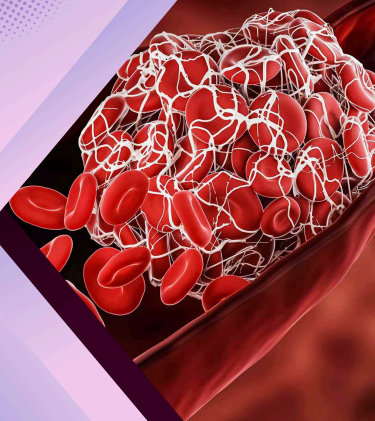


VESSOMAG's Inside the VESSEL ...



Official Quarterly Newsletter of the
Vascular & Endovascular Surgeons of
Maharashtra and Goa



THEME
VTE



Must Reads

- Is Open Thrombectomy still an option in DVT Management
- Pharmacomechanical Thrombectomy
- Why is Post Thrombotic Syndrome Important
- Are we still using IVC Filters ?
- Anticoagulation strategies ...
- Whats New in DVT ..
- High Risk PE : Management Strategies
- Role of Vascular Genetic Clinic in VTE



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From the Editor's Desk

Dr. Aniruddha Bhuigan
Vascular & Endovascular Surgeon
MUMBAI



As we welcome this latest edition of “Inside the VESSEL”, it feels timely to reflect on a pathology that touches nearly every aspect of vascular practice: Venous Thromboembolism and Pulmonary Embolism. Despite all the rapid advances in percutaneous thrombectomy and catheter-directed therapies, VTE management remains a discipline where swift, calculated decisions carry enormous clinical weight—often meaning the difference between life and death.

This edition focuses on the decisive elements of VTE and PE care: from the acute, life-saving management of massive pulmonary emboli to the chronic, nuanced challenges of deep vein thrombosis and post-thrombotic syndrome. March being the DVT Prevention month, we thought that this theme would be apt for this newsletter edition.

In this era of rapidly evolving clot-retrieval technologies, where minimally invasive techniques frequently dominate the conversation, this newsletter highlights the enduring importance of a patient-specific approach.

Our hope is that this edition encourages each of us to revisit the fundamentals of medical and surgical management, reaffirming the principle that timely diagnosis and tailored therapy are the absolute foundations of effective VTE care.

I would like to thank all the authors for their invaluable contributions and Bayer for supporting this edition of the newsletter.

Thank you



Are we still using IVC Filters ?

Dr. Nupur Bit
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DEBATES



The Inferior Vena Cava (IVC) filter remains one of the most controversial devices in the vascular surgeon's armamentarium. Since the 1970s, its clinical utility has swung from widespread prophylactic adoption to a period of intense scrutiny characterized by litigation and safety alerts. In 2026, as we balance advanced pharmacotherapy with catheter-directed interventions, we must ask: Do we still need and use IVC filters? The answer is a definitive yes, but their application has evolved from a "safety net" for the many to a precision tool for a highly specific few.

The Weight of Evidence: From PREPIC to PREPIC2

To understand the current utility of IVC filters, one must look at the landmark data that reshaped our guidelines. The original PREPIC (Prévention du Risque d'Embolie Pulmonaire par Interruption Cave) study was a watershed moment. While it demonstrated that filters significantly reduced the risk of pulmonary embolism (PE), it also revealed a sobering trade-off: a statistically significant increase in the long-term risk of deep vein thrombosis (DVT). The subsequent PREPIC2 trial in 2015 further narrowed the scope of filter use, showing that in patients with acute PE and high-risk features who could be anticoagulated, the addition of a retrievable IVC filter did not reduce the recurrence of PE. These findings catalyzed a shift in our specialty, moving us away from "prophylactic" placement in trauma or bariatric patients and toward a strict "contraindication-based" model.

The Indispensable Indications

Despite the cautionary data, there are clinical scenarios where the IVC filter

Are we still using IVC Filters ?

is not just useful, but mandatory. In the high-stakes environment of a trauma center or an oncology ward, we frequently encounter the "therapeutic impasse": the patient with an acute, proximal DVT who has a concomitant absolute contraindication to anticoagulation.

In these instances—intracranial hemorrhage, massive gastrointestinal bleeding, or the immediate perioperative window of major surgery—the IVC filter remains the only mechanical barrier against a fatal embolic event. Furthermore, in cases of "anticoagulation failure," where a patient suffers a recurrent PE despite therapeutic-grade INR or factor Xa inhibition, the filter provides a necessary secondary line of defense. Commonly used options are the Denali filter by BD and Cook Celect filter.

The Evolution of Hardware and the "Exit Strategy"

The contemporary use of filters is defined by the retrievable design. The era of the "permanent" filter is largely behind us, reserved only for those with lifelong contraindications to anticoagulation and very high embolic risk. The modern vascular surgeon views the filter as a temporary bridge, not a permanent implant. The clinical mandate in 2026 is the "Exit Strategy." Every filter placement must be accompanied by a plan for its removal.

Complications and the Cost of Persistence

We still use filters, but we do so with a profound respect for their long-term morbidity. The complications of a retained filter—caval thrombosis, migration, and perforation into adjacent structures like the aorta or duodenum—are well-documented. Chronic IVC occlusion can lead to debilitating post-thrombotic syndrome (PTS), characterized by venous claudication and stasis ulceration. These risks necessitate a rigorous risk-benefit analysis for every patient.

Conclusion: A Tool of Necessity, Not Convenience

In conclusion, the IVC filter is far from obsolete. We still need it because

Are we still using IVC Filters ?

human biology frequently presents us with the "bleeding-clotting" paradox that drugs cannot solve. However, we no longer use it as a routine supplement to anticoagulation.

Our current practice reflects a maturation of the field. We have moved from a period of over-utilization to one of evidence-based precision. By adhering to the Society for Vascular Surgery (SVS) and American College of Chest Physicians (ACCP) guidelines, and by maintaining a relentless focus on retrieval, we ensure that the IVC filter remains a life-saving intervention rather than a long-term liability. The filter is no longer a "set-it-and-forget-it" device; it is a tactical, temporary solution for the critically ill.

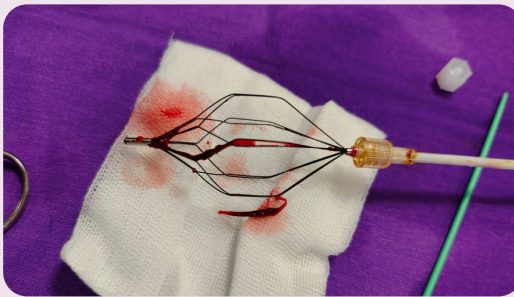


Fig 1. Retrievable over the wire IVC filter

Fig 2. IVC Filter - Retrieval - 30 days post implantation



Is Open Thrombectomy still an option in DVT Management ..

Dr. Amish Mhatre
Vascular & Endovascular Surgeon
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DEBATES



Introduction

With the advent of endovascular devices for venous thrombectomy, the indications for open surgical venous thrombectomy have significantly decreased. One of the remaining indications is when anticoagulation is contraindicated and there is a risk of phlegmasia cerulea dolens (limb-threatening DVT). The procedure involves exposure of the femoral vein and open thrombectomy.

Procedure / Surgical Technique

Regardless of whether surgery or an endovascular approach is planned, there is always a risk of pulmonary embolism. Therefore, insertion of an inferior vena cava (IVC) filter prior to the procedure is recommended to reduce this risk. Contralateral limb access is obtained, and an infrarenal IVC filter is placed. The procedure is performed under general anaesthesia, and a high PEEP is maintained to reduce the risk of pulmonary embolism.

Exposure of the common femoral vein, superficial femoral vein, and great saphenous vein is achieved through a groin incision. These veins are typically dilated and firm due to thrombus, leading to venous congestion, swelling, and significant venous oozing and lymphatic leakage at the operative site. This is sometimes referred to as “underwater surgery,” where surgical expertise lies in meticulous dissection and precise exposure.

It is essential to obtain proximal and distal control of the vein. Due to the fragile nature of the venous wall, vascular clamps should be avoided. Gentle handling of the vein is critical to prevent clot migration. At this stage, 5000 units of heparin are administered.

Is Open Thrombectomy still an option in DVT Management ..

