due to damaged vein valves.
Anticoagulation	Blood-thinning medicine that prevents the clot from growing and new clots from forming. It does not dissolve the existing clot directly — the body does that over time.
DOAC (direct oral anticoagulant)	Modern blood thinners — apixaban (Eliquis) or rivaroxaban (Xarelto) — that do not need regular blood tests. Preferred for most DVT patients.
D-dimer	A blood test that rises when clots are breaking down. A negative D-dimer rules out DVT in low-to-moderate risk patients.

Term	Meaning
Duplex ultrasound	The main imaging test for DVT. Combines a picture of the vein with a blood-flow map using sound waves (no radiation).
Superficial thrombophlebitis	A clot in a surface vein (such as the saphenous vein), often with redness and tenderness along the vein. Less serious than DVT but can extend inward.
Compression stockings	Elastic stockings that apply graduated pressure to the leg. Help prevent post-thrombotic syndrome and reduce swelling after DVT.

Deep Vein Thrombosis?

- DVT is a blood clot that forms inside a deep vein — most often in the calf, thigh, or pelvis.
- Deep veins carry blood back to the heart. They run inside the muscles, far from the skin.
- Three things together cause a DVT: slow blood flow, blood that clots too easily, and damage to the vein wall. Doctors call this Virchow's Triad.
- A clot above the knee (in the femoral or iliac vein) is more dangerous than one in the calf. It is more likely to break free and travel to the lungs.
- Doctors confirm DVT with a leg ultrasound and sometimes a blood test called D-dimer.
- DVT is very treatable. Starting blood thinners quickly stops the clot from growing and keeps it from reaching the lungs.



Virchow's Triad: any one of these three factors — slow blood flow, blood that clots too easily, or vein-wall damage — can trigger a DVT. Two or more together greatly raise the risk.

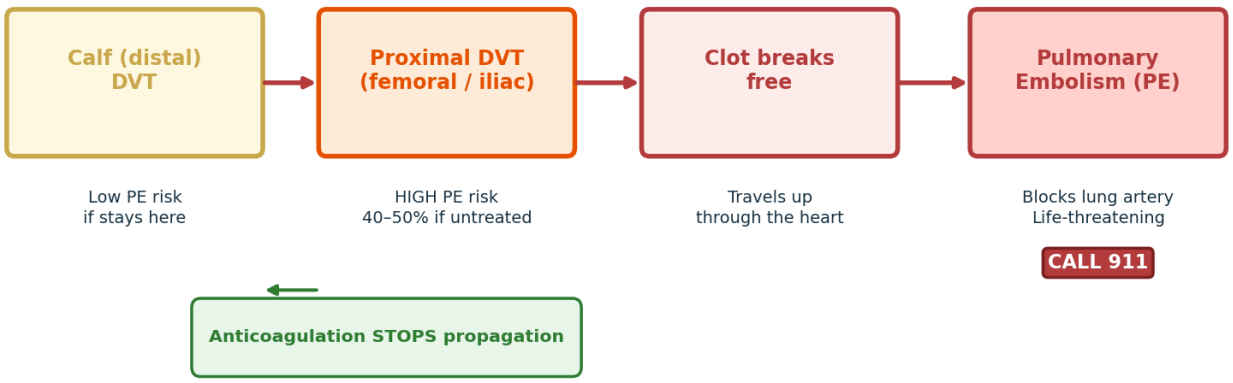
DVT vs. Superficial Thrombophlebitis: Key Differences

Feature	DVT (Deep Vein)	Superficial Thrombophlebitis
Vein involved	Deep femoral / popliteal / calf	Saphenous / surface veins
PE risk	HIGH (proximal) or low (distal calf)	Very low
Ultrasound	Required to confirm	Often clinical diagnosis
Treatment	Anticoagulation (blood thinners)	NSAIDs + heat + compression
Skin findings	Leg swelling, warmth — may have no redness	Red, tender cord under skin
Severity	Can be life-threatening	Painful but rarely dangerous

Why It Matters

- DVT and pulmonary embolism (PE) together are the third most common cardiovascular cause of death, after heart attack and stroke.
- Up to half of untreated proximal DVTs lead to a pulmonary embolism. Starting treatment quickly is the key to prevention.
- DVT damages vein valves. Even after the clot dissolves, damaged valves let blood pool. This causes chronic leg swelling, pain, and skin changes — called post-thrombotic syndrome.
- About 1 in 3 DVT patients will have a second DVT within 10 years. Finding the underlying cause guides how long to treat.
- May-Thurner syndrome (left iliac vein compression) is found in up to 25% of patients with left-leg DVT. A vein stent may be needed in addition to blood thinners.

