



ISSN NO. 2320-5407

*Journal homepage: <http://www.journalijar.com>***INTERNATIONAL JOURNAL  
OF ADVANCED RESEARCH****RESEARCH ARTICLE****INCIDENCE OF DEEP VEIN THROMBOSIS IN PATIENTS UNDERGOING A MAJOR LOWER LIMB SURGERY IN TERTIARY CARE CENTRE OF NORTH INDIA.****Rajinder Singh<sup>1</sup>, Khalid Muzzafar<sup>2</sup>, Khurshid Ahmed Bhat<sup>2</sup>, Abdul Ghani<sup>1</sup>, Nadeem Ali<sup>3</sup>**

1. Senior consultant department of orthopaedics GMC Jammu

2. Senior resident department of orthopaedics GMC Jammu

3. Senior resident department of orthopaedics SKIMS Srinagar

**Manuscript Info****Manuscript History:**

Received: 15 July 2015

Final Accepted: 22 August 2015

Published Online: September 2015

**Key words:**Deep Vein Thrombosis,  
Thromboprophylaxis, Pulmonary  
Embolism**\*Corresponding Author****Khalid Muzzafar****Abstract**

High incidence of Deep Vein Thrombosis (DVT) has been reported post operatively worldwide and definite prophylactic guidelines have been formulated to prevent it. Our institution had no policy of giving thromboprophylaxis as incidence was thought to be low. This study was conducted to see the incidence of DVT in our patients. Results showed that there is almost equal incidence of DVT in our patients as compared to reported in literature. Thus it was concluded that thromboprophylaxis should be given to patients undergoing major lower limb surgeries.

*Copy Right, IJAR, 2015.. All rights reserved***INTRODUCTION****Background**

Deep vein thrombosis (DVT) is the thrombosis of deep veins of lower extremities. Symptomatic DVT causes morbidity in itself due to acute pain and swelling of affected limb. DVT may embolize to pulmonary arterial circulation and can lead to fatal complications. World over high incidence of DVT is reported with lower limb surgeries and prophylaxis to prevent it given to patients operated for lower limb. Our institution had no policy of any prophylaxis for DVT as it was held that DVT was not common in this part of world. This study was done to see prevalence of DVT in our patients and compare with the world literature and to see if prophylaxis is required in our patients or not.

**Aims and objectives**

This study evaluates Prevalence of Deep Vein Thrombosis in patients undergoing major lower limb surgeries.

**Material and methods****Study area:**

This study was conducted in department of orthopaedics, Govt. Medical College Jammu. Reason of doing this study was to find prevalence of DVT in periarticular hip and knee fractures and surgeries, as we had no policy of giving thromboprophylaxis as we believed the incidence to be less besides studies regarding prevalence of DVT in periarticular hip and knee fractures and surgeries in Asian patients are very few.

All the patients who were operated for major lower limb injuries were included in the study. Patients who had evidence of DVT before surgery and patients younger than 15 years were excluded from the study.

A detailed history, clinical and radiological examination was carried out in all the patients.

Laboratory Investigation were carried out on all patients which included:

1. Complete haemogram, ESR, Blood Urea, Serum Creatinine, Sr. electrolytes, Random blood sugar, Coagulation profile (PT/APTT/INR), 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.
3. Post operatively Doppler was done on 3 occasions, on day 5, day 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.

## Results.

A total of 212 patients underwent lower limb surgery in our unit. 27 of which were below 15 years of age and three had evidence of DVT on pre op assessment. They were excluded from the study.

A total of 182 patients were included in the study. 98 (53.84%) were males and 84 (46.15%) were females. The average age of our patients was 51.18 years, males 49.64 years and females 52.98 years.

On fifth day 6 patients had evidence of DVT on USG Doppler, out of which 4 were females. We had 11 positive doppler on 3<sup>rd</sup> week out of which 7 were females. At 3 months 16 patients had a positive scan for DVT with 10 being females and 6 males.