A vertical venotomy is preferred as it allows easier access for larger devices. A large (6 Fr) Fogarty catheter or even a plastic suction catheter can be used to remove thrombus from the iliac segment. This process is repeated until satisfactory thrombus clearance is achieved. A soft bulldog clamp may be applied to control backflow. For the superficial femoral and popliteal veins, dedicated venous thrombectomy catheters are used. These help minimise damage to venous valves. Thrombectomy is repeated until complete clearance is achieved. To maintain venous patency, an arteriovenous (AV) fistula is created between the femoral artery and femoral vein using either an interposition vein graft or a PTFE graft. This AV fistula should be closed after a few months. The presence of an interposition graft facilitates later closure by simple ligation. The wound is then closed and a compression dressing is applied.

Adjuvant Treatment

- Anticoagulation: Low molecular weight heparin (LMWH) followed by oral anticoagulation
 - In patients with contraindications, low-dose LMWH may be considered
- Iliac vein stenting: Indicated in May-Thurner syndrome or iliac vein stenosis
- Compression therapy: Graded compression stockings
- Pharmacotherapy: Venoactive drugs such as micronized purified flavonoid fraction (90% diosmin, 10% hesperidin)



Fig 1. Long Segment Venous Thrombus

Is Open Thrombectomy still an option in DVT Management ..

Problems of Open Surgery

1. Difficulty in wound closure due to edema and lymphatic leakage
2. Delayed wound healing
3. Secondary infection
4. Prolonged antibiotic use
5. Graft infection (especially with PTFE), which may require graft excision and vascular repair
6. AV fistula closure requires re-exploration of a previously operated field, increasing wound-related complications

Advantages of Open Surgery

1. Faster thrombus clearance with potential reduction in post-thrombotic syndrome
2. Reduction in risk of recurrent venous thromboembolism (VTE)

Conclusion

If given a choice, open surgery for venous thrombosis should generally be avoided, as the risks often outweigh the benefits. In the current era of advanced endovascular and emerging AI-assisted techniques for venous and pulmonary thrombectomy, the role of open surgery is limited. The primary indication for open surgical thrombectomy remains patients in whom anticoagulation is contraindicated and who are at risk of phlegmasia cerulea dolens (limb-threatening DVT).



Risk Stratification in VTE: Protocols for daily clinical practice

Dr. Paresh Pai
Vascular & Endovascular Surgeon
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PERSPECTIVES

Deep vein thrombosis (DVT) remains a major contributor to morbidity and mortality across surgical and medical specialties. Despite advances in thromboprophylaxis, pulmonary embolism (PE) continues to be a leading cause of preventable in-hospital deaths. For clinicians—whether surgeons, cardiologists, intensivists or general practitioners—the key to reducing this burden lies in accurate risk stratification. Understanding who is at risk, to what degree, and for how long allows us to design rational, safe and effective prevention and treatment strategies.

Why Risk Stratification Matters

VTE is not a uniform disease. The likelihood of developing a first episode—or suffering a recurrence—varies widely depending on patient factors, clinical context and provoking events. Equally important is the competing risk of bleeding from anticoagulation. Clinical decisions therefore require balancing two opposing hazards: thrombosis versus haemorrhage. Structured risk assessment tools help transform this complex judgment into a practical action plan.

Stratifying Risk of First Episode of DVT

Risk for initial VTE can broadly be divided into patient-related and situational factors. Various tools and scores are very useful in daily clinical practice to stratify & predict risk of VTE, aid diagnosis and decide treatment options.

Risk Stratification After a Confirmed VTE – DVT + PE

Once VTE occurs, two separate questions arise:

1. What is the immediate risk to life and limb?
2. What is the long-term risk of recurrence?

Risk Stratification in VTE: Protocols for daily clinical practice

PREDICTING, DIAGNOSING & MANAGING VTE: PRACTICAL CLINICAL TOOLS USED IN DAILY PRACTICE

PREDICTOR TOOLS FOR ESTIMATING RISK OF VTE			TOOLS FOR DIAGNOSIS OF VTE - DVT & PE		
MODIFIED CAPRINI SCORE (Surgical Patients)			PADUA SCORE (Medical Patients)		
1 point	2 points		1 point	2 points	
Age 41-60 yr	Age 61-74 yr		Age >70yr	Recent Surgery / Trauma ≤1mth	
Minor Surg <45min plan	Major Surg >45min plan		Cardiac &/or Respiratory failure	3 points	
Major Surg >45 min in <1 mth	POP cast within 1 mth		AMI / Ische stroke	H/o VTE	
Varicose vein	Malignancy		Acute infection	Active Cancer + mets	
Immobility <72hr	Immobility >72hr		Rheumatology	Chemo Rx ≤6mth	
H/o inflammatory disease	H/o indwelling IV catheters		Hormonal Rx	Immobility >72hr	
Swollen legs	3 points		BMI >25	H/o Thrombophilia	
BMI >25	Age ≥ 75yr		Score	VTE Risk	Prophylaxis
AMI / CCF	H/o VTE		<4	Low	Early Ambulation
Maj infection	FHO blood clots		≥4	High	Pharmacological
COPD	Personal / FHO		KHORANA SCORE (Cancer patients)		
For Women	Thrombophilia		1 point	2 points	
Hormonal Rx	5 points		Lymphoma	CA Stomach	
Pregnancy	Elect THR/TKR		Lung malignancy	CA Pancreas	
Puerperal	Fracture hips		Gynec / GU malignancy		
Bad Obs hist	Serious Trauma		Testicular malignancy		
Smoking	Spinal cord inj		Pre chemo platelet >350L		
DM on insulin	Stroke		Pre chemo Hb < 10gm%		
Score	VTE Risk	Prophylaxis	Pre chemo TLC > 11.0		
0-2	Low	Early Ambulation	BMI ≥31		
3-4	Mod	Mechanical	Score	VTE Risk	Probability of VTE (%)
5-6	High	Pharmacological	0	Low	0.3 to 0.8
7-8	V High	Mech + Pharmac	1-2	Intermediate	1.8 to 2.0
>8	VV High	Mech + Pharmac	≥3	High	6.7 to 7.1
WELLS SCORE (Diagnosis of DVT & PE)			Criteria for DVT		
Criteria for DVT	Points		Criteria for PE	Points	
Immobility > 72hr	1.0		Clinical symptoms & signs of DVT	3.0	
Paralysis, reduced movement, POP	1.0		PE likely: chest pain, DOE, hypotension, collapse	3.0	
Surgery in previous 12 wks	1.0		Heart Rate > 100	1.5	
Tenderness along deep vein	1.0		Immobility > 72hr	1.5	
Unilateral leg swelling, calf ≥3cm	1.0		Surgery in previous 4 wks	1.5	
Unilateral pitting edema	1.0		Past h/o VTE	1.5	
Non-varicose collateral veins	1.0		Hemoptysis	1.0	
Active Malignancy within 6 mths	1.0		Active Malignancy within 6 mths	1.0	
Past h/o documented VTE	1.0		Score	Probability of PE	Modified Probability
Alternative diagnosis for VTE	-2.0		<2	Low	≤4 –PE unlikely
Score	Probability of DVT	Further Assessment	2-6	Mod	>4 PE likely
0	Low	D Dimer + Venous Doppler	>6	High	
1-2	Mod	D Dimer + Venous Doppler			
≥3	High	D Dimer + Venous Doppler			

Acute Phase Assessment

In acute VTE, particularly proximal ilio-femoral thrombosis, risk stratification for mortality, PE, limb loss and post-thrombotic syndrome determines intensity of treatment. Patients are categorized as:

- Low-risk: Isolated calf vein thrombosis
- Intermediate-risk: Proximal DVT without significant symptoms
- High-risk: Extensive ilio-femoral DVT with limb swelling, phlegmasia, or impending venous gangrene

Risk Stratification in VTE: Protocols for daily clinical practice

While most patients can be safely treated with anticoagulation alone, selected high-risk individuals may benefit from catheter-directed thrombolysis or pharmacomechanical thrombectomy to prevent post-thrombotic syndrome. Early identification of this subgroup is critical.

Assessing Risk of Recurrence

The duration of anticoagulation is one of the most important decisions following a DVT episode. This decision hinges on whether the event was provoked or unprovoked.

1. Unprovoked DVT:

- Recurrence risk may exceed 10% in the first year, 20% in 3 years & 30% in 5 years.
- Often requires extended or indefinite anticoagulation

2. Provoked DVT following a transient minor risk factor: (e.g., after surgery, trauma, immobilization)

- Recurrence risk is low once the provoking factor resolves
- Standard treatment: 3-6 months of anticoagulation

3. Provoked DVT following a persistent or major risk factor: (e.g., GI/GU malignancy, thrombophilia)

- Recurrence risk is very high.
- Often requires extended or indefinite anticoagulation

Tools such as the Vienna prediction model, HERDOO2 rule, DASH score and serial D-dimer testing can further refine decisions regarding continuation of therapy.

