

Original Research Article

A comprehensive study on incidence and risk factors of deep vein thrombosis in asymptomatic patient after prolonged surgery

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	International Archives of Integrated Medicine, Vol. 6, Issue 3, March, 2019. Copy right © 2019, IAIM, All Rights Reserved. Available online at http://iaimjournal.com/ ISSN: 2394-0026 (P) ISSN: 2394-0034 (O)	
	Received on: 28-02-2019	Accepted on: 04-03-2019
	Source of support: Nil	Conflict of interest: None declared.
How to cite this article: D. Princess Beulah, T. Avvai. A comprehensive study on incidence and risk factors of deep vein thrombosis in asymptomatic patient after prolonged surgery. IAIM, 2019; 6(3): 237-242.		

Abstract

Background: Deep vein thrombosis (DVT) is one of the most dreaded complications in postoperative patients as it is associated with considerable morbidity and mortality. The prevalence of Deep Vein Thrombosis (DVT) in various series involving Western population ranges from 15% to 40% among patients undergoing major general surgical procedures.

The aim of the study: To identify risk factors of deep vein thrombosis in asymptomatic patients after prolonged surgery Age, Gender, Diabetes, Hypertension, COPD, Hyperlipidemia, Renal disorder, liver disorder, duration of surgery, blood transfusion, nature of surgery elective or emergency, type of surgery.

Materials and methods: This study was conducted in the Department of General Surgery, Government Stanley Medical College, Chennai in 2018. 100 patients admitted to our hospital for a period of 11 months according to inclusion criteria. All the patients were subjected to handheld doppler study of the deep venous system of both lower limb and ileac system on a postoperative day 2, day 5 and day 7 Confirmation of DVT using duplex scan.

Results: The predominant age group was 40-59 years constituting 37% followed by 20- 39 years constituting 36%. 31% of patients were diabetic on insulin and 17% were hypertensive on treatment.

Out of 100, 21 patients were suffering from malignancies. Majorities were carcinoma breast and gastrointestinal malignancies. 33% received injection low molecular weight heparin as prophylaxis.

Conclusion: For patients who undergo surgery for a prolonged duration (especially > 3 hours) and prolonged immobilization (> 2 days), it is recommended to screen them with Doppler for the incidence of DVT along with appropriate DVT prophylaxis in the post-op period to avoid morbidity and mortality associated with unforeseen and asymptomatic deep vein thrombosis.

Key words

Deep Vein Thrombosis, Hypertension, Diabetes, Smoking.

Introduction

Deep vein thrombosis (DVT) is one of the most dreaded complications in postoperative patients as it is associated with considerable morbidity and mortality [1]. The prevalence of Deep Vein Thrombosis (DVT) in various series involving Western population ranges from 15% to 40% among patients undergoing major general surgical procedures [2]. The autopsy studies document that 50% of all patients dying in the hospital have DVT. Around 10–30% of these patients have pulmonary embolism secondary to proximal DVT [3]. Majority of patients with postoperative DVT are asymptomatic. Its complications like pulmonary embolism can be lethal [4]. As a sequel to DVT, venous valves become incompetent or destroyed, resulting in chronic venous hypertension and subsequent development of varicose veins, lipodermatosclerosis and venous ulcers causing considerable disability [5]. Venous thrombosis commonly involves lower limbs, affecting most frequently calf veins, which are involved in virtually 100% of symptomatic, spontaneous lower extremity DVT [6]. It is believed that the DVT is less prevalent among the Indians and Asians. There have been very few studies on DVT in the postoperative period in Asian patients. Hence this study intends to show incidence and risk factors of deep vein thrombosis in asymptomatic patients after prolonged surgery [7].

Materials and methods

This study was conducted in the Department of General Surgery, Government Stanley Medical College, Chennai in 2018. 100 patients admitted

to our hospital for a period of 11 months according to inclusion criteria. All the patients were subjected to handheld doppler study of the deep venous system of both lower limb and ileac system on a postoperative day 2, day 5 and day 7 Confirmation of DVT using duplex scan.