The overall prevalence of DVT in major surgeries of lower limb in our study as detected by Doppler ultrasonography was found to be in 33 patients (18.13%).

21 out of 33 (63.63%) patients who developed DVT were females.

Only 8 (24.24%) patients out of 33 patients diagnosed to have DVT were symptomatic.

Out of 182 patients only 8 (4.39%) had symptoms.

One of our patient expired due to a massive pulmonary embolism on 5<sup>th</sup> post op day. Which was confirmed by elevated D dimer levels and CT chest.

With increase in age group the incidence of development of DVT increased as depicted in TABLE 1.

66 patients were operated for hip, while 29, 39 and 48 patients were operated for thigh, knee and leg and ankle respectively. Periarticular surgeries showed a higher incidence of DVT 19.6% hip surgeries and 28.0% in knee surgeries as shown in CHART 1.

19 patients (57.57%) had thrombus proximal to knee, 13 (39.39%) had it below the knee, while 1(3%) had it proximal to inguinal region.

Age group	PATIENTS			Evidence of DVT ON USG doppler								
	Male	Female	Total	5 Days			3 weeks			3 months		
				M	F	T	M	F	T	M	F	T
15-24	9	7	<b>16</b>	-	-	-	-	-	-	1	-	1
25-34	14	11	<b>25</b>	-	-	-	1	-	<b>1</b>	1	1	<b>2</b>
35-44	19	13	<b>32</b>	1	1	<b>2</b>	1	1	<b>2</b>	-	2	<b>2</b>
45-54	17	11	<b>28</b>	-	1	<b>1</b>	-	1	<b>1</b>	1	2	<b>3</b>
55-64	18	16	<b>34</b>	1	-	<b>1</b>	1	2	<b>3</b>	1	2	<b>3</b>
>65	21	26	<b>47</b>	-	2	<b>2</b>	1	3	<b>4</b>	2	3	<b>5</b>
Total	98	84	<b>182</b>	2	4	<b>6</b>	4	7	<b>11</b>	6	10	<b>16</b>

TABLE 1. SHOWING AGE WISE AND SEX WISE INCIDENCE OF DVT IN THE STUDY GROUP.