Balancing Thrombosis Prevention with Bleeding Risk

No discussion on risk stratification is complete without considering safety. Anticoagulation saves lives—but can also cause harm. Major bleeding risk must therefore be assessed before initiating or extending therapy.

Commonly used bleeding risk tools include:

- **HAS-BLED score**
- **VTE-BLEED score**

Risk Stratification in VTE: Protocols for daily clinical practice

High-risk features include advanced age, renal or liver dysfunction, previous bleeding, concurrent antiplatelet therapy, alcoholism and poorly controlled hypertension.

In patients with high bleeding risk, clinicians may opt for:

- Shorter duration of therapy
- Lower-intensity anticoagulation
- Use of mechanical prophylaxis alone
- Careful selection of newer direct oral anticoagulants (DOACs) with better safety profiles

Special Situations

Certain patient groups require individualized assessment:

- **Cancer-associated thrombosis:** Higher recurrence; often need long-term LMWH or DOACs
- **Pregnancy:** LMWH is the agent of choice; warfarin and DOACs are contraindicated
- **Elderly and frail patients:** Lower thresholds for dose adjustment and monitoring
- **Perioperative patients:** Careful timing of interruption and resumption of anticoagulation

RISK OF BLEEDING ON ANTICOAGULATION					
HAS-BLED SCORE FOR RISK OF BLEEDING ON ANTICOAGULATION					
			Points		
H	Hypertension	Uncontrolled BP >160 systolic	1	HAS BLED score (Total pts)	Bleeds per 100 patient years
A	Abnormal	Liver Cirrhosis, Bil > 2x, Enzymes > 3x	1	0	1.13
		Renal Dialysis, Creat <2.26, Renal transplant	1	1	1.02
S	Stroke		1	2	1.88
B	Bleeding	Major / Bleeding tendency	1	3	3.74
L	Labile INR	<60% time in therapeutic range	1	4	8.70
E	Elderly	Age >65 years	1	>5	Insufficient data
D	Drugs	Meds NSAID, Aspirin, Clopidogrel	1		
		Alcohol >8 drinks / week	1		
VTE-BLED SCORE FOR RISK OF BLEEDING ON ANTICOAGULATION					
			Points		
Active Cancer			2.0	VTE BLED score (Total pts)	Risk of bleeding on anticoag
Hypertension	Male, BP ≥ 140 mm of Hg systolic		1.0	<2	Low risk of bleeding
Anemia	Hb <13gm% in Male, <12 gm% in Female		1.5	>2	High risk of bleeding
H/o Bleeding	Major & non-major clinically significant bleed		1.5		
CKD	Creatinine clearance 30-60ml/min		1.5		
Elderly	Age >65 years		1.5		

Risk Stratification in VTE: Protocols for daily clinical practice

CLINICAL FACTORS & TOOLS TO DECIDE CHOICE, DURATION OF RISK OF TREATMENT											
RISK STRATIFICATION OF ACUTE VTE & FACTORS AFFECTING CHOICE & DURATION OF TREATMENT											
Site	Life	PE	Limb	PTS	Treatment	Duration	Cause of VTE	Choice & duration of treatment			
Superficial V	Low	Low	Low	Low	Lower dose anticoag	6-12wks	Unprovoked	Life long anticoagulation depending on risk of bleed			
Calf Vein	Low	Low	Low	Low	Lower dose anticoag	6-12wks	Provoked – transient factor	3-6 months of anticoagulation			
Fem-pop	Low	Mod	Low	Mod	Full dose anticoag	3 mth	Provoked – persistent factor	>6 months to life depending on factor & risk of bleed			
Mild Ilio-Fem	Mod	High	Mod	Mod	Full dose anticoag	3-6 mth	Cancer associated DVT	Based on remission / mets / chemo / immune + risk of bleed			
Maj Ilio-Fem	Mod	NA	High	High	Anticoag + AT + CDT	≥6 mth	Use of compression bandaging followed by class II graduated compression stockings	IVC filters are selectively used			
Stable PE	High	NA	NA	NA	Full dose anticoag	≥6 mth	Choice of anticoagulation: Heparin / LMWH / Fondaparinux + VKA or/ & NOACs				
Unstable PE	High	NA	NA	NA	Anticoag + AT + CDT	>24 mth					

RISK OF RECURRENCE OF DVT											
VIENNA PREDICTION SCORE											
Sex	Female	Male		Location	Distal	Proximal	PE				
	0	70			0	70	100				
D Dimer	100	150	200	250	300	400	500	600	750	1000	1500
	0	15	20	25	30	40	50	60	70	80	90
Total points	0	50	100	150	175	200	225	250	275	300	350
1 year risk		2%	3%	4%	6%	7%		8%	12%	15%	
5 year risk			10%		20%		30%		40%	50%	

DASH score											
D Dimer	Normal	Abnormal	Age	≤50	>50	Sex	Female	Male	Hormonal	No	Yes
	0	2		1	0		0	1		0	
DASH Score	-2	-1	0	1	2	3	4				-2
Annual recur	1.8%	1.0%	2.4%	3.9%	6.3%	10.8%	19.9%				

HERDOO 2 (for women)					
Hyperpigmentation	Edema	Redness	D Dimer >250	Obesity BMI >30	Older age (>65yr)
1	1	1	1	1	1
HERDOO2 score	0-1 Low risk (1.6% annual risk recur)	Discontinue anticoagulation	≥2 High risk (14.1% annual risk recur)	Continue anticoagulation	

Building a Practical Action Plan

For everyday practice, a simple framework can be adopted:

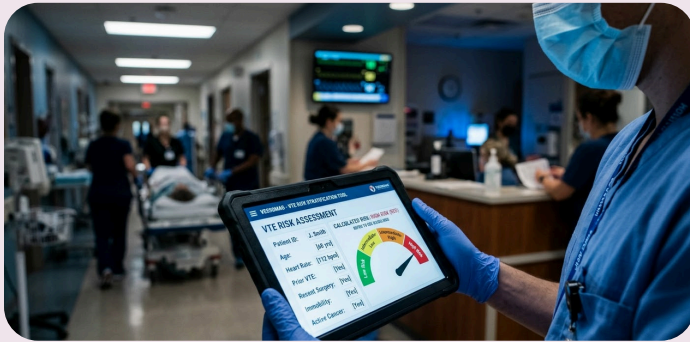
1. **Assess risk of thrombosis using validated scores**
2. **Initiate appropriate prophylaxis** based on risk category
3. **Confirm diagnosis early** with duplex ultrasound when suspected
4. **Classify event as provoked or unprovoked**
5. **Decide duration** of anticoagulation using recurrence risk tools
6. **Continuously evaluate bleeding risk**
7. **Educate patients** on symptoms, compliance and lifestyle modification.

Conclusion

Risk stratification transforms DVT management from a one-size-fits-all approach into precision medicine. By systematically evaluating both thrombosis

Risk Stratification in VTE: Protocols for daily clinical practice

and bleeding risks, clinicians can prevent first episodes, treat established disease effectively, and minimize recurrence—while maintaining patient safety. For the modern multidisciplinary practitioner, adopting structured risk-based protocols is not merely an academic exercise; it is the cornerstone of high-quality, evidence-based vascular care.



Anticoagulation strategies ...

Dr. Shrikant Ghanwat
Vascular & Endovascular Surgeon
PUNE, INDIA



PERSPECTIVES

Balancing Thrombosis Prevention with Haemorrhagic Risk

Clinical application of vascular anticoagulation demands meticulous individualisation. Every prescription represents a balance between preventing catastrophic thrombotic events and avoiding major haemorrhage. In vascular surgery, this balance becomes even more nuanced—particularly in acute limb ischaemia, iliofemoral DVT, post-revascularisation states, vascular trauma, and polyvascular atherosclerotic disease.

Antithrombotic therapy broadly targets different components of thrombus formation:

- **Antiplatelet agents** – inhibit platelet aggregation
- **Anticoagulants** – attenuate coagulation cascade activation
- **Thrombolytics** – promote fibrin degradation

This article focuses on anticoagulants, available in parenteral and oral forms, with practical dosing, indications, and contemporary evidence.

