

# Deep vein thrombosis research papers examples

[Health & Medicine](#), [Body](#)



Deep vein thrombosis is formation of thrombus in the deep vein of leg. Most commonly it occurs as a result of post surgical complication, any chronic and debilitating disease, immobility for a considerably long period of time, post partum complications, local injury. The thrombus may be loosely attached to the vein, which may lead to fatal consequences like pulmonary embolism due to dislodging of the emboli.

## **PREDISPOSING FACTORS**

- Stasis
- Increased blood coagulability
- Injury to the vessel wall

## **SITES OF INVOLVEMENT**

- Calf vein
- Femoral vein
- Iliofemoral vein
- Pelvic vein

## **PREVENTION**

Before operation : a) Pre operative hospital stay should be minimum

b) Leg should be kept elevated above heart level

**During operation : a) If possible, elevation of leg during surgery could be of great help in**

preventing stasis of blood in the affected leg.

b) Avoid using hypertonic or irritating I. V. solutions into the veins of legs. If had to be administered, then infuse it with the help of an indwelling catheter.

- c) Using anticoagulant agent like heparin in minute doses can reduce the incidence of deep vein thrombosis significantly. 5000 units of heparin introduced subcutaneously 2 hours prior to operation and every 8 hours thereafter for 7 days has considerably reduced incidence of deep vein thrombosis as diagnosed by I-125 labelled fibrinogen test.
- d) Intermittent pneumatic compression, electrical calf stimulation and active plantar flexion of the feet effectively prevent venous stasis in the soleal vein.

**After operation : a) Dextran has proved to be greatly effective in many cases, although its**

indiscriminate use can lead to formation of haematoma, bleeding and thus pulmonary oedema. Dosage should be kept as low as 1.5 g/kg of body weight. However fluid overload should be kept in mind.

- b) Use of aspirin can reduce post operative pain and deep vein thrombosis.
- c) Use of elastic stockings with an optimal pressure of 18 to 8 mm of Hg stasis.
- d) Leg elevation

## **OPERATIVE PROCEDURES FOR DEEP VEIN THROMBOSIS**

- Valve repair : The damaged valves can be repaired in two ways. One is internally, that is, by opening up the vein and repairing the damaged valve, thus making it competent. And the other is externally, by suturing the damaged valve with the vein without opening it.

- Valvular transplant : This type of procedure is carried out by the method of autograft. The damaged valve alongwith some part of the vein is replaced by

a competent valve and some segment of a normal vein; the vein to be selected could be axillary vein or brachial vein taken from the patient himself.

- Venous thrombectomy with Fogarty catheter has been seen to be successful in many cases of subclavian, ileal or ileofemoral vein.
- A medical emergency can occur in case of severe venous thrombosis in the legs, leading to ischaemia and gangrene. In such cases an incision is given in the vein through the groin region to remove the clots. Although this procedure is avoided nowadays, the treatment of choice for this emergency is infusing fibrinolytic agents like streptokinase or tissue plasminogen activator into the affected vein.
- The best way to prevent secondary embolism is administration of heparin in dosages up to 60, 000 units in 24 hours given by regulated drip.

## **TESTS AND DIAGNOSTIC TOOLS**

- Ultrasound : The clot will be visible in the ultrasonographic image
- Venography : This is basically an X- ray procedure where a dye is injected into the large veins of foot or ankle, and the image is taken, thus the location of the clot becomes clear.
- CT or MRI : Both the procedures give an image of the vein thus helping in locating the clot.
- Blood test : d- Dimer test is carried out to rule out the probability of a thrombosis. If the d- Dimer test is negative or normal then chances of a thrombus formation is almost nil. If it is high, then it indicates formation of thrombus in the body. But the level of d-Dimer may be increased in pregnancy, inflammation or any other infections. Thus basically the d- Dimer

levels are just an indication for further investigations towards the line of deep vein thrombosis. If found positive, then ultrasound is considered to be the investigation of choice. Although CT or MRI would be more accurate, but high on expense.

