

Venous Thromboembolism

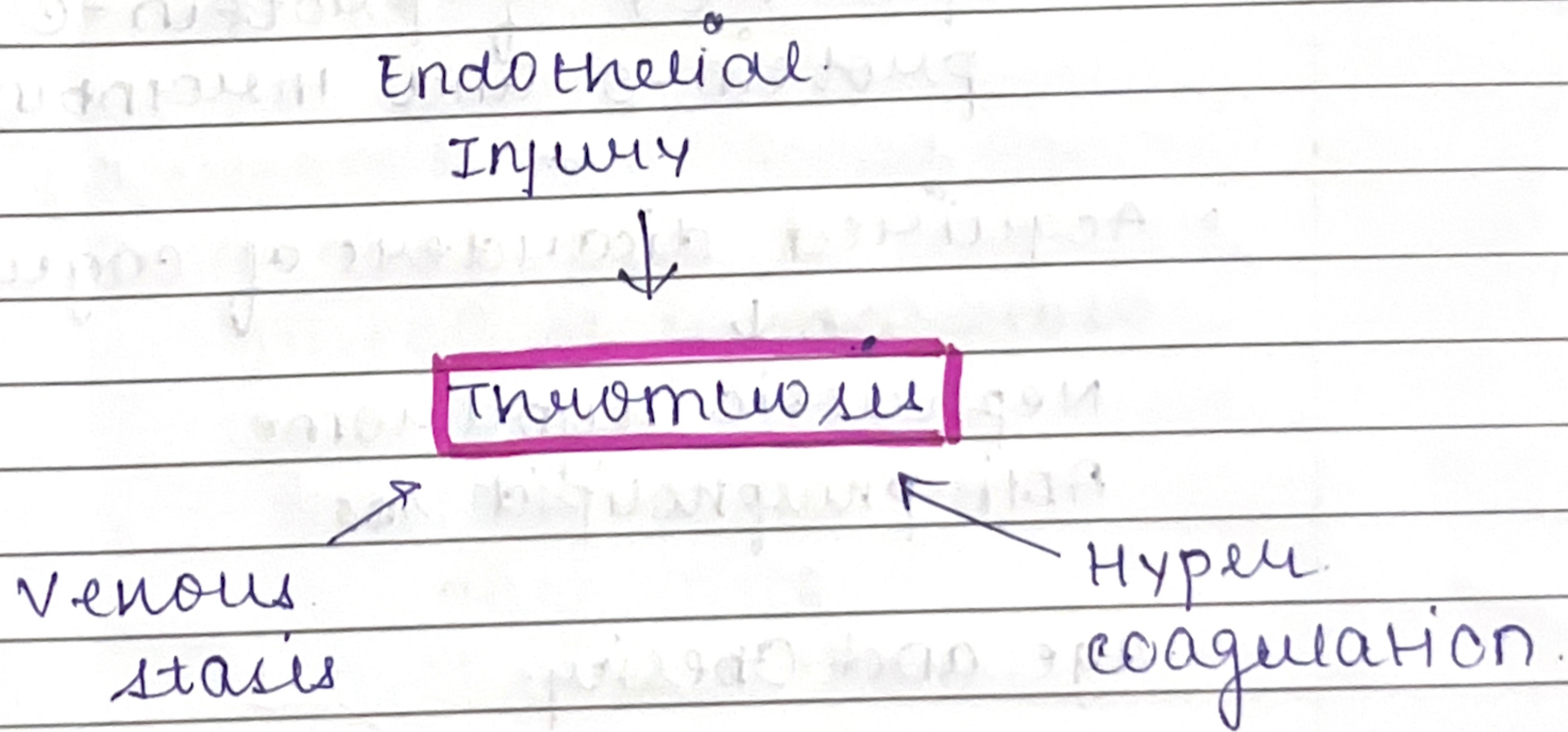
Date

Condition in which a clot forms in the deep veins of arms, legs or groin (DVT) and further lodges into lungs after systemic circulation (PE).

When DVT and PE occur together, it is called as VTE.

⇒ Etiology and Risk factors:

It is caused by the following reasons which were described by Rudolph Virchow a 100 year ago.



(1) Venous stasis:

- Prolonged bed rest (> 4 days)
- Cast on leg
- Extended travel
- Limb paralysis due to stroke or a spinal cord injury.

(2) Endothelial Injury:

- Trauma

- surgery
- Invasive procedures
- Central venous catheters in subclavian and internal jugular vein.

(3) Hypercoagulability :

- surgery
- Trauma
- Malignancy
- ↑ Oestrogen
- Inherited disorders of coagulation

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Deficiency of protein-C,
protein-S and thrombin III

- Acquired disorders of coagulation

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Nephrotic syndrome.
Anti-phospholipid Abs.

- Age and Obesity.

⇒ Pathophysiology.

venous trauma

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stimulates clotting cascade

↓

Activate platelets

↓

stimulate platelets to exposure of IIb-IIIa glycoprotein receptors

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Platelet & Fibrin form initial clot

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RBCs get trapped in the meshwork

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Thrombus goes in the direction of blood flow

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breaks down and goes into circulation.

⇒ Clinical features:

- (1) Asymmetric legs.
- (2) Pitting edema
- (3) Pain
- (4) Erythema.
- (5) Dyspnoea
- (6) Pleuritic chest pain
- (7) sweating
- (8) Papralle cord.

(9) Cyanosis.
(10) Hypotension } → In massive pulmonary embolism.