Parenteral Anticoagulants

Unfractionated Heparin (UFH)

The intraoperative gold standard. Rapid onset, short half-life (30–60 min), and full reversibility with protamine make UFH indispensable in acute limb ischaemia and vascular surgery.

Dose: 80 U/kg bolus → 18 U/kg/hr infusion

Monitoring: ACT/aPTT (target 2–3× control)

Limitation: Variable response, HIT risk.

Anticoagulation strategies ...

Low-Molecular-Weight Heparin (LMWH)

Predictable pharmacokinetics, 90% bioavailability, 4–6 hr half-life, no routine monitoring.

Dose: 100 U/kg BD or 150 U/kg OD

Lower HIT risk than UFH; partial protamine reversal.

Widely used for outpatient DVT, bridging, and cancer-associated VTE.

Fondaparinux

Selective factor Xa inhibition.

Useful in HIT (no cross-reactivity).

Avoid if CrCl <30 mL/min.

Once-daily subcutaneous dosing based on weight.

Oral Anticoagulants

Vitamin K Antagonists (Warfarin)

Target INR 2–3. Still preferred in:

- Antiphospholipid syndrome
- Mechanical valves
- Severe renal impairment

Limitations: Monitoring burden, drug/food interactions, higher intracranial bleed risk vs DOACs. Contraindicated in pregnancy.

Direct Oral Anticoagulants (DOACs)

First-line for most VTE cases. Predictable kinetics, no routine monitoring, lower intracranial bleeding than warfarin.

Typical Regimens

- Apixaban: 10 mg BD ×7 days → 5 mg BD
- Rivaroxaban: 15 mg BD ×21 days → 20 mg OD
- Dabigatran: Requires 5 days LMWH first → 150 mg BD

Avoid in pregnancy and breastfeeding. Idarucizumab reverses dabigatran.

Anticoagulation strategies ...



Duration & Dual Pathway Therapy

- Provoked VTE: Minimum 3 months
- Unprovoked/persistent risk: Extended therapy
- Polyvascular disease: Low-dose rivaroxaban (2.5 mg BD) + aspirin reduces MACE and MALE (COMPASS data)

Conclusion

Modern anticoagulation is no longer a binary choice between heparin and warfarin. It is a tailored strategy integrating surgical timing, renal function, thrombotic burden, bleeding risk, malignancy status, and vascular territory involved. Choosing the right drug, at the right dose, for the right duration—while constantly reassessing risk is the correct regimen for anticoagulation strategies.

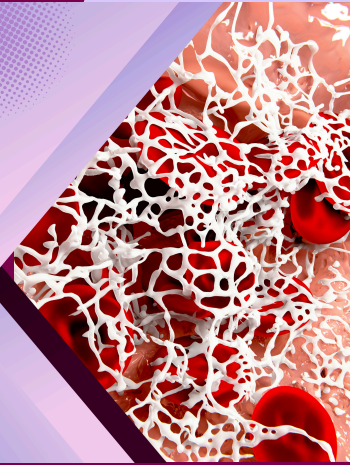


Why is POST-THROMBOTIC Syndrome IMPORTANT

Dr. Simit Vora
Vascular & Endovascular Surgeon
MUMBAI, INDIA



PERSPECTIVES



Post-thrombotic syndrome (PTS) is a chronic complication of deep vein thrombosis (DVT) that occurs due to persistent venous obstruction and/or damage to venous valves, leading to long-term venous hypertension in the affected limb. It is characterized by chronic pain, swelling, skin changes, and sometimes venous ulcers in a limb after a previous episode of DVT.

Post-thrombotic syndrome (PTS) is important because it is the most common, disabling and long-term complication of deep vein thrombosis (DVT) and has major implications for patient quality of life, limb health and healthcare financial burden.

Why PTS is important:

1. Chronic morbidity after DVT develops in 20–50% of patients after DVT.

Can appear months to years after the acute event.

Once established, it is irreversible.

2. Significant impact on quality of life.

Patients may develop:

- Chronic leg pain and heaviness
- Persistent swelling
- Skin changes (hyperpigmentation, lipodermatosclerosis)
- Venous eczema
- Venous leg ulcers (most severe form)

These symptoms lead to:

- Reduced mobility
- Work absenteeism
- Psychological distress

Why is POST-THROMBOTIC Syndrome IMPORTANT

3. Risk of venous ulceration

PTS is the leading cause of venous leg ulcers.

Ulcers are:

- Painful
- Recurrent
- Expensive to treat
- Associated with infection and hospitalization.

Fig 1. PTS : Chronic Left Iliofemoral DVT + Venous Ulcer



Fig 2. Non healing Lateral Malleolus Ulcer - PTS

Why is POST-THROMBOTIC Syndrome IMPORTANT

4. Pathophysiology highlights the importance of early care:

PTS occurs due to:

Persistent venous obstruction

Valve destruction → venous reflux

Resultant chronic venous hypertension.

Emphasizes the importance of:

- Early diagnosis of DVT
- Adequate anticoagulation
- Early ambulation
- Selected use of thrombus-removal strategies (in appropriate patients)

5. Prevention is better than treatment

There is no definitive cure for established PTS. Management is mainly supportive:

- Compression therapy
 - Exercise and limb elevation
 - Wound care for ulcers
 - Endovascular or surgical options in select cases.
- Therefore, preventing PTS is the key goal in DVT management.

6. Economic and healthcare burden

- Long-term treatment costs
- Recurrent outpatient visits
- Loss of productivity

Prevention & Management :

Prevention:

1. Primary prevention (after acute DVT):

- Early and effective anticoagulation
- Adequate intensity and duration to prevent clot propagation and recurrence.
- Early ambulation
- Encouraged once anticoagulation is started.
- Graduated compression stockings (30–40 mmHg).

Why is POST-THROMBOTIC Syndrome IMPORTANT

2. In selected patients with proximal DVT and persistent symptoms, control risk-factors like,

- treat obesity,
- avoid immobility,
- avoid dehydration,
- avoid recurrent DVT.

3. Consider early thrombus removal strategies

(Catheter-directed thrombolysis / thrombectomy) in selected patients with:

- Iliofemoral DVT
- Severe symptoms
- Low bleeding risk.

Management:

1. Conservative (first-line):

- Compression therapy
- Stockings or bandaging tailored to symptoms.
- Leg elevation & regular exercise
- Calf muscle pump strengthening.
- Skin care
- Emollients, topical steroids for dermatitis.
- Pain & edema control
- Analgesics, short-term diuretics only if needed.

2. Interventional (for moderate-severe or refractory PTS):

- Endovascular venous recanalization
- Iliac vein angioplasty ± stenting
- Treatment of venous reflux
- Superficial venous ablation (if indicated)
- Ulcer care
- Compression, wound care, infection control.

Why is POST-THROMBOTIC Syndrome IMPORTANT

Key take-home message:

Post-thrombotic syndrome is important because it transforms an acute, treatable DVT into a lifelong, disabling venous disease. Early recognition, optimal DVT management, and preventive strategies are crucial to reduce its incidence and severity.



**Fig 3. Common Findings on History :
Non healing Venous Ulcer
even post ablation
of superficial reflux**

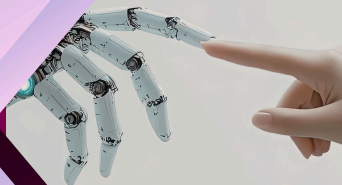


Pharmaco-Mechanical Thrombectomy for DVT

Dr. Vinit Paliwal
Vascular & Endovascular Surgeon
THANE, INDIA



CLINICAL



The incidence of deep vein thrombosis (DVT) is approximately 48 per 100,000 persons per year in large community-based studies, with an annual morbidity and mortality of 14.6%. In particular, iliofemoral DVT (proximal DVT/extensive DVT) can lead to recurrent thrombosis and post-thrombotic syndrome (PTS), a painful condition that can result in chronic venous insufficiency, oedema, and ulceration. It causes significant disability, impaired quality of life, and economic burden.

The most common late complication of DVT, post-thrombotic syndrome (PTS), is due to valve damage from chronic thrombus and intravascular scarring. This may occur months or years after DVT.

Conventional therapy includes anticoagulation with either unfractionated heparin or low molecular weight heparin, followed by long-term therapy with oral warfarin sodium or newer oral anticoagulants (NOACs). Anticoagulation therapy, the current standard of care for DVT, only inhibits thrombus propagation and provides prophylaxis against pulmonary embolism. However, it neither prevents chronic post-thrombotic complications nor removes the existing thrombus.