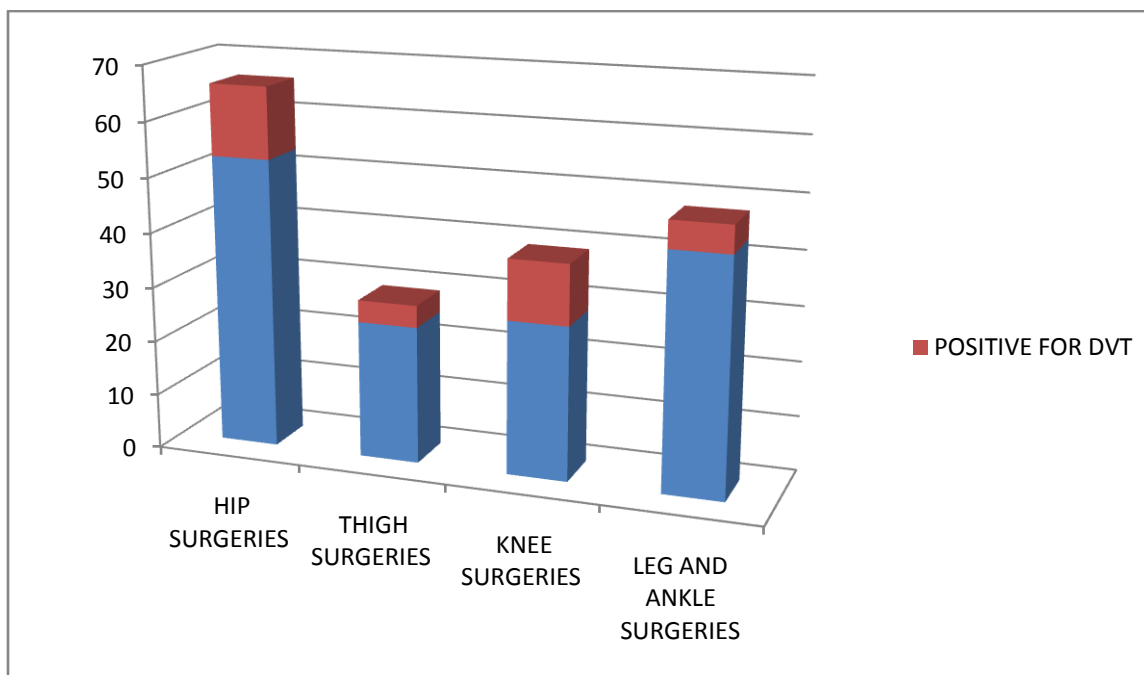


CHART 1: DEPICTING INCIDENCE OF DVT IN VARIOUS SURGERY LOCATIONS

**Discussion**

DVT is known to occur frequently after surgery, particularly orthopedic surgery and cause pulmonary embolism, which often leads to a serious outcome. Without thromboprophylaxis, the rates of objectively confirmed DVT occurring within 7–14 days after lower extremity orthopedic surgery are around 40–60%. Most of these thrombi resolve spontaneously, but a small percentage (1–14%) will progress to symptomatic VTE. The incidence of DVT has been reported to be 23.5% in overall, and to be 23%–33% in patients after hip replacement and 44%–58% in those after knee replacement.

A study spanning 19 Asian centres conducted by **Poviela F et al (2005)** revealed that DVT occurred in 41% of patients undergoing major joint surgery without thrombo-prophylaxis.

In another study by **Aggarwal S et al (2003)** Thirty-two of 53 patients who underwent major orthopaedic surgery without thrombo-prophylaxis had DVT which was proven on venography.

An autopsy study on 1000 medical patients at the Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh (**2008**) revealed that PE was present in 159 (16%) of 1000 patients who died in the hospital—it was a fatal embolus in 36 and was a major contributor to death in 90 patients; in 30 patients, the embolus was an incidental finding at autopsy as death occurred due to some other cause.

In a study by **Masatoshi et al (2012)**, the incidence of DVT was 19.3% in all, 12.1% in hip surgery, and 41.6% in knee surgery. In comparison we had an overall incidence of 19.6% occurring in hip surgeries and 28.20% occurring around knee. Old age is a well-known risk factor for DVT, was also confirmed by their study. Our study also confirmed the same. Moreover, as per them elderly individuals are more likely to require a major operation or may be immobilized due to medical problems. We also felt that this was a reason for higher incidence in elderly patients.

Our current findings also showed that females are at a greater risk for DVT and postoperative DVT; no consensus has been reached regarding differences in the incidence of DVT according to gender in previous studies.

The incidence of fatal venous thrombo embolism has been reported to be 1-2% in world literature. We had 1 death out of 182 patients making it 0.54%.

In a study similar to ours by **Z Ali et al (2014)** had an overall incidence of 27% in comparison to our 18.13%. They had 35% symptomatic and 65% non symptomatic patients in comparison we had 24% patients who were symptomatic. We had 57.57% proximal DVT, 39.39% distal and 3%, above inguinal compared to their 79%, 17% and 4% respectively.

As recognised world over we found that elderly patients particularly females with peri-articular knee surgeries who were having co-morbid conditions were more likely to have DVT post operatively after lower limb surgery.

The incidences we found were comparable to the world literature, though our study had less number of patients and included only one mode of investigation. We believe more such studies are needed to determine protocol for prophylaxis for DVT in our part of the world, however we strongly believe that prophylaxis is must in patients who are in risk groups like elderly, females and patients undergoing peri-articular knee surgeries and in whom mobilization will be delayed due to comorbid conditions. Thromboprophylaxis in such high risk patients is now always considered in our institution.