How a DVT Can Travel to the Lungs and Become a Pulmonary Embolism



How a DVT can travel to the lungs: a calf DVT may grow upward (propagate) into the proximal veins and then break free into the lung arteries (pulmonary embolism). Anticoagulation started early stops propagation.

Proximal DVT: Highest Risk of PE

- Proximal DVT = clot in the popliteal, femoral, or iliac vein (above the knee).
- 40–50% of untreated proximal DVTs cause a pulmonary embolism — often within days.
- Both legs can be affected simultaneously, though left-leg DVT is more common due to May-Thurner anatomy.
- Proximal DVT requires systemic anticoagulation. Some large iliofemoral clots may also need catheter-directed clot removal.
- Symptoms are more prominent: significant one-sided leg swelling, heaviness, warmth, and pain.

Distal (Calf) DVT: Lower Risk, Still Needs Attention

- Distal DVT = clot in the calf veins (peroneal, posterior tibial, soleal) — below the knee.
- PE risk is much lower than proximal DVT, but approximately 20–30% of calf DVTs will propagate upward if not treated.
- Treatment decisions are nuanced: isolated calf DVT in a low-risk patient may be monitored with serial ultrasound vs. anticoagulated for 3 months.
- Patients with high bleeding risk, active cancer, or prior DVT recurrence may have tailored duration.
- Symptoms are often mild: focal calf tenderness or mild swelling.

Risk Factors

Some patients are more likely to develop this condition. Knowing your risk helps your care team take extra precautions.

Risk Factor	Why It Increases Risk
Recent surgery or hospital stay	Immobility after surgery and tissue trauma trigger clotting. Hip and knee replacement carry the highest DVT risk.
Long-haul travel (>4–6 hours)	Prolonged sitting slows blood flow in the leg veins (stasis). Economy class seat + dehydration raises the risk further.
Active cancer or cancer treatment	Many cancers release clotting factors. Chemotherapy drugs also damage vein walls. Cancer-associated DVT often needs longer anticoagulation.
Oral contraceptives or hormone replacement therapy	Estrogen raises clotting-factor levels. The risk is highest in the first 3 months and in women who smoke.
Pregnancy and postpartum period	Pregnancy increases blood volume and clotting activity. DVT risk is 5× higher than in non-pregnant women of the same age.
Inherited clotting disorders (thrombophilia)	Factor V Leiden, prothrombin G20210A mutation, protein C/S deficiency, and antithrombin deficiency all raise DVT risk, especially when a second trigger is added.
Prior DVT or PE	Having had a DVT before is a strong predictor of recurrence. The damaged vein and residual clot create an ongoing nidus.
Obesity (BMI >30)	Obesity raises intra-abdominal pressure, compresses pelvic veins, and is associated with a chronic pro-inflammatory, pro-coagulant state.
May-Thurner / iliocaval compression	The right iliac artery compresses the left iliac vein where they cross. Creates a persistent flow obstruction that predisposes to left-leg DVT.
Immobility (bedrest, paralysis, cast)	Any prolonged immobility — illness, fracture, stroke — eliminates the muscle-pump action that drives blood upward out of the leg veins.