Early thrombus removal techniques have been advocated in patients with iliofemoral DVT in order to reduce PTS. One such endovascular technique is pharmacomechanical thrombectomy (PMT), a combination of catheter-based thrombolysis and catheter-directed thrombectomy.

Indication

- Iliofemoral, ilio-caval DVT i.e., proximal/extensive DVT
- Impending venous gangrene, symptomatic DVT
- Acute DVT (within 14 days, up to a maximum of 21 days)

Pharmaco-Mechanical Thrombectomy for DVT

- Phlegmasia cerulea dolens and phlegmasia alba dolens
- Patients with long life expectancy who are at risk of developing long-term complications of PTS

Contraindication

- Life expectancy less than 2 years
- Chronic DVT (DVT older than 4 weeks)
- Contraindication to thrombolytics and anticoagulation (active bleeding, recent stroke/surgery)

Procedure

Under local anesthesia in the cath lab.

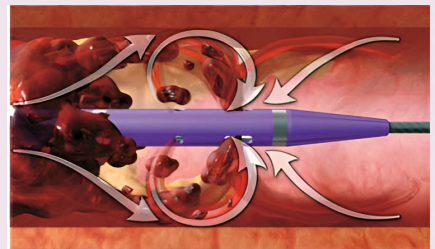
Position: Supine or prone position

Either the popliteal vein or tibial vein is accessed under ultrasound guidance. The PMT catheter is inserted into the thrombosed part of the vein, and thrombolytics are delivered to lyse the thrombus. After 20 minutes, the lysed thrombus is aspirated using a thrombectomy catheter.

Sometimes adjunct treatment is required in the form of balloon angioplasty and stenting to macerate residual thrombus and treat underlying venous obstruction. A temporary retrievable IVC filter is inserted before the procedure to capture thrombus fragments and prevent pulmonary embolism. This IVC filter is removed within 15 days to 3 months of the primary procedure.

Hardware / Material

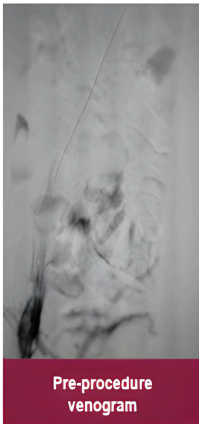
- AngioJet thrombectomy device
- Penumbra catheter with multi-hole catheter for thrombolysis
- Fountain catheter, guiding catheter, balloon
- Venous stents



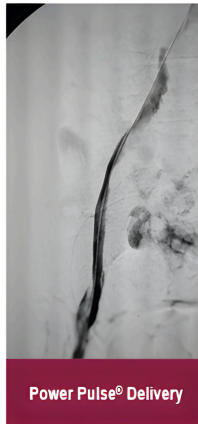
Pharmaco-Mechanical Thrombectomy for DVT

Advantages

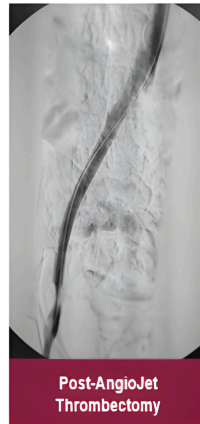
- **Reduced Treatment Time:** Faster, often single-session removal of clot. 80–90% reduction of swelling and symptoms within 24–36 hours.
- **Less Lytic Agent:** Lower risk of systemic bleeding due to reduced use of thrombolytic agents.
- **High Success Rates:** Acute thrombus removal rates >90%.
- **Early Recovery:** Shorter hospital stay and reduced chances of development of PTS



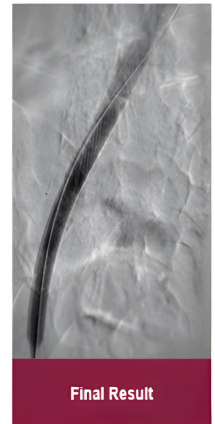
Pre treatment image following left popliteal stick



Post Power Pulse Delivery with AngioJet® Solent® Proxi; 10mg tPA in 500ml bag, 30 minute dwell time



4 passes with Solent Proxi catheter followed by PTA



Post PTA of common Iliac and the external Iliac

Conclusion

Pharmacomechanical thrombectomy (PMT) is a safe, rapid, and effective method of thrombus removal in carefully selected cases. PMT reduces the risk of chronic venous insufficiency and PTS, and improves quality of life.



Catheter-Based Pulmonary Interventions for Acute PE

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Vascular & Endovascular Surgeon
MUMBAI



Dr. Ishita Jethwa

Vascular & Endovascular Surgeon
MUMBAI



CLINICAL

Acute pulmonary embolism (PE) is a life-threatening condition where blood clots obstruct pulmonary arteries, causing sudden strain on the right ventricle and hypoxia. While systemic thrombolysis remains first-line for massive PE, catheter-based interventions, under local anaesthesia, have transformed care for patients with contraindications to thrombolysis or those who fail medical therapy. These minimally invasive methods aim for rapid reperfusion and reduced bleeding risk compared to systemic fibrinolytics. The ideal case for catheter intervention would however be someone who has a rising cardiac enzyme level, shows progressive RV dilatation and is hemodynamically stable enough to be shifted to the Cath-lab.

Major Devices & Systems

1. FlowTrier System (Inari Medical)

Indication: Intermediate-risk and select high-risk PE

Mechanism: Large-bore mechanical thrombectomy with self-expanding nitinol discs that engage and retract clot, combined with aspiration.

Pros:

- Immediate thrombus removal without thrombolytics
- Significant RV/LV ratio improvement and low major bleeding rates in trials

Catheter-Based Pulmonary Interventions for Acute PE

Cons:

- Requires large access sheaths (16–24F) and experienced operators
- Smaller distal clots can be challenging to capture.

2. **Penumbra Lightning Flash/Indigo System**

Indication: Intermediate-risk PE and deep segmental emboli

Mechanism: Continuous vacuum aspiration with intelligent suction modulation and separator technology to reduce clogging.

Pros:

- Smaller catheter sizes (6–12F) improve access to distal vasculature
- Smart algorithms can minimize blood loss and optimize suction cycles
- Cons:
- May require multiple passes for large clot burden
- Less effective at bulk clot extraction compared with large-bore systems.

*3. **AngioVac Venovenous Aspiration System**

Indication: Massive central PE and right heart thrombi

Mechanism: Large inflow cannula connected to extracorporeal circuit with filter, reinfusing blood after clot removal.

Pros: Immediate removal of large central clots

Cons: Complex setup, requires extracorporeal support, risk of access-site complications.

*4. **Ultrasound-Assisted Catheter-Directed Thrombolysis (e.g., EKOS)**

Indication: Intermediate to high-risk PE, especially when rapid lysis is desired

Mechanism: Delivers low-dose thrombolytics locally with ultrasound to enhance drug penetration.

Pros: Lower bleeding risk than full systemic lysis

Cons: Slower onset and requires thrombolytic use with associated bleeding risk.

Catheter-Based Pulmonary Interventions for Acute PE

Indications

- Massive PE with hemodynamic instability when thrombolysis is contraindicated
- Intermediate-high-risk PE with RV dysfunction
- Persistent hypoxia or shock despite anticoagulation
- Right heart thrombi or residual clot burden after lysis

* Not yet available for use in India

Fig 1. Thrombus extracted using INARI Flowtriever

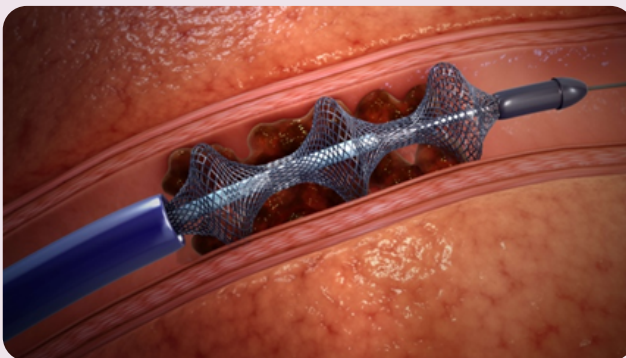


Fig 2. INARI Flowtriever - Device

Catheter-Based Pulmonary Interventions for Acute PE

Fig 3. Penumbra Lightning FLASH



Pros & Cons Summary

Pros:

- Immediate reperfusion
- Reduced systemic bleeding compared with full-dose thrombolysis
- Option when thrombolytics are contraindicated

Cons:

- Larger access sheaths risk vascular injury
- Requires specialized centres and expertise
- Variable evidence for mortality benefit; most data demonstrate surrogate outcomes like RV/LV ratio improvement.

