Received on 25.08.2016, **Accepted on** 24.09.2016 DOI: http://dx.doi.org/10.21088/ijsn.2277.467X.5316.3

IJSN
Volume 5, Number 3

A Study to Identify the Incidence of Deep Vein Thrombosis among Major Orthopedic Surgical Patients in Selected Hospital at Chennai

K. Sathiya*, S. Nalini*, Lisy Josaph*, B. Venkatasan**

Abstract

Deep vein thrombosis occurs frequently as a postoperative complication, particularly after orthopedic surgery and increasing number of patients were referred to the outpatient clinic of vascular surgery. The aim of study was to identify the incidence of deep vein thrombosis among post operative major orthopedic surgical patients and to find out the association between the incidence of deep vein thrombosis with the selected background variables. The result revealed that Out of thirty subjects 20% subjects belongs to 10-30 years, 16.7% belongs to 31-40 years, 20% belongs to 41-50 years, 30% belongs to 51-60 years and 13.3% belongs to 60-100 years. With regard to sex 50% were males and 50% were females. As per the number of post operative day 6.7% subjects belong to first postoperative day and 13.3% belongs second POD, 23.3% belong third POD and 26.7% belong fourth POD and 30% belong fifth POD. According to duration of hospital 6.7% belong to 0-7 days, 43.3% belongs to one week to two weeks, 40% belongs to three to four weeks and 10% belongs above a month. The incidence of DVT by using Autar scale among post operative orthopedic surgical patients shows that 3.3% people have the low risk, 46.7% have moderate risk, 50% people have high risk of deep vein thrombosis. The mean and standard deviation of assessing the risk of deep vein thrombosis among post operative orthopedic surgical patients where the mean value was 17.36 and standard deviation was 2.17. there is a significant association between body mass index and the risk for deep vein thrombosis.

Keywords: DVT; High Risk; Orthopedics Surgery; Incidence and Post Operative Complication.

Introduction

Deep vein thrombosis is a condition in which the blood vessel is blocked by the embolus carried in the blood stream from the site of formation of clot. Thrombosis usually develops as a result of venous stasis or slow flowing of blood around venous valve sinuses.

Deep vein thrombosis is a silent killer. It is a serious threat to recovery from surgery and is the third most common vascular disease after ischemic heart disease and stroke. DVT is mostly preventable and national and international consensus groups on venous thrombus prophylaxis have all recommended that hospital patients should be assessed for clinical risk factors and overall of thromboembolism. Incidence of DVT in India 2.7 per 1000 person. Incidence of DVT in south India revealed that 45% to 85% in patients who have had no prophylaxis. DVT was determined in 50% of patient aged 50 years and more.

The risk of DVT is always high among orthopedic patients due to immobility and poor venous return of the body. DVT is more prevalent in major orthopedic surgeries, injuries, traction and plaster casts. All these factors lead to venous stasis and an increased likelihood of thrombosis. It was suggested that appropriate educational session regarding thrombo prophylaxis especially costless measures (physical exercise), use of pneumatic compression and compression stocking, would enable the patients to prevent the development of deep vein thrombosis.

The incident of DVT is very much higher in India. As a part of clinical requirement investigators are posted in orthopedics ward. We found that the immobility s is higher in orthopedic surgical patients. So investigators are interested to do the study to identify the incidence of deep vein thrombosis among orthopedic surgical patients.

Author Affiliation: *Lecturer, Faculty of Nursing, Sri Ramachandra university, Porur, Chennai-116. **Associate Prof cum HOD, Padmashree Institute of Nursing, Bangalore

Correspondance: K. Sathiya, Lecturer, Faculty of Nursing, Sri Ramachandra university, Porur, Chennai, Tamil Nadu 600116

E-mail: sathiya_osma@yahoo.co.in

Materials and Methods

Research Design

A descriptive cross -sectional design was adopted to identify the incidence of deep vein thrombosis among major orthopedic surgery patients.

Setting of the Study

The study was conducted in selected Hospital at Chennai . It is one of the largest tertiary care hospitals in Tamil Nadu and in India providing multi disciplinary care, it is a 1717 bedded hospital with round o clock emergency services.