Inclusion criteria: All patients who underwent elective or emergency operations with duration more than 2 hours, admitted in Government Stanley Hospital.

Exclusion criteria: Patient who underwent cardiac or vascular operations, Patients who had symptoms suggestive of DVT such as unilateral lower limb edema and calf muscle pain, Patients who ever took an anticoagulant such as warfarin, aspirin, and clopidogrel during one week before hospital admission, Patients who suffered from pre-operation DVT, Uncorrectable coagulopathy, The patient was on heparin.

Statistical analysis: Observations were tabulated according to the pre-designed proforma. The collected data were analyzed with IBM.SPSS statistics software 23.0 Version. To describe about the data descriptive statistics frequency analysis, percentage analysis was used for categorical variables and the mean and S.D were used for continuous variables. The Shapiro Wilk's test for normality shows the data was skewed hence to find the significant difference.

Results

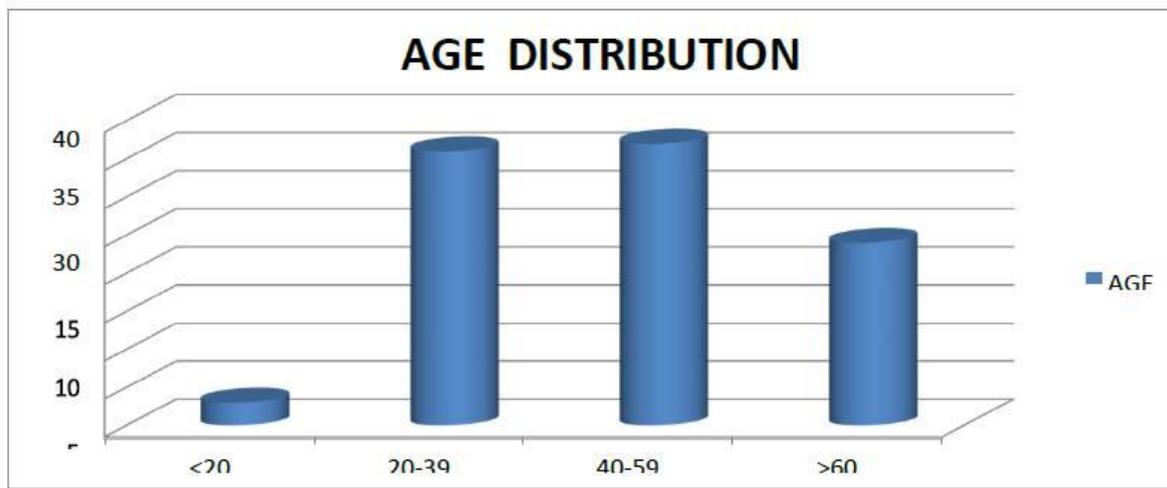
This was a prospective study done in the Department of General Surgery Stanley Medical College, Chennai in 2018. This study included

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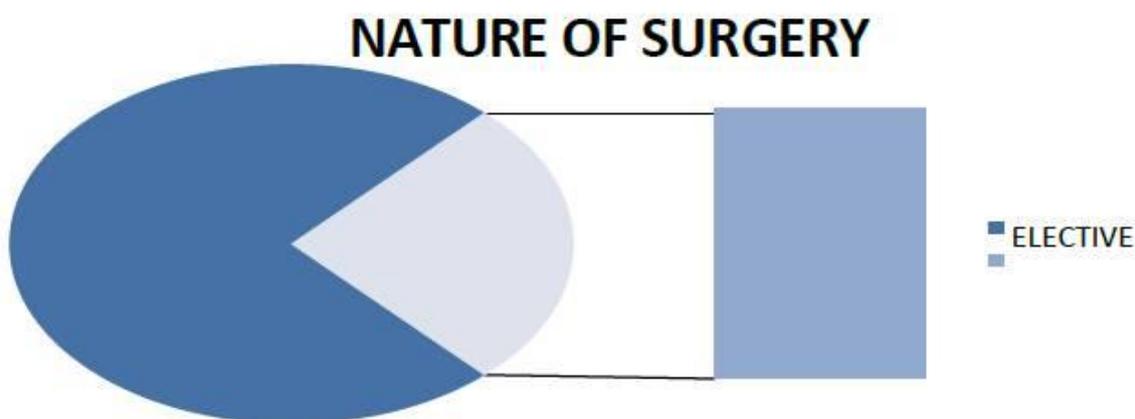
100 post-operative patients who were studied prospectively for the detection of deep vein thrombosis.