Summary

Catheter-based pulmonary interventions are vital tools in managing acute PE, especially for patients who cannot tolerate systemic thrombolysis or who present with massive clot burden. Devices like FlowTrieve and Penumbra Lightning/Indigo have shown promising results in reducing right ventricular strain and improving immediate hemodynamics, though large-scale mortality data remain limited. As technology and operator experience evolve, these approaches are increasingly central in a multidisciplinary pulmonary embolism response team (PERT) paradigm. These devices though effective, come at a price, and many centre continue to use modified techniques like pigtail catheters and guiding catheters, often very effectively, in treating Pulmonary Embolism.



Whats New in DVT

Dr. Rajesh Babu Dharmaraj
Vascular & Endovascular Surgeon
SINGAPORE



CUTTING EDGE

WHATS
NEW?

Venous thromboembolism (VTE), encompassing deep vein thrombosis (DVT) and pulmonary embolism (PE), continues to pose a significant clinical burden worldwide. In Singapore, with an ageing population, rising cancer prevalence, and increasing use of major orthopaedic and oncologic interventions, the incidence of VTE is steadily growing. While anticoagulation remains the cornerstone of treatment, the last decade has witnessed a shift toward device-based therapies, particularly for patients with high clot burden, haemodynamic compromise, or contraindications to systemic thrombolysis. This article outlines the current landscape of newer devices in DVT and PE management.

Rationale for Device-Based Therapy

The traditional approach to VTE has been anticoagulation with or without systemic thrombolysis. However, systemic thrombolysis carries a non-negligible risk of major bleeding, including intracranial haemorrhage. Additionally, anticoagulation alone does not actively remove thrombus, leaving patients at risk for post-thrombotic syndrome (PTS) in DVT and chronic thromboembolic pulmonary hypertension (CTEPH) in PE.

Device-based therapies aim to:

- Rapidly reduce thrombus burden
- Restore venous or pulmonary arterial flow
- Reduce long-term sequelae
- Minimise systemic exposure to thrombolytic agents

Whats New in DVT

Devices in DVT Management

1. Pharmacomechanical Thrombectomy (PMT) Systems

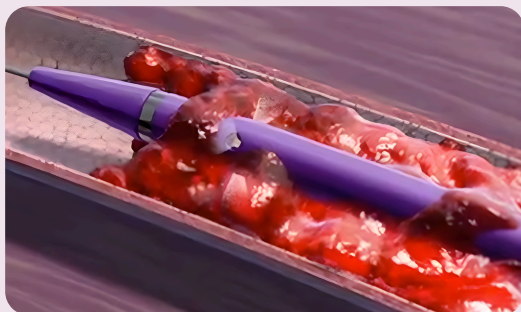
These devices combine mechanical clot disruption with localised thrombolytic delivery.

- **AngioJet™ Rheolytic Thrombectomy System**

Utilises high-velocity saline jets to fragment thrombus and create a Venturi effect for aspiration. While effective, its use has declined due to concerns regarding bradyarrhythmias, haemolysis, and renal impairment.

- **Trellis™ Peripheral Infusion System** (legacy device)

Previously used for isolated segment thrombolysis with proximal and distal balloon occlusion, but now largely phased out.



**Fig 1. AngioJet™
Rheolytic
Thrombectomy
System**

2. Mechanical Thrombectomy Devices (Non-thrombolytic)

These are increasingly preferred, especially in patients with bleeding risk.

- **ClotTriever® System**

Designed for large-burden iliofemoral DVT, it enables single-session mechanical thrombectomy without thrombolytics. The device uses a coring element and collection bag to extract organised thrombus. Early experience suggests significant luminal gain with reduced ICU utilisation.

Whats New in DVT

**Fig 2.
ClotTrieve®
System**



- **Indigo® Aspiration System (Penumbra)**

A continuous aspiration system with large-bore catheters and a vacuum pump. It is particularly useful for subacute thrombus and can be combined with separator devices to prevent clogging.

- **Inari FlowTrieve® (off-label for DVT in some centres)**

Though primarily designed for PE, it has been used in selected DVT cases with large central clot burden.

3. Adjunctive Technologies

- **Intravascular Ultrasound (IVUS)**

Increasingly utilised to assess underlying venous stenosis, particularly in iliac vein compression (May-Thurner syndrome), which is not uncommon in Asian populations.

- **Dedicated Venous Stents**

Following thrombectomy, stenting is often required in cases of chronic iliac obstruction. Newer nitinol venous stents provide better radial force and flexibility.

Devices in Pulmonary Embolism Management

1. Catheter-Directed Thrombolysis (CDT)

- **EKOS™ Endovascular System**

Whats New in DVT

Combines ultrasound-assisted thrombolysis with low-dose tPA infusion. Ultrasound energy enhances fibrin penetration, allowing lower thrombolytic doses. This is particularly useful in intermediate-high risk PE. In Singapore, EKOS is widely available in tertiary centres and has become a standard option for selected PE patients.

2. Mechanical Thrombectomy Devices

These have gained traction due to the ability to avoid thrombolytics altogether.

- **FlowTrieve® System (Inari Medical)**

A large-bore aspiration system with self-expanding nitinol discs to engage and extract thrombus. It allows rapid haemodynamic improvement and is increasingly used in intermediate and high-risk PE.

- **Indigo® System (Penumbra)**

Uses continuous aspiration with catheter-based access. The Lightning intelligent aspiration system improves efficiency by reducing blood loss.



Fig 3.
Lightning Flash 2.0
(Device)

- **AngioVac® System**

A veno-venous bypass system with extracorporeal filtration. It is useful in massive PE or right heart thrombus but requires perfusion support and is resource-intensive.

Whats New in DVT

Patient Selection and Practical Considerations

Appropriate patient selection remains critical. In the Singapore context, several factors influence decision-making:

- **Bleeding risk:** Particularly relevant in elderly patients and those with recent surgery or intracranial pathology
- **Resource availability:** Advanced devices are typically limited to tertiary institutions
- **Operator expertise:** Outcomes are closely linked to procedural experience
- **Cost considerations:** Device-based therapies are significantly more expensive than anticoagulation, and funding models may influence utilisation

Multidisciplinary Pulmonary Embolism Response Teams (PERT) are increasingly being adopted to streamline decision-making.

Outcomes and Evidence

While early registry data and single-arm studies have shown promising results—particularly with FlowTrier and ClotTrier—randomised controlled trial data remain limited. Ongoing trials are expected to clarify:

- **Long-term outcomes (PTS, CTEPH)**
- **Optimal patient selection**
- **Cost-effectiveness**

In Asian populations, including Singapore, local data is still evolving, and there is a need for region-specific registries.

Future Directions

The field is moving toward:

- Single-session therapies avoiding ICU stay
- Reduction or elimination of thrombolytics
- Integration of imaging (IVUS, cone-beam CT) into procedural workflows
- Personalised therapy based on clot chronicity and patient risk profile

Artificial intelligence and predictive modelling may further refine patient selection in the coming years.

Whats New in DVT

Fig 4.
CT Venogram : IVC,
Left Common, External
Iliac vein, Common &
Superficial Femoral
Vein Thrombosis

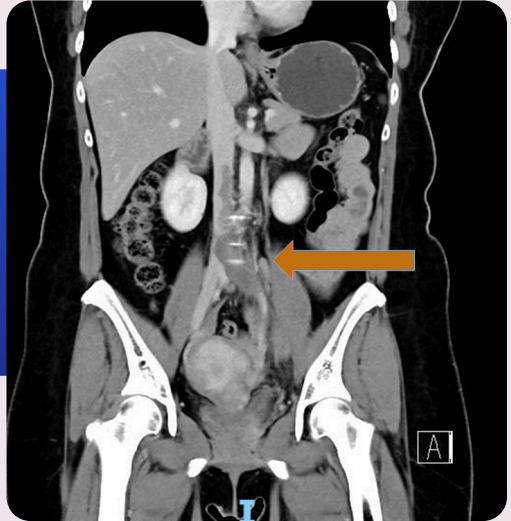


Fig 5.
Thrombectomy
done from Popliteal
Access

Whats New in DVT ...