DVT Clinical Diagnosis: Wells Score + D-Dimer Algorithm

Wells Score: +1 each — active cancer · recent immobility (>3 days) or surgery · calf tenderness · entire leg swollen · calf swollen >3 cm vs other leg · pitting edema · collateral superficial veins · prior DVT

Minus 2 pts: alternative diagnosis as likely as DVT

D-dimer test first
→ If negative: DVT ruled out
→ If positive: ultrasound

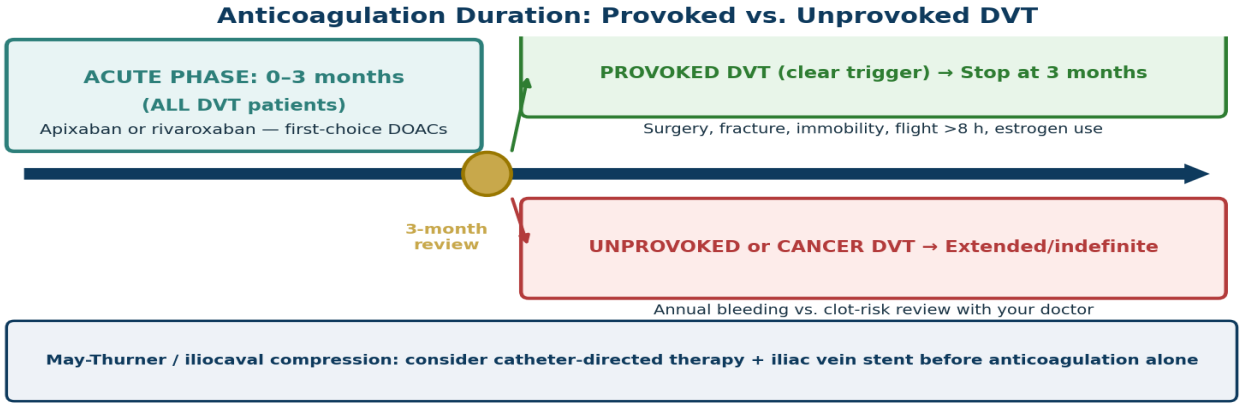
D-dimer test
→ If negative: DVT unlikely
→ If positive: ultrasound

Ultrasound RIGHT AWAY
(D-dimer not needed)
→ Start anticoagulation if positive

The Wells Score assigns points for DVT signs, symptoms, and risk factors. A score of 0–1 is low probability; 2 is moderate; 3 or higher is high. Combined with the D-dimer blood test, this guides whether an ultrasound is needed and how urgently.

Treatment Options

- Blood thinners (anticoagulation) are started as soon as DVT is confirmed — sometimes even before the ultrasound.
- DOACs (apixaban or rivaroxaban) are the first choice for most patients. They do not need regular blood tests and have fewer food interactions than warfarin.
- Apixaban (Eliquis): 10 mg twice a day for 7 days, then 5 mg twice a day. No injection needed to start.
- Rivaroxaban (Xarelto): 15 mg twice a day with food for 21 days, then 20 mg once a day. No injection needed to start.
- LMWH (enoxaparin / Lovenox) injections are preferred in cancer-related DVT and during pregnancy.
- Warfarin (Coumadin) is still used when DOACs are not safe — for example, in certain heart valve conditions or severe kidney disease.
- Duration: 3 months for provoked DVT (a clear cause). Longer — sometimes indefinite — for unprovoked DVT, cancer DVT, or recurrent DVT.
- May-Thurner DVT may need catheter-directed clot removal plus an iliac vein stent. A vascular specialist handles this.
- Compression stockings (20–30 mmHg, knee-high) worn daily for 2 years cut the risk of chronic leg problems by about half.



Anticoagulation duration depends on whether the DVT had a clear reversible trigger (provoked — stop at 3 months) or no obvious cause (unprovoked — consider extended therapy). Your 3-month review visit is when this decision is made.

Anticoagulant options for DVT. DOACs (apixaban, rivaroxaban) are preferred for most patients. LMWH preferred in cancer and pregnancy. Warfarin used when DOACs are contraindicated.