## Conclusion

There is comparable incidence of DVT in our patients as compared to the incidence found in world literature. There is a need to institute DVT prophylaxis in patients undergoing major lower limb surgeries particularly in high risk patients.

**Footnote**

Ethical clearance obtained for ethical committee GMC Jammu

We declare no conflict of interest with anyone.

**REFERENCES:**

1. Agarwala S, Bhagwat AS, Modhe J. *Deep vein thrombosis in Indian patients undergoing major lower limb surgery*. Indian J Surg 2003;65:159–62.
2. Anderson F A, Jr, Spencer F A. *Risk factors for venous thromboembolism*. Circulation 2003;107(supl 1):I9–16.16
3. Bagaria V, Modi N, Panghate A, Vaidya S. *Incidence and risk factors for development of venous thromboembolism in Indian patients undergoing major orthopaedic surgery: results of a prospective study*. Postgraduate Medical Journal. 2006;82(964):136-139. doi:10.1136/pgmj.2005.034512
4. Cohen AT, Tapson VF, Bergmann JF, Goldhaber SZ, Kakkar AK, Deslandes B, et al.; ENDORSE Investigators. *Venous thromboembolism risk and prophylaxis in the acute hospital care setting (ENDORSE study): A multinational cross-sectional study*. Lancet 2008;371:387–94. Erratum in: Lancet 2008;371:1914.
5. Committee for the Preparation of the Guidelines for the Prevention of Pulmonary Thromboembolism/Deep Vein Thrombosis (Deep Vein Embolism) Guidelines for the Prevention of Pulmonary Thromboembolism/Deep Vein Thrombosis. Tokyo: Medical Front International Limited; 2004; 1: 96.
6. Hathirat S. Cardiovascular disease in south east Asia. In: *Oxford text book of medicine*. 3rd ed. Oxford: Oxford University Press, 1987
7. Heit J A, Silverstein M D, Mohr D N. *et al Risk factors for deep vein thrombosis and pulmonary embolism: a population-based case-control study*. Arch Intern Med 2000;160:809–815.815
8. Kakkar N, Vasishta RK. *Pulmonary embolism in medical patients: An autopsy-based study*. Clin Appl Thromb Hemost 2008;14:159–67
9. Leizorovicz A, Turpie AG, Cohen AT, Wong L, Yoo MC, Dans A; SMART Study Group. *Epidemiology of venous thromboembolism in Asian patients undergoing major orthopedic surgery without thromboprophylaxis. The SMART study*. J Thromb Haemost 2005;3:28–34.
10. Mantilla C B, Horlocker T T, Schroeder D R. *et al Risk factors for clinically relevant pulmonary embolism and deep venous thrombosis in patients undergoing primary hip or knee arthroplasty*. Anesthesiology 2003;99:552–560.560
11. Masatoshi Motahashi, Akira Adachi, Ko Takigami, Keishu Yesuda *et al: Deep Vein Thrombosis in Orthopedic Surgery of the Lower Extremities*. Ann Vasc Dis. 2012; 5(3): 328–333.
12. Monreal M, Ruíz J, Olazabal A, et al. *Deep venous thrombosis and the risk of pulmonary embolism. A systematic study*. Chest 1992; 102: 677-81
13. Piovella F, Wang CJ, Lu H, Lee K, Lee LH, Lee WC, et al.; AIDA investigators. *Deep-vein thrombosis rates after major orthopedic surgery in Asia. An epidemiological study based on postoperative screening with centrally adjudicated bilateral venography*. J Thromb Haemost 2005;3:2664–70.
14. Z Ali, L Khurshid, S Vakil, A Anjum, M Varghese. *To Study Prevalence Of Deep Venous Thrombosis In Periarticular Hip And Knee Fractures And Surgeries*. The Internet Journal of Orthopedic Surgery. 2014 Volume 22 Number 1.