Conclusion

Device-based therapies are redefining the management of DVT and PE, offering rapid clot resolution with potentially improved outcomes. In Singapore, where healthcare infrastructure supports advanced endovascular interventions, these technologies are increasingly being integrated into routine practice. However, careful patient selection, cost considerations, and the need for robust long-term data remain key challenges.

Fig 6.
Thrombus capture with
INARI Clotriever

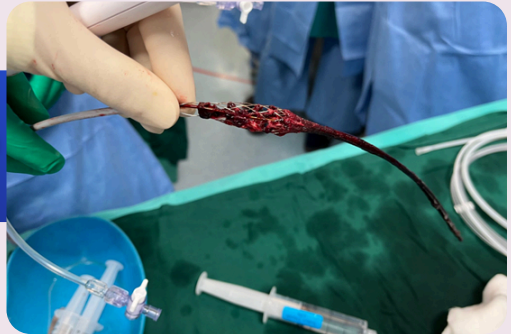


Fig 7.
Post Clot / Thrombus
Removal



Role of the Vascular Genetic Clinic in VTE without risk factors

Dr. Dhanesh Kamerkar
Vascular & Endovascular Surgeon
PUNE



Dr. Amit Rane
Vascular & Endovascular Surgeon
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CUTTING EDGE

Introduction

Venous thromboembolism (VTE), comprising deep vein thrombosis (DVT) and pulmonary embolism (PE), remains a significant cause of morbidity and mortality worldwide. While many cases are associated with transient provoking factors (surgery, trauma, immobilisation, malignancy), a substantial proportion occur without any identifiable trigger—the so-called unprovoked VTE.

In the era of precision medicine, the establishment of a Vascular Genetic Clinic is emerging as a transformative step in understanding individual risk, guiding lifelong anticoagulation, and preventing familial thrombotic events.

1. Definition: Unprovoked VTE- VTE without Risk factors

Unprovoked VTE refers to a thromboembolic event occurring in the absence of major transient or persistent risk factors such as:

- Recent surgery or trauma
- Prolonged immobilisation
- Active cancer
- Pregnancy or hormonal therapy

The recurrence risk after unprovoked VTE is significantly higher compared to provoked VTE, often justifying extended or indefinite anticoagulation



Role of the Vascular Genetic Clinic in VTE without risk factors

2. Familial & Inherited Conditions in VTE

Approximately 30–50% of patients with unprovoked VTE may have an identifiable inherited or acquired thrombophilia.

A. Inherited Thrombophilia

Common inherited thrombophilias include:

- Factor V Leiden mutation (most common in Caucasians)
- Prothrombin gene mutation (G20210A)
- Protein C deficiency
- Protein S deficiency
- Antithrombin deficiency

Inheritance Patterns

Disorder	Pattern of Inheritance
Factor V Leiden	Autosomal dominant (incomplete penetrance)
Prothrombin mutation	Autosomal dominant
Autosomal dominant	Autosomal dominant
Protein S deficiency	Autosomal dominant
Antithrombin deficiency	Autosomal dominant
Rare severe thrombophilias	Autosomal recessive
Certain coagulation factor defects	X-linked (rare)

Role of the Vascular Genetic Clinic in VTE without risk factors

Most inherited thrombophilias demonstrate autosomal dominant transmission with variable penetrance, making family screening relevant.

B. Acquired Thrombophilia

Antiphospholipid Syndrome (APS)

Antiphospholipid Syndrome (APS) is an acquired autoimmune thrombophilia characterised by:

Arterial and/or venous thrombosis

Recurrent pregnancy loss

Presence of lupus anticoagulant, anticardiolipin, or β 2-glycoprotein I antibodies

APS has critical implications in anticoagulant choice (warfarin preferred over DOACs in high-risk APS patients).

3. Why a Vascular Genetic Clinic?

A Vascular Genetic Clinic integrates:

- Clinical phenotyping
- Detailed pedigree analysis
- Genetic counselling
- Molecular diagnostics
- Pharmacogenomic assessment

Clinical Indications for Referral

- First episode of unprovoked VTE <50 years
- Recurrent VTE
- VTE at unusual sites (mesenteric, cerebral, portal)
- Strong family history
- Warfarin resistance or recurrent thrombosis on therapy

4. Role of Family Screening

- Family screening is controversial but beneficial in selected cases.

Role of the Vascular Genetic Clinic in VTE without risk factors

Objectives

- Identify high-risk asymptomatic carriers
- Advise on prophylaxis during high-risk periods (surgery, pregnancy, immobilisation)
- Avoid oestrogen-containing contraceptives
- Pre-marital and pre-pregnancy counselling

5. Advanced Testing: Exome Sequencing & Pharmacogenomics

A. Whole Exome Sequencing (WES)

WES enables identification of:

- Rare coagulation pathway mutations
- Combined thrombophilia
- Novel gene variants in unexplained recurrent VTE
- Emerging evidence from genetic studies suggests polygenic risk scores may refine recurrence prediction

B. Pharmacogenomics in VTE

Pharmacogenomics plays a crucial role in:

1. Warfarin Therapy

CYP2C9 polymorphism affects metabolism

VKORC1 polymorphism affects sensitivity

Genetic testing predicts dose requirements and bleeding risk

2. DOAC Therapy

Emerging data suggest genetic variability in:

P-glycoprotein transport

Factor Xa pathway

Clinical Question

Can the patient safely take lifelong anticoagulation?

Role of the Vascular Genetic Clinic in VTE without risk factors

Genetic profiling may help:

- Predict bleeding risk
- Optimize dosing
- Avoid treatment failure
- Guide selection between warfarin and DOACs

6. Risk Reduction Strategies

For genetically predisposed individuals:

- Weight optimisation
- Smoking cessation
- Avoid oestrogen therapy
- LMWH prophylaxis during pregnancy
- Perioperative thromboprophylaxis
- Early mobilisation strategies

Department of Vascular & Endovascular Surgery along with Dept of Cardiology, Haematology & Medicine launched our Cardiac and Vascular genetic clinic at Ruby Hall Clinic on 28 January 2026



Conclusion

The Vascular Genetic Clinic represents the next frontier in personalised vascular medicine. In patients with unprovoked VTE(VTE without risk factors), genetic evaluation: clarifies etiology, stratifies recurrence risk, guides lifelong anticoagulation, enables targeted family screening, integrates pharmacogenomics for precision therapy



Expert Answers

Dr. Aniket Pradhan

Vascular & Endovascular Surgeon
United Kingdom



Q&A

Q: How do you risk stratify acute DVT patients in your practice to decide between anticoagulation alone and early endovascular intervention?

A: DVT is handled by the medical department in DRI. Patients are stratified based on anatomical extent, symptom severity, and limb threat. Most patients (distal or proximal DVT) are managed with anticoagulation alone as per NICE guidance. In cases of iliofemoral DVT with significant symptoms, young patients escalation is done to the vascular department for catheter-directed thrombolysis (CDT), in line with ESVS recommendations.

Q: What factors determine your choice of anticoagulation (DOAC, LMWH or Warfarin) in special population such as cancer, renal impairment or obesity?

A: DOACs are first-line in most patients (NICE NG158). In cancer-associated thrombosis, LMWH is preferred in the inpatient setting, with consideration of DOACs later depending on bleeding risk. In renal impairment, DOACs (dose-adjusted) are used. In severe CKD, and LMWH (dose-adjusted) or warfarin is used. In obesity, LMWH or warfarin is considered. LMWH is used exclusively in pregnancy.

Q: What are your specific indications for catheter directed thrombolysis or pharmaco-mechanical thrombectomy in acute ilio-femoral DVT?

A: CDT is considered in acute iliofemoral DVT (<14 days) with severe symptoms, low bleeding risk, and good functional status (young patients). It is also indicated in limb-threatening DVT (e.g., phlegmasia). CDT is not routinely used for femoropopliteal DVT. As mechanical thrombectomy is not available as of now we will soon be introducing the same in our practice.

Q: Do you routinely use IVUS in extensive DVT, and what criteria guide your decision to proceed with venous stenting?

A: IVUS is not routinely used in our unit. Assessment is typically based on duplex ultrasound and venography when required. Venous stenting is considered in selected patients with persistent iliac vein obstruction, such as May–Thurner syndrome.