Anticoagulant	Route	Duration (Acute Phase)	Monitoring
Apixaban (Eliquis)	Oral pill	10 mg 2×/day × 7 days, then 5 mg 2×/day	None required
Rivaroxaban (Xarelto)	Oral pill (with food)	15 mg 2×/day × 21 days, then 20 mg/day	None required
LMWH (enoxaparin)	Injection under skin	Full dose until therapeutic	Anti-Xa if kidney concerns
Warfarin (Coumadin)	Oral pill	Indefinite (INR 2.0–3.0)	Weekly INR blood tests
Fondaparinux	Injection under skin	Bridge or monotherapy	None required

Post-Thrombotic Syndrome (PTS) — Why Compression Matters:
After a DVT, damaged vein valves let blood pool in the lower leg. Over months to years, this causes chronic swelling, aching, skin discoloration (hemosiderin staining — brown patches near the ankle), and, in severe cases, venous ulcers that are very difficult to heal.

Compression stockings (20–30 mmHg, knee-high) worn daily for 2 years after a proximal DVT reduce PTS severity by about 50% compared to no compression. Put them on in the morning before standing up. Take them off at bedtime.

Comfort Measures at Home (No Medication Needed)

These simple steps support healing and ease symptoms. Use them alongside any medication your doctor prescribes.

- Elevate the affected leg above heart level when resting — this helps with swelling and discomfort.
- Walking is encouraged (do NOT stay completely in bed). Gentle movement of the calf muscles pumps blood upward.
- Wear your compression stockings as prescribed. Put them on in the morning before getting out of bed, and remove them at night.
- Stay well hydrated. Dehydration thickens the blood and slows venous flow.
- Avoid prolonged sitting or standing in one position. Move your ankles and calves every 30–60 minutes.
- Avoid aspirin, ibuprofen (Advil, Motrin), or naproxen (Aleve) unless your doctor approves — these can raise bleeding risk when combined with anticoagulants.
- If you have an underlying clotting disorder, discuss with your doctor whether family members should be tested.

Risks, Benefits, and Alternatives

Every choice has trade-offs. Use this table to start the shared decision conversation.

Option	Risks	Benefits	Alternatives
DOAC blood thinners (apixaban or rivaroxaban)	Bleeding risk: 2–3% serious events per year. Common: bruising, nosebleeds, heavier periods. Rare: stomach or brain bleeding.	Stops clot growth. Prevents PE. Cuts recurrent DVT by ~85%. No injections or regular blood tests needed.	Warfarin (needs INR blood tests, more diet rules). LMWH shots (used in cancer, pregnancy). Aspirin alone does not treat DVT.
Extended blood thinners past 3 months for unprovoked DVT	Ongoing bleeding risk (~1–2% serious per year). More office visits. Discuss risk at each annual review.	Cuts recurrent DVT by ~80% versus stopping at 3 months. Biggest benefit for patients with prior clots, strong family history, or antiphospholipid syndrome.	Stop at 3 months and watch with clinical exams and D-dimer tests — right for some low-risk patients.
Catheter-directed thrombolysis for large iliofemoral or May-Thurner DVT	Higher bleeding risk than blood thinners alone. Requires hospital stay. Risk of puncture-site bleeding.	Dissolves the clot faster. Restores vein flow. Reduces chronic leg problems (PTS) in large proximal clots.	Blood thinners alone — clot dissolves slowly, valve damage more likely, but no procedure risk.
Compression stockings for 2 years after DVT	Cost, discomfort in heat. Hard to put on for some patients (arthritis, obesity).	~50% reduction in chronic leg swelling versus no stocking. Reduce pain and skin damage in the months after DVT.	No stocking — higher risk of chronic swelling and skin breakdown. Leg elevation helps but is not a full substitute.