The predominant age group was 40-59 years constituting 37% followed by 20- 39 years constituting 36% (**Graph – 1**).

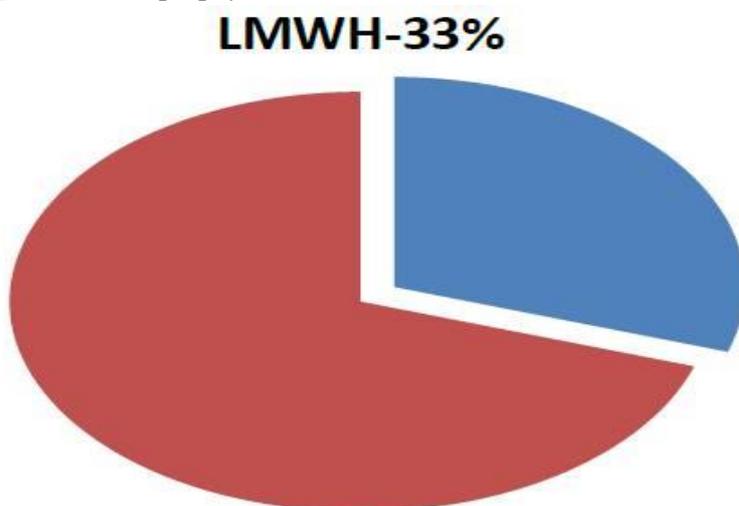
Graph – 1: Age distribution.



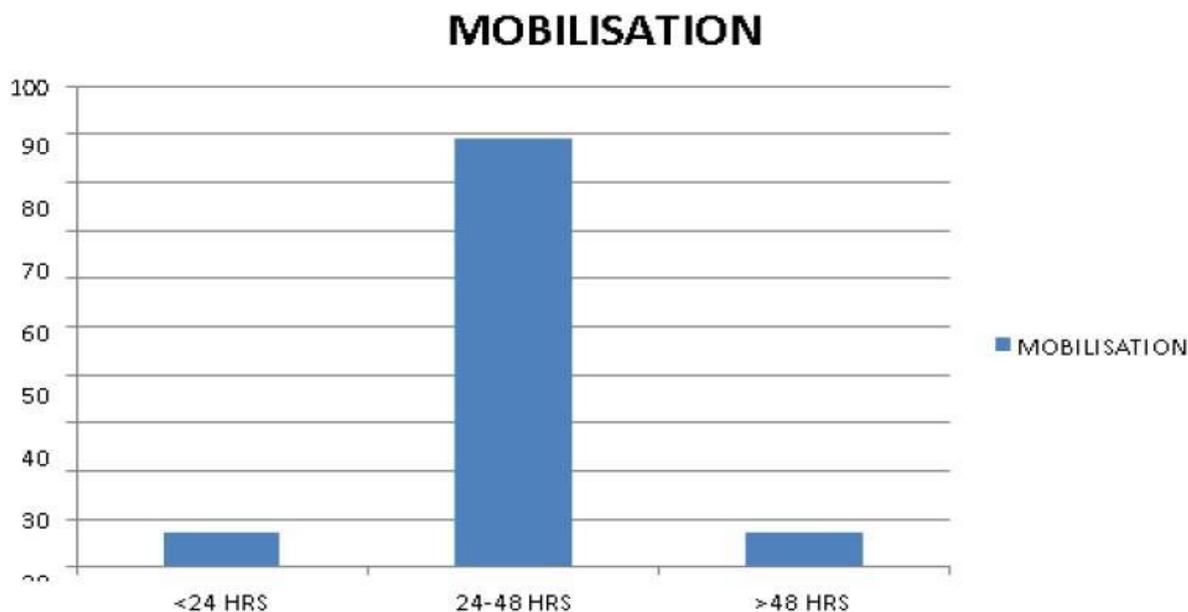
Graph – 2: Nature of surgery.