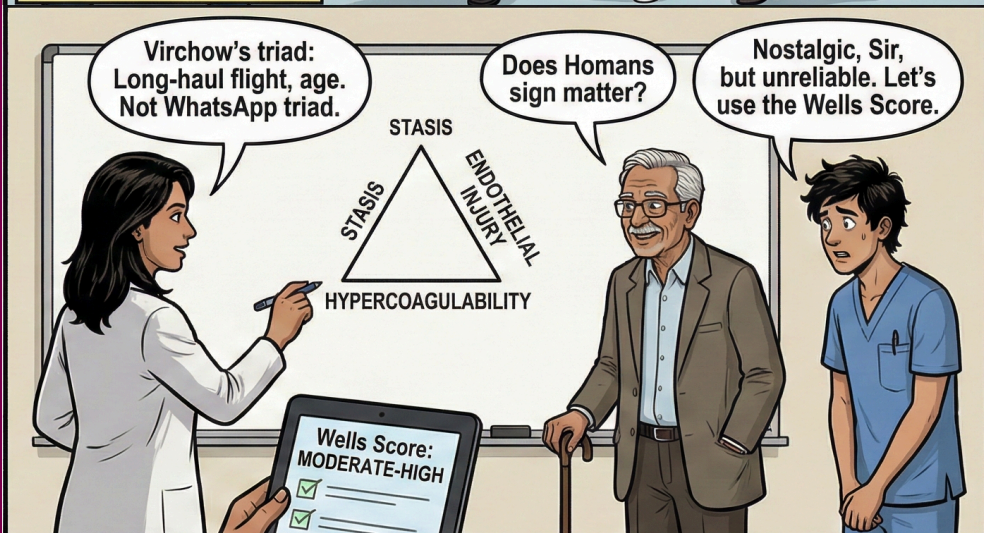
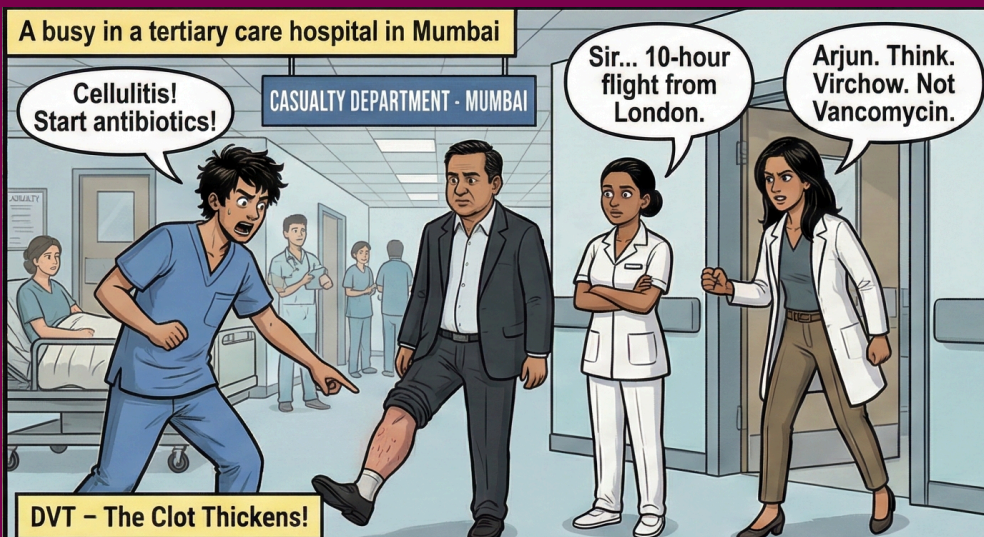
Q: In contemporary practice, what are your absolute indications for IVC filter placement, and how do you ensure timely retrieval?

A: Absolute indications include contraindication to anticoagulation and recurrent pulmonary embolism despite adequate anticoagulation, as per NICE and ESVS. Use is selective. When used, we ensure clear documentation, patient education, early follow-up, and a defined plan for retrieval to minimise long-term complications.

Q: How do you individualise the duration of anticoagulation in provoked, unprovoked and recurrent DVT cases and do you routinely perform thrombophilia workup?

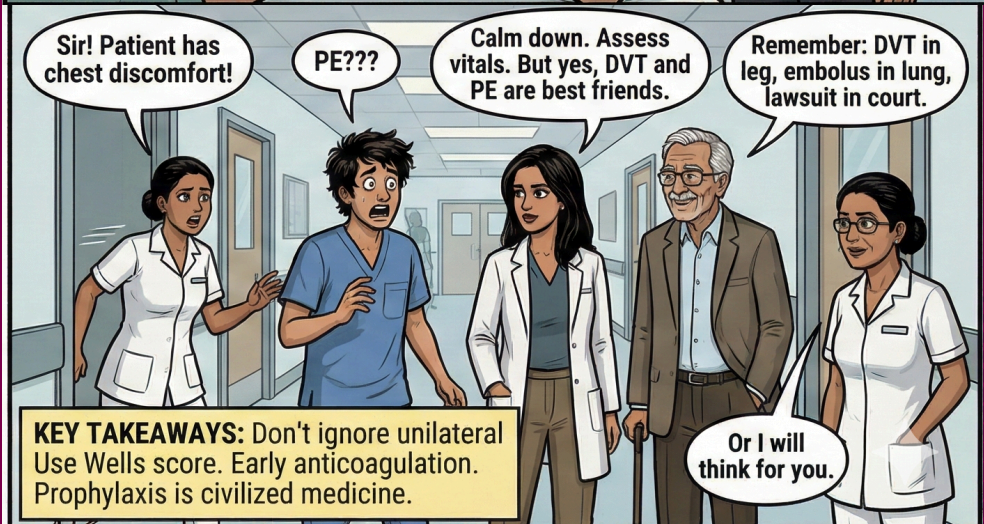
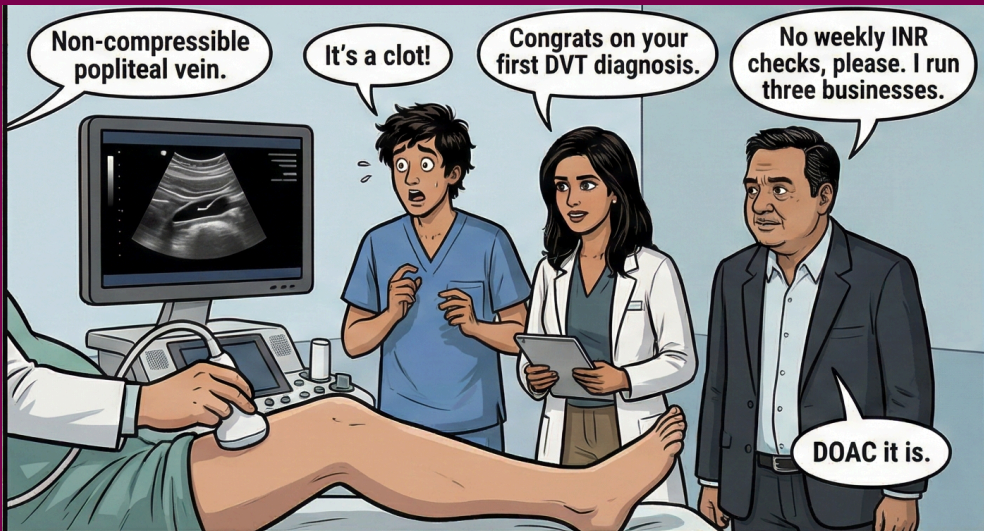
A: Provoked DVT is treated for 3 months (NICE NG158). Unprovoked DVT is treated for at least 3–6 months, followed by reassessment of recurrence versus bleeding risk. Recurrent or unprovoked DVT in low bleeding risk patients may require extended anticoagulation. Cancer-associated thrombosis is treated for as long as the cancer remains active. Thrombophilia testing is not routinely performed unless in young patients with unprovoked events or strong family history, and only if it will influence management.





The Clot Thickens

COMICS



VESSOMAG

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VESSOMAG

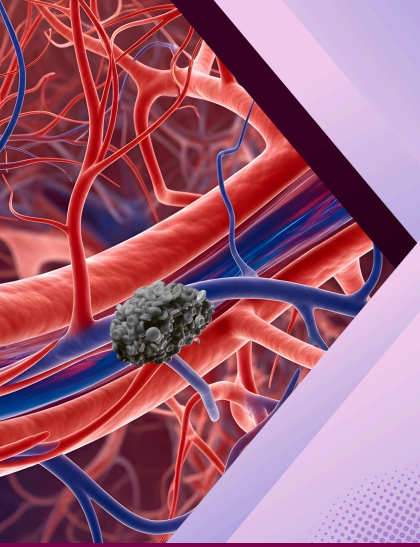
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