Common Misconceptions

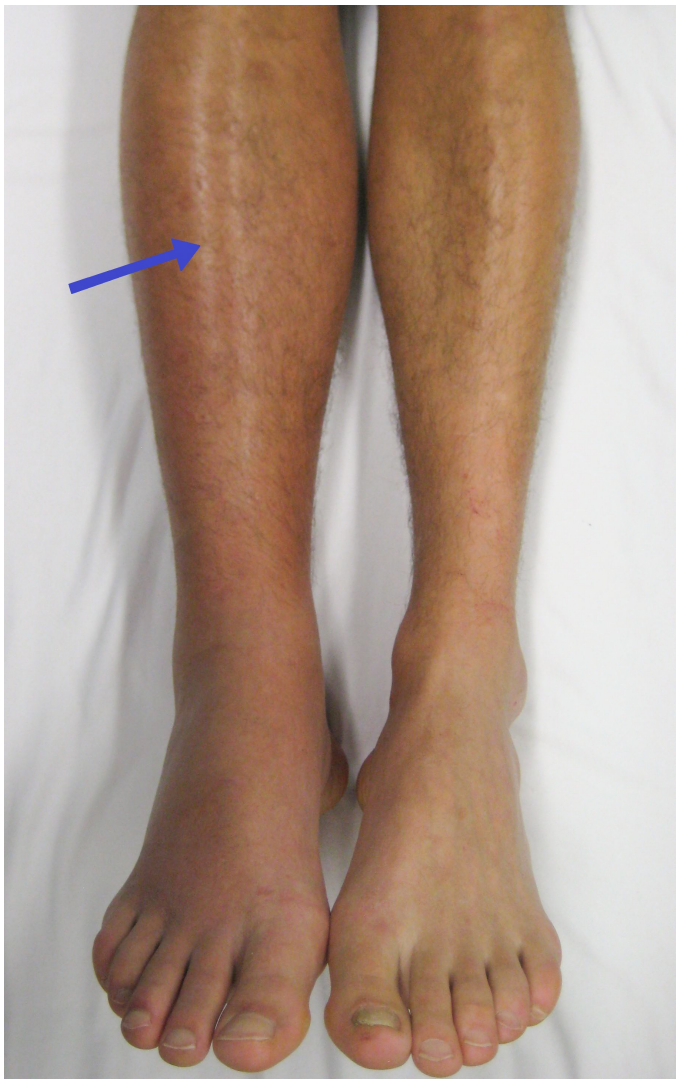
Myth	Reality
DVT only happens to old people or bedridden patients.	DVT can occur at any age. Oral contraceptives, long flights, athletic injury, pregnancy, and inherited clotting disorders cause DVT in young, active adults. The youngest patients can be in their teens or twenties.
My leg is just sore from exercise — it can't be a DVT.	DVT pain is often mild, aching, or felt only as tightness. It can look exactly like a muscle strain. The key difference: DVT swelling is usually in one leg only, and the pain does not go away with rest. If in doubt, get an ultrasound.
Blood thinners dissolve the clot right away.	Anticoagulants stop the clot from growing and prevent new clots — they do not directly dissolve the existing clot. The body breaks down the clot slowly over weeks to months. Your job is to prevent the clot from getting bigger and from traveling to the lungs.
I can stop my blood thinners once my leg feels better.	Stopping early is one of the most common causes of a recurrent DVT or a PE. Take the full course your doctor prescribed, even if you feel completely normal. Ask before stopping anything.
If I have a DVT, I must stay in bed.	Bed rest is no longer recommended for DVT. Walking with graduated compression stockings is safe, improves blood flow, and may reduce the risk of post-thrombotic syndrome. Your doctor will guide when and how much activity is safe.
Superficial thrombophlebitis (a clot near the skin surface) is the same as DVT.	They are different. Superficial thrombophlebitis involves surface veins, shows as a red, tender cord under the skin, and is rarely life-threatening. DVT involves the deep veins and carries PE risk. However, superficial clots can extend inward — tell your doctor if a surface clot worsens or does not improve.

Myth	Reality
I can fly or travel after a DVT.	Most patients can travel after a DVT once anticoagulation is started and stable. For long flights, discuss timing with your doctor — wear compression stockings, stay hydrated, and walk the aisle regularly.

Possible Complications

Knowing what can go wrong helps you spot problems early. Most complications are uncommon, especially with treatment.