⇒ Diagnostic tests:

- (1) D-dimer conc. ↑
- (2) ↑ ESR
- (3) ECG.
- (4) Venography
- (5) Pulmonary angiography.

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Invasive technique as it involves injection of radiopaque contrast dye in pulmonary artery.

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Expensive → ↑ Mortality

- (6) CT scan.
- (7) MRI.
- (8) Duplex ultrasound.

⇒ Treatment:

NON - PHARMAC THERAPY -

- Exercise.
- Walk for 1 to 2 hours.
- Avoid tight clothes.
- Walk on grass.
- Use socks
- Avoid fat diet.

PHARMACOTHERAPY -

(1) Parenteral anticoagulants -

(a) Indirect thrombin inhibitors

- Heparin.

- LMWHs: Enoxaparin

Revarpin

Tinzaparin

- Synthetic: Fondaparinux.

(b) Direct thrombin inhibitors

- Abacimaban

- Lepirudin

- Bivalirudin.

(2) Oral anticoagulants: Warfarin.

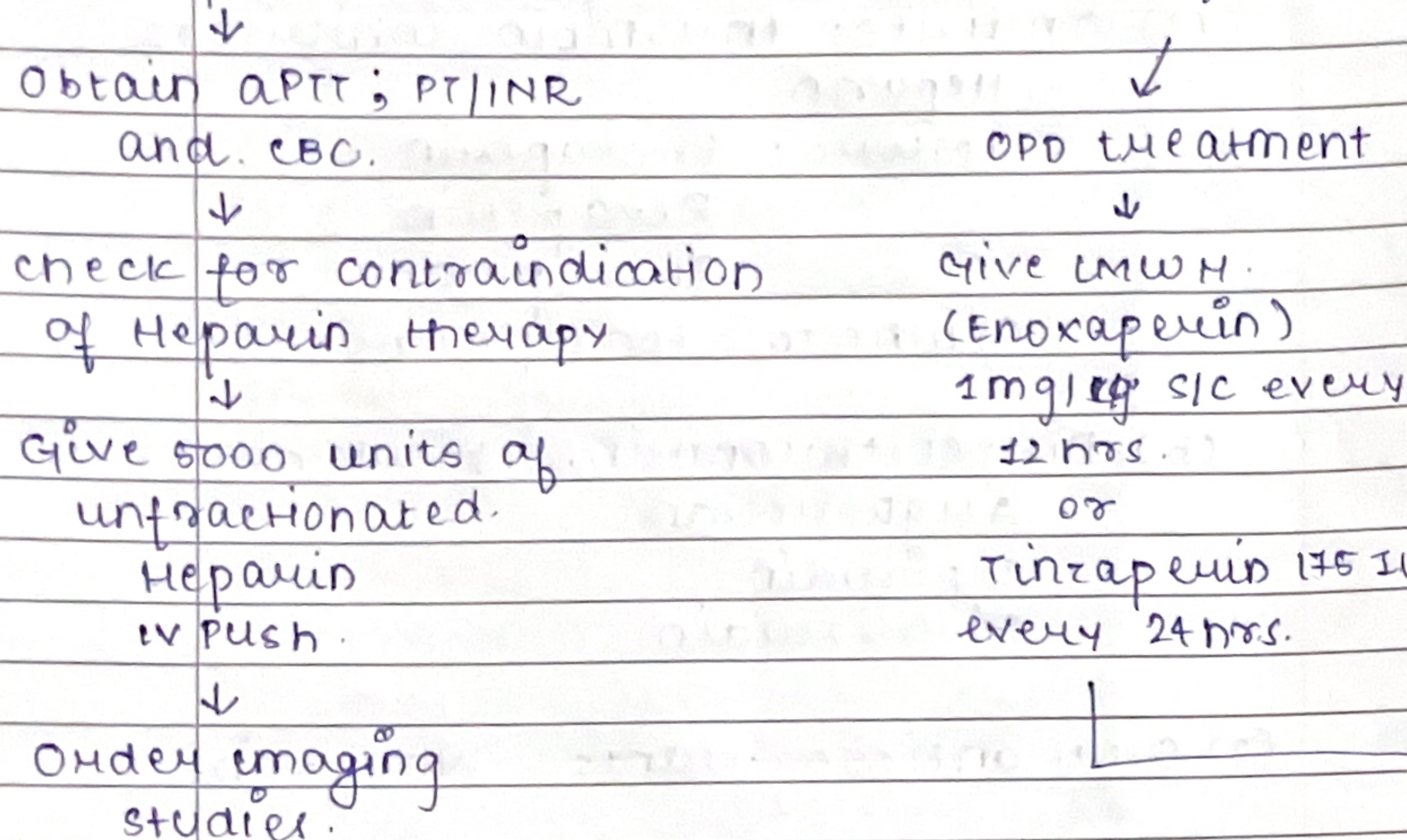
(3) Thromolytics: Streptokinase

Urokinase

Alteplase.

Reteplase.

* ~~Oral anticoagulants~~ : Warfarin

VTE Dsuspected ← → confirmed

IPD treatment
with or without
Pulmonary embolism.

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LMWH (Enoxaparin)
1.2mg/kg s/c every
24 hrs
or

Tinzaparin 175 IU/kg
every 24 hours
s/c

↓ Day 1.

start warfarin therapy acc. to INR

↓ (Day 1-5)

consider checking platelet count

↓ (Day 5-7)

stop LMWH if INR ≥ 2.0 for 2 days

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Anticoagulate with warfarin for
at least 3 months.