

# To Study Prevalence Of Deep Venous Thrombosis In Periarticular Hip And Knee Fractures And Surgeries

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## Abstract

### BACKGROUND

The presence of thrombus within deep veins of the extremity is termed as deep vein thrombosis (DVT). If not recognized deep venous thrombi can embolize to pulmonary arterial circulation which can be fatal within few hours of onset. The consistent theme reiterated in all studies is high incidence of asymptomatic and undiagnosed cases and continuum between deep vein thrombosis and pulmonary embolism which can be fatal. Therefore it is a felt need to broaden diagnostic horizon, to include at risk asymptomatic patients. DVT can cause morbidity in itself due to acute pain and swelling of affected limb, and it can also cause structural damage to valves of deep veins that result in postphlebotic syndrome. The disease is very elusive in terms of its recognition. Various signs and symptoms ascribed to DVT are found in very few patients with DVT and may be associated with other vascular and non vascular pathologies of lower limbs. Objectives of study was to study was to look for prevalence of deep venous thrombosis in periarticular hip and knee fractures

### AIMS AND OBJECTIVES

This study evaluates Prevalence of Deep Vein Thrombosis in periarticular hip and knee fractures and surgeries.

### MATERIAL AND METHODS

**Study area:** This study was conducted in department of orthopaedics, St. Stephen's hospital, Tis Hazari, Delhi, Reason of doing this study was to find prevalence of DVT in periarticular hip and knee fractures and surgeries, as studies regarding prevalence of DVT in periarticular hip and knee fractures and surgeries in Asian patients are less.

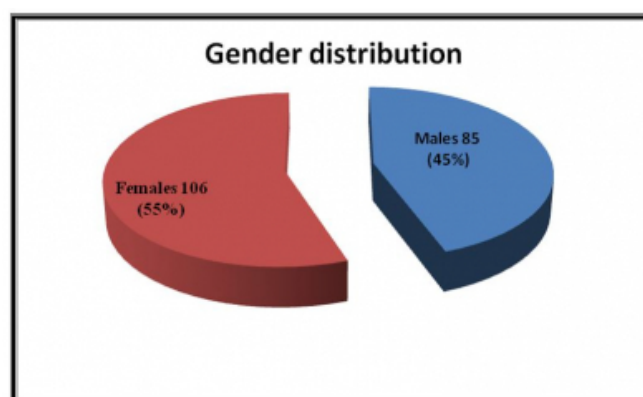
**Study population:**

A: A total of 191 patients who met inclusion

criteria were studied.

All the patients who were included in the study were admitted in the hospital and were then followed even after their discharge from the hospital.

**Figure 1**



Majority of patients were females comprising about 55 % and males were 45%.

**Data collection technique and tools:** A detailed history, clinical and radiological examination was carried out in all 191 patients

Following Investigation were carried out on all patients:

1. Complete haemogram, ESR, Blood Urea, Serum Creatinine, Sr. electrolytes, RBS, Coagulation profile (PT/APTT/INR), D-Dimer, Urine-Routine/Microscopy, Chest X- Ray, ECG
2. Venous Doppler B/L lower limbs to look for evidence of deep venous thrombosis.

A pre-operative assessment for DVT was done in patients by Doppler Ultrasonography. The assessment included

examination of the bilateral common femoral, superficial femoral popliteal, anterior tibial vein, posterior tibial vein.

Post operatively Doppler was done on 3 occasions, on day 4±1, day 14±1 and 3 months

A diagnosis of DVT was made in case of visualization of thrombus, absence of flow, lack of compressibility, or lack of augmentation.

## DATA ANALYSIS

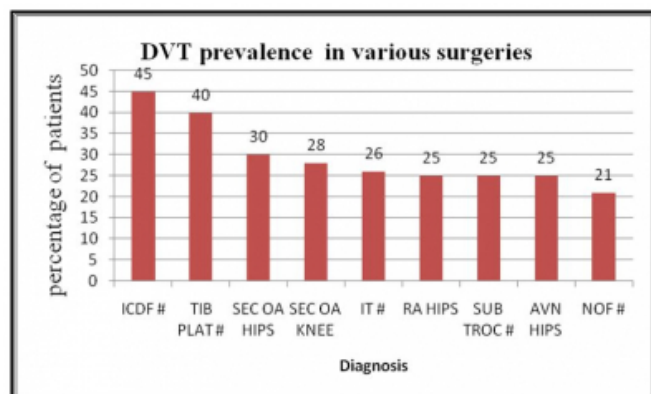
All data after being compiled was then statistically analyzed by statistician by using various calculations like grouping of patients in different parameters, average, median, range, incidence, prevalence, Fisher's exact test, linear-by linear association, chi-square test to look for statistical significance. P value was then calculated

## SALIENT FINDINGS

The overall prevalence of DVT in periarticular hip and knee fractures and surgeries in our study as detected by Doppler ultrasonography was found to be 27%.