Population

The target population of this study was adult patients (male and female) with major orthopedic surgeries.

Sample and Sample Size

The subjects included for the study were 30 male and female patients with major orthopaedic surgeries, admitted in orthopaedics ward .

Sampling Technique

The samples were selected through convenient sampling technique.

Sampling Criteria

Inclusion Criteria

- Patients are willing to participate.
- Male and female with major orthopedic surgeries especially in lower limbs (Total hip replacement, total knee replacement, Open reduction of internal fixation, Open reduction of external fixation)

Exclusion Criteria

- Patients are not willing to participate.
- Patients with serious mental illness
- Patients with minor orthopedic surgeries

Description of Tools

The tool used was Autar deep vein thrombosis risk assessment scale. The instrument has two parts. Part-1 Consists of back ground and clinical variables. Part -2 Autar (1994) Deep vein thrombosis risk assessment scale.

Part-1

Section-A

Consist of demographic variables, Age, Sex, Occupation, and monthly income

Section-B

Consists of clinical variables, BMI, History of valvular diseases, type of surgery, Number of postoperative day, duration of hospitalization.

Part -2

Autar (1994) deep vein thrombosis risk assessment scale to assess the risk of deep vein thrombosis among the patients underwent major orthopedic surgeries. It consists of 8 categories. Age specific group, body mass index, mobility, special risk category, trauma risk, type of surgical interventions, high risk diseases.

Score Interpretation

A.	No risk	0-6
B.	Low risk	7-10
C.	Moderate risk	11-14
D.	High risk	15-30

Results

Section-1: Distribution of study related background variables among post operative major orthopedic surgical patients.

Section-2: Distribution of clinical variables among post operative orthopedic surgical patients.

Section-3: Distribution of each category of Autar scale among post operative major orthopedic surgical patients.

Section-4: Association between the selected background variables and the incidence category of deep vein thrombosis.

Section-1

Table I shows that The frequency and percentage distribution of demographic variables of patient undergone major orthopedic surgeries. Out of thirty

subjects 20% subjects belongs to 10-30 years, 16.7% belongs to 31-40 years, 20% belongs to 41-50 years, 30% belongs to 51-60 years and 13.3% belongs to 60-100 years. With regard to sex 50% were males and 50% were females. As per occupation 6.7% belongs to professional, 20% belongs to non professional, 43.3% belongs to daily wages and 30% belongs to house wife. According to monthly income of the family 23.3% earn around 1,000-5,000, 56.7% earn around 10,000-15,000 and 3.3% earn around 15,000-20,000.

Table 1: Frequency, percentage distribution of demographic variables (N=30)

Demographic variables	Frequency	Percentage
Age		
a)10-30 years	6	20.0
b)31-40 years	5	16.7
c)41-50 years	6	20.0
d)51-60 years	9	30.0
e)61-100 years	4	13.3
Sex		
a)Female	15	50.0
b)Male	15	50.0
Occupation		
a)Professional	2	6.7
b)Non-professional	6	20.0
c)Daily wages	13	43.3
d)Housewife	9	30.0
Monthly income in rupee		
a)< 5000	7	23.3
b)5001 -10000	17	56.7
c)10001-15000	5	16.7
d)15001-20000	1	3.3
e)>20000	-	-

Table 2: Frequency ,percentage distribution of clinical variables

Clinical Variables	Frequency	Percentage
Body mass index		
a)Underweight	2	6.7
b)Average	18	60.0
c)Overweight	10	33.3
d)Obese	-	-
e)Very obese	-	-
History of valvular disease		
a)Yes	2	6.7
b)No	28	93.3
Number of POD		
a)First	2	6.7
b)Second	4	13.3
c)Third	7	23.3
d)Fourth	8	26.7
e)Fifth	9	30.0
Duration of hospital		
a)<1week	2	6.7
b)1-2week	13	43.3
c)3-4week	12	40.0
d)>4weeks	3	10.0