- Normal blood values : d- Dimer levels should be between 110-250 ng/ml. If found to be more, then it is an indicative of clot formation.

## **BLOOD VALUES IN RELATION TO TREATMENT OF DVT**

If the patient is under anticoagulant medicines then certain tests are required to be carried out from time to time.

- Activated partial thromboplastin time ( APTT) : To monitor treatment with heparin. Normal APTT value is 30- 40 seconds. However the therapeutic range with heparin is 1.5-2.5 times of the normal, that is, 45-75 seconds.

- Prothrombin time ( PT) : To monitor treatment with warfarin. Normal prothrombin time is 10-14 seconds.

## **COMPLICATIONS**

- Pulmonary embolism : It occurs when an emboli detached from a thrombus elsewhere in the body, lodges into the veins of the lungs. It can lead to fatal effects. We will discuss about this in the next section. This is the most serious complication of deep vein thrombosis.

- Post phlebitic syndrome : This occurs as an effect of the clot lodged in the vein, leading to symptoms like swelling of the leg, pain, discoloration of the skin of legs and leg sore.

## **PULMONARY EMBOLISM**

**PATHOPHYSIOLOGY:** Once a thrombus breaks and get released into the blood stream then it may get lodged anywhere in the body. One of the commonest site for this is the right atrium, from where it enters the left atrium and thus ultimately entering into the pulmonary artery. Even a small emboli lodging into the lobar segment can cause death, but the exact mechanism is idiopathic. It is hypothesised that it could be due to intense reflex vasoconstriction and bronchoconstriction. A single small emboli can cause empyema, infection, abscess or infarction. Multiple emboli can cause pulmonary hypertension, even right heart failure. Large thrombus into the pulmonary artery can cause sudden death due to vasovagal shock, right ventricular failure and hypoxia.

85% of the pulmonary emboli originate from the lower extremities. 5% comes from pelvic vein, vena cava or upper extremities. Rest 10% originate from right atrium.

## **CLINICAL FEATURES**

- Dyspnoea
- Chest pain
- Haemoptysis
- Hypotension

The sequence of events starts with dyspnoea, followed by chest pain. The pain is mostly substernal, stabbing pain, occurring during breathing. In case of peripheral embolus there may be pleuritic pain. Epigastric pain can be seen in few patients. Haemoptysis will occur as a result of infarctions in the segments of lungs.

## **ON EXAMINATION**

- Tachycardia
- Tachypnoea
- Signs of shock
- Cyanosis
- Pleural friction rubs : heard in case of peripheral infarcts
- Rales

## **INVESTIGATIONS TO BE CARRIED OUT**

- Chest X-ray : Diminished pulmonary vascular markings will be observed. But this can be seen only in 50% patients when the films are taken within 24 to 48 hours. In many chest X-rays could be misleading, as they will remain normal throughout the course of pulmonary embolism.
- Electrocardiogram : Most common finding is ST segment depression followed by T wave inversion.
- BIOCHEMISTRY TESTS : Increased LDH level, increased serum bilirubin, normal SGOT level are the characteristic triad seen in pulmonary embolism.
- Pulmonary arteriography : This is the best way to get a sure shot diagnosis.
- Pulmonary radio isotope scanning

## **TREATMENT**

### **PROPHYLAXIS**

It is same as that of Deep vein thrombosis

### **TREATMENT OF KNOWN CASES**

- Anticoagulants : 40, 000 or more units of heparin are administered daily till

the clotting time becomes double of the normal values.

- Fibrinolytic agents : Streptokinase is infused through pulmonary angiogram cannula in an initial dose of upto 600000 units followed by 100000 units hourly for upto 3 days.
- Correction of metabolic acidosis by infusion of sodium bicarbonate and improvement of heart function by inotropic drugs should be considered.

## **SURGICAL TREATMENT**

- Pulmonary embolectomy
- Venous interruption
- Ligation or division of femoral vein or inferior vena cava

## **REFERENCES**

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Deep vein thrombosis (DVT)

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