Where / What	What Can Happen
Pulmonary embolism (PE)	A DVT clot breaks free and travels to the lung arteries. May cause sudden shortness of breath, chest pain, or cardiac arrest. The most feared complication of proximal DVT.
Post-thrombotic syndrome (PTS)	Damaged vein valves after a DVT allow blood to pool chronically. Causes leg aching, heaviness, swelling (worse with standing), and over time skin discoloration and venous ulcers.
Phlegmasia cerulea dolens	Massive proximal DVT that blocks almost all venous drainage from the leg. The leg turns blue and swollen under extreme tension. A vascular emergency requiring immediate intervention.
Recurrent DVT	DVT recurs in ~25–30% of patients within 5–8 years, especially those with unprovoked first episodes or inherited thrombophilias. Extended anticoagulation significantly reduces this risk.
Venous ulcers	In advanced post-thrombotic syndrome, chronic venous hypertension damages the skin near the ankle, causing painful slow-healing ulcers. Prevention requires consistent compression stocking use.
Anticoagulation-related bleeding	Major bleeding (intracranial, GI) occurs in ~2% of patients per year on therapeutic anticoagulation. The risk is weighed against the benefit of preventing PE and recurrent DVT.
Heparin-induced thrombocytopenia (HIT)	A paradoxical rare reaction to heparin in which antibodies cause the platelet count to drop AND clots to form. Requires switching to a non-heparin anticoagulant immediately.



Clinical appearance of right-leg DVT: unilateral swelling, erythema (redness), and warmth. These findings — especially when in only one leg — should prompt same-day evaluation. Credit: James Heilman, MD, Wikimedia Commons (CC BY-SA 3.0).

May-Thurner Syndrome: A Structural Cause of Left-Leg DVT

- The right iliac artery crosses and presses on the left iliac vein. This squeeze slows blood flow out of the left leg.
- The result: left-leg DVT is more common than right-leg DVT in May-Thurner patients — especially in young women.
- May-Thurner is found in 20–25% of patients with left-leg DVT on CT or MR venography.
- Blood thinners alone often do not solve the problem. The structural squeeze stays even after the clot dissolves.
- Treatment: catheter-directed clot removal, then iliac vein stent to hold the vein open.
- After stenting, blood thinners are taken for 6–12 months or longer.
- DVT recurrence is much lower after stenting than with blood thinners alone.

Points to Know

If you remember nothing else, remember these key points.

- DVT is a blood clot in a deep vein — usually the leg. It is different from a surface vein clot.
- The biggest danger is that the clot breaks free and travels to the lungs (pulmonary embolism, PE). Starting treatment quickly prevents this.
- Leg swelling on ONE side only, aching, warmth, or redness are warning signs. Go to the ER the same day — do not wait.
- Most DVTs are treated with blood thinners (anticoagulants). DOACs (apixaban or rivaroxaban) do not require regular blood tests.
- Duration matters: provoked DVT (clear trigger) = 3 months; unprovoked = longer. Your doctor will review at 3 months.
- Wear compression stockings as prescribed — they halve the risk of chronic leg swelling (post-thrombotic syndrome).
- May-Thurner syndrome (structural left iliac vein compression) can require a stent — ask if yours was ruled out.
- Tell every doctor and dentist that you are on a blood thinner. Carry a medication card.

When to Call Us - and When to Call 911

If you are not sure, call. We would rather hear from you twice than miss a real problem.

- CALL 911 / GO TO ER IMMEDIATELY: sudden shortness of breath, chest pain, rapid heartbeat, coughing up blood, or faintness — these are signs of pulmonary embolism.
- CALL 911: one-sided weakness, speech difficulty, or sudden severe headache while on anticoagulation (signs of a bleeding event in the brain).
- Call our office SAME DAY: new or worsening leg swelling, pain, or redness — even if you are already on blood thinners.
- Call our office SAME DAY: any unusual bleeding (blood in urine or stool, prolonged nosebleed, coughing up blood) while on anticoagulation.
- Call our office: if you need to have a procedure, dental work, or surgery — anticoagulation may need to be adjusted.
- Call our office: if you miss two or more doses of your blood thinner.
- Call our office: if you become pregnant or are planning to become pregnant — DOAC blood thinners are not safe in pregnancy.