Section-2

Table 2 shows that The frequency and percentage distribution of clinical variables of patient undergone major orthopedic surgeries. Based on history of valvular diseases 6.7% has the problem and 93.3% has no valvular diseases. As per the number of post operative day 6.7% subjects belong to first postoperative day and 13.3% belongs second POD, 23.3% belong third POD and 26.7% belong fourth POD and 30% belong fifth POD. According to duration of hospital 6.7% belong to 0-7 days, 43.3% belongs to one week to two weeks, 40% belongs to

three to four weeks and 10% belongs above a month. Based on body mass index 6.7% belongs to underweight, 60% belongs to average and 33.3% belongs to overweight.

Table 3: Frequency, percentage distribution of AUTAR SCALE

Autar Scale	Frequency	Percentage
Age specific group		
a)10-30	6	20
b)31-40	5	16.7
c)41-50	6	20.0
d)51-60	9	30.0
e)above 60	4	13.3
Body mass index		
a)Underweight	2	6.7
b)Average	18	60.0
c)Overweight	10	33.3
d)Obese	-	-
e)Veryobese	-	-
Mobility		
a)Ambulant	-	-
b)Limited (uses aids)	6	20
c)Very limited	10	33.3
d)Chair bound	1	03.4
e)Complete bed rest	13	43.3
Special risk category		
Oral contraceptive		
a)20-35yrs	1	3.3
b)35+yrs	2	6.7
Trauma risk		
a)Head injury	–	–
b)Chest injury	–	–
c)Spinal injury	–	–
d)Pelvic injury	8	26.7
e)lower limb injury	22	73.3
Surgical intervention		
a)Minor surgery	–	–
b)Major surgery	–	–
c)Emergency major surgery	–	–
d)Thoracic	–	–
e)Abdominal	–	–
f)Urological	–	–
g)Neurosurgical	-	-
h)Orthopedic	30	100
High risk disease		
a)Ulcerative colitis	–	–
b)Anaemia:Sickle cell	–	–
Polycythaemia		
Haemolytic		
c)Chronic heart disease	7	23.3
d)Myocardial infarction	–	–
e)Malignancy	–	–
f)Vericose vein	3	10
g)Previous DVT or CVA	–	–

Section-3

Table 3 shows that frequency and percentage of variables in DVT assessment scale (Autar scale). Out of thirty subjects 20% subjects belongs to 10-30 years, 16.7% belongs to 31-40 years, 20% belongs to 41-50 years, 30% belongs to 51-60 years and 13.3% belongs to 60-100 years. Based on body mass index 6.7% belongs to underweight, 60% belongs to average and 33.3% belongs to overweight. As per mobility status 0% belongs to ambulant, 20% belongs to limited mobility status, 33.3% belongs to very limited(needs help), 3.4% are chair bound and 43.3% belongs to complete bed rest. In a special risk category especially for females 3.3% belongs to 20-35 years and, 6.7% belongs to 35 years above and both are oral contraceptive users and 90% belongs to no oral contraceptive users.

According to trauma risk category 26.7% belongs

to pelvic injury and 73.3% belongs to lower limbs Injury and 100% subjects were belongs to orthopedic surgical interventions According to high risk diseases 23.3% has chronic heart diseases and 10% has varicose veins and 66.7% subjects have no high risk diseases.

Section-4

According to incident risk assessment of DVT by using Autar scale among post operative orthopedic surgical patients shows that 3.3% people have the low risk, 46.7% have moderate risk, 50% people have high risk of deep vein thrombosis.

Table 4: Frequency, percentage distribution of DVT risk assessment score interpretation by using Autar scale

Risk Category	Frequency	Percentage
No Risk(<6)	0	0
Low Risk(7-10)	1	3.3
Moderate(11-14)	14	46.7
High Risk(>15)	15	50

Table 5: Mean, standard deviation of the incidence in deep vein thrombosis among post operative major orthopedic surgical patients by using Autar DVT risk assessment scale

Variables	Mean	Standard Deviation
Incidence of deep vein thrombosis among post operative major orthopedic surgical patients	17.36	5.26

Table 6: Association between the selected background variables and the incident category of deep vein thrombosis.