The average age of the patients in the study was 67 years. A majority of these were elderly osteoporotic patients with intertrochanteric fractures and fracture neck of femur.

**Figure 2**



The Prevalence of DVT in periarticular hip and knee fractures and surgeries ranged from 21 % to 45 %.The highest prevalence was seen in intercondylar distal femoral fractures. No prophylaxis was given to these patients

In our study only 35% of patients had signs and symptoms consistent with diagnosis of DVT while more than 65% that is majority of patients did not show any clinical evidence of DVT and presence of thrombus was picked up at the time of routine Doppler evaluation in the study. It seems that

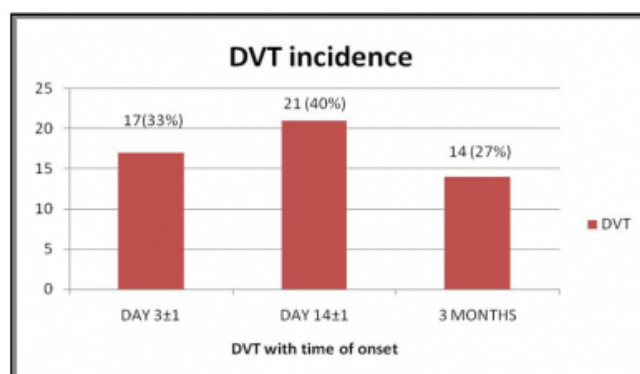
commonly recognized clinical signs and symptoms are unreliable and non specific for diagnosis of deep vein thrombosis.

Overall 79 (41%) patients received LMWH prophylaxis while 112(59%) did not receive prophylaxis. DVT was found in 22 (27%) patients. This implies that DVT risk exists even after giving LMWH prophylaxis and one needs to be vigilant to look for DVT even after giving chemoprophylaxis.

Patients undergoing arthroplasty, higher prevalence of DVT was seen in total knee replacement as compared to total hip arthroplasty. Prevalence of DVT was 25 % among hip cases and 33% among knee cases.

Venous Doppler was done pre operatively and 3 times postoperatively on particular days.

**Figure 3**



Out of all diagnosed cases, 17 (33%) cases were found to have DVT between day 3 ±1 days, 21 (40%) cases were found to have DVT at 14 days ±1day and 14 (27%) cases were found to have DVT at 3 months of post operative period. This peak at 14 days could be as a result of timing of Doppler study. DVT could had been present any time between first and second Doppler.

Cut off value for significant D-Dimer in the study was 200 IU. The value of D-Dimer more than 200 IU was taken as positive and a value of less than 200 IU was taken as negative. The sensitivity of D-Dimer in the study was found to be 86 % and specificity of 41%, negative predictive value of 77%. P value was found to be 0.32. It was not statistically significant

Out of 52 diagnosed cases of DVT, 41 (79 %) of cases were having distal thrombosis and 9 (17%) were found to have proximal thrombosis while 2(4%) were having thrombus

above inguinal ligament. Distal DVT was mostly seen in anterior and posterior tibial vein. While proximal DVT was seen commonly in popliteal vein, and femoral vein

Tourniquet was used in 54 (28%) of cases and use of tourniquet, duration of its application did not significantly influence prevalence of DVT however average tourniquet time in patients with DVT was slightly more than the patients whose Doppler was normal. Average tourniquet time was 73 minutes in NON DVT cases and 89 min in DVT cases.

The use of cement in hip arthroplasty seems to have higher predilection for occurrence of DVT as compared to those undergoing non cemented arthroplasty. In cemented hemiarthroplasty 4 patients out of 12 patients had DVT a prevalence of 33 %, while in non cemented hemiarthroplasty 5 patients out of 22 patients were found to have DVT leading to prevalence of 23%.

### **CONCLUSIONS**

To conclude, DVT of lower limb venous system was found in a significant number of cases of lower limb fractures treated conservatively or operatively and also in the cases operated for hip and knee arthroplasties.

DVT was seen instead of giving prophylaxis in patients

undergoing arthroplasties around hip and knee.

### **RECOMMENDATION**

Routine screening of all the patients for evaluation of DVT is not recommended.

D-Dimer value was not found to be useful in diagnosis of DVT in orthopaedic patients as it was elevated most of times in fracture and post operative patients.

Commonly recognized clinical signs and symptoms are unreliable and non specific for diagnosis of deep vein thrombosis.

DVT risk still exists in orthopaedic trauma and surgical patients even after giving either pharmacological or chemical prophylaxis and one can has to still find DVT if there is little bit of suspicion.

For calculating exact risk time period of DVT venous Doppler needs to be done at more frequent intervals however it is not practical.

Further study involving larger group of patients is required to make statistically significant analysis on prevalence or incidence of DVT in periarticular hip and knee fractures and surgeries.

### **References**

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