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PE Warning Signs — Call 911 Right Now:
• Sudden shortness of breath (at rest or with mild activity)
• Chest pain that is sharp or worsens with a deep breath
• Rapid heart rate (pounding or racing)
• Coughing up blood (even a small amount)
• Faintness, dizziness, or passing out

These are signs the clot may have traveled to the lungs. Do not drive yourself. Call 911 immediately.

Trusted Resources

The links below are the trusted resources Dr. Ali used to write this guide and that he recommends you visit for more information. Each is a clickable link in the digital version and a Short.io tracked URL on the printed version.

- NIH MedlinePlus — Deep Vein Thrombosis - NIH plain-language overview with treatment, prevention, and symptom information.
- American Heart Association — VTE - AHA patient page on blood clots in the veins, including DVT and PE.
- Cleveland Clinic — DVT - Comprehensive DVT overview including diagnosis, treatment, and recovery.
- National Blood Clot Alliance (NBCA) - Patient-focused nonprofit with DVT/PE stories, support resources, and prevention guides.
- CDC — Blood Clot (VTE) Information - CDC public health resources including infographics on DVT risk and prevention.

Sources Used to Build This Guide

Every recommendation in this guide is grounded in one or more of the studies, guidelines, or trusted resources below. Short links are tracked so Dr. Ali can see which references patients are reading; nothing personally identifying is captured.

- AHA Deep Vein Thrombosis (DVT) overview *[Patient Education]*
  AHA plain-language framing of DVT etiology, symptoms, and treatment
- Cleveland Clinic Deep Vein Thrombosis guide *[Patient Education]*
  Competitor benchmark — used to identify gaps in standard-of-care patient resources
- Mayo Clinic Deep Vein Thrombosis overview *[Patient Education]*
  Competitor benchmark — plain-language symptoms and risk factor framing
- NIH MedlinePlus Deep Vein Thrombosis *[Patient Education]*
  Trusted-resource link in guide; NIH plain-language overview
- 2021 AHA/ACC guideline — venous thromboembolism anticoagulation *[Guideline]*
  Source of DOAC-preferred anticoagulation recommendations and duration tiers (provoked 3 mo vs unprovoked extended)
- 2023 ESC Guidelines on VTE — EHJ *[Guideline]*
  Current European guideline on DVT management; Wells score thresholds, D-dimer use
- Wells score and D-dimer algorithm — NEJM *[Primary Literature]*
  Original Wells DVT clinical prediction rule validation study; pre-test probability scoring
- Apixaban for DVT (AMPLIFY trial) — NEJM 2013 *[Primary Literature]*
  Pivotal trial supporting apixaban for DVT/PE; HR 0.84 vs warfarin with less bleeding
- Rivaroxaban for DVT (EINSTEIN DVT) — NEJM 2010 *[Primary Literature]*
  Pivotal trial supporting rivaroxaban for DVT; non-inferior to warfarin + LMWH
- May-Thurner syndrome review — Vasc Med 2021 *[Review Article]*
  Iliocaval compression as structural DVT driver; left iliac vein anatomy
- Post-thrombotic syndrome (PTS) review — Circulation 2014 *[Review Article]*
  Prevalence, grading (Villalta), prevention with compression; role of anticoagulation duration
- Photorealistic image: DVT ultrasound clot in femoral vein (Wikimedia Commons) *[Image Source]*
  CC-BY-SA 4.0 photorealistic duplex ultrasound showing DVT clot in the right leg — photorealistic tier for guide

About This Guide

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Reviewer note: Reviewed against: Cleveland Clinic DVT page, AHA VTE overview, Mayo Clinic DVT guide. This guide adds: Virchow's Triad 3-circle diagram, Wells score + D-dimer decision flowchart, DVT to PE propagation pathway, anticoagulation duration timeline (provoked vs unprovoked), May-Thurner structural DVT section, post-thrombotic syndrome grading, and DVT vs. superficial thrombophlebitis distinction.

Disclaimer

This guide is for educational purposes only and does not replace medical advice from your physician. Recommendations may not apply to every patient. Always follow the specific instructions of Dr. Ali and your care team. In an emergency call 911 or go to the nearest emergency department.

Take This Guide With You

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