Demographic variables	Frequency	Chi square & P value
Age		
a)10-30 years	6	
b)31-40 years	5	11.4
c)41-50 years	6	9.49
d)51-60 years	9	Significant
e)61-100 years	4	
Sex		
a)Female	15	0.132
b)Male	15	3.84
		N.S
Occupation		
a)Professional	2	6.11
b)Non-professional	6	7.81
c)Daily wages	13	N.S
d)Housewife	9	
Monthly income in rupee		
a)< 5000	7	
b)5001 -10000	17	4.12
c)10001-15000	5	7.81
d)15001-20000	1	N.S
e)>20000	-	

Table 7: Association between the selected clinical variables and the incident category of deep vein thrombosis.

Clinical Variables	Frequency	Chi square & P value
Body mass index		
a)Underweight	2	5.9
b)Average	18	5.9
c)Overweight	10	significant
d)Obese	-	
e)Very obese	-	
History of valvular disease		2.14
a)Yes	2	3.84
b)N0	28	N.S
Number of POD		
a)First	2	1.74
b)Second	4	9.49
c)Third	7	N.S
d)Fourth	8	
e)Fifth	9	
Duration of hospital		
a)<1week	2	2.32
b)1-2week	13	7.81
c)3-4week	12	N.S
d)>4weeks	3	

The mean and standard deviation of assessing the risk of deep vein thrombosis among post operative orthopedic surgical patients where the mean value was 17.36 and standard deviation was 2.17.

Table 6 shows that there is a significant relationship between age factor and the incident of deep vein thrombosis.

Table 7 shows that there is a significant association between body mass index and the risk for deep vein thrombosis.

Discussion

The present study was undertaken to identify the incidence of deep vein thrombosis among post operative major orthopedic surgical patients. The study was conducted in Sri Ramachandra hospital. The findings of the study are discussed under the following objectives.

The first objective of the study was to identify the incident of deep vein thrombosis among post operative major orthopedic surgical patients.

Table 4 depicts that the distribution of incidence of deep vein thrombosis among orthopedic patients undergone with major orthopedic surgeries in inpatient orthopedic department 3.3% subjects had low risk of deep vein thrombosis and 46.7% subjects had moderate level risk of deep vein thrombosis and 50% subjects had high risk of deep vein thrombosis.

The second objective of the study to determine the association between the incidences of deep vein thrombosis with selected background variables

Table 6 depicts that there is a significant association between the age factor and the incidence of deep vein thrombosis among postoperative major orthopedic surgical patients.

Table 7 shows that there is a significant association between the body mass index level and the incidence of deep vein thrombosis

Recommendation for Future Study

1. Same study can be done in larger sample
2. Study can be conducted through various setting
3. Study can be conducted in a various population

Conclusion

The study was conducted to identify the incidence of deep vein thrombosis among post operative major orthopedic surgical patients in inpatient orthopedic department in selected hospital at Chennai. The findings reveal that majority of the people had the high risk of deep vein thrombosis and other people had mild to moderate risk of deep vein thrombosis.

References

1. Barnes R W, Nix M L,Barnes C L. Perioperative asymptomatic venous thrombosis: role of duplex scanning versus venography. Journal of vascular surgery.1989; 9((2):50-61.
2. Clarke MT, Green JS,Harper WM. Cement as a risk factor for deep vein thrombosis. Journal Bone joint Surgery. 1998; 8(6):11-3.
3. Garino JP, Lotke PA, Kitziger KJ. Deep venous thrombosis after total joint arthroplasty. Journal Bone joint Surgery.1996; 78(2):1359-65.
4. Lynch AF ,Bourne RB, Rorabeck CH.deep vein thrombosis and continuous passive motion after total knee arthroplasty. Journal Bone Joint Surgery.1988; 70(A):11-4.
5. Bhan S, H Elizabeth. Deep venous thrombus prophylaxis. Indian journal of orthopaedics 2004; 23(6):24-28.