Graph – 3: DVT prophylaxis.



Graph – 4: Mobilization time.



31% of patients were diabetic on insulin and 17% were hypertensive on treatment (**Table – 1**).

Table – 1: Comorbid conditions.

Conditions	No of patients
Diabetes	31
Hypertension	17
CAD	2
COPD	2
Renal diseases	3
Liver disease	2
Psychiatric	1

2 Out of 74 elective cases 25.67% were laparoscopic surgeries. In our institution, the major laparoscopic procedure was lap cholecystectomy. It also reflected in our study of 84.21%. Laparoscopic surgeries were laparoscopic cholecystectomy (**Graph – 2**).

33% received injection low molecular weight heparin as prophylaxis (**Graph – 3**). Mobilization time was as per **Graph – 4**.

Discussion

One of the most common preventable cause of morbidity and mortality in hospitalized patients is deep venous thrombosis and its complications

like pulmonary embolism and post-thrombotic syndromes [8]. So it is essential to know about its incidence, etiology, pathogenesis, pathology, clinical features, diagnosis, management, and its sequelae. DVT is part of a spectrum of Venous Thromboembolism [9]. The remainder being Pulmonary Embolism and post-thrombotic sequelae. Recognition of its risk factors and early management also becomes an important aspect of its management [10]. Always prevention is better than cure. So every aspect of DVT needs to be understood for its proper management. Rudolf Virchow's pathophysiologic theory still holds the truth about its development. It is an area where much research is on now and needs still more light on it [11]. The newest area is the response to thrombosis and its amplification response. It is clear now that DVT is a result of multiple factors interplay. And its management needs knowledge about that. About 31% of hospital admissions both in medical and surgical wards develop some sort of this DVT. In this population, the incidence varies with underlying disease, use of thromboprophylaxis, the intensity of screening programmes, and the testing modality [12]. For example in spinal injury patients with paraplegia or quadriplegia where the periodical screening is intense shows an 81% incidence [13]. So suspicion on to the occurrence

only can diagnose it. In patients of ICU either medical or surgical, the risk is high. In one study it was about 25 to 32%. But in patients receiving thromboprophylaxis, it was about 10 to 18%. In one interesting study showed that the duration of ICU stay is not related to the DVT incidence. Actually, 64% of patients are developing this DVT after discharge only. So duration does not affect the incidence [14]. Overall the spinal cord injury patients, neurosurgical patients, orthopedic injury patients are at more risk of developing DVT than simply staying in ICU. On 7th POD, hand-held Doppler of both lower limbs done as a part of the study which revealed thrombosis of right popliteal vein, confirmed by duplex scan. Patient as already on DVT prophylaxis which was changed to treatment doses after vascular consult [15].

Conclusion

For patients who undergo surgery for a prolonged duration (especially > 3 hours) and prolonged immobilization (> 2 days), it is recommended to screen them with Doppler for the incidence of DVT along with appropriate DVT prophylaxis in the post-op period to avoid morbidity and mortality associated with unforeseen and asymptomatic deep vein thrombosis.

Acknowledgments

The authors would like to thank the Professors, Associate Professor, and Postgraduate students, Department of General Surgery, Madras Medical College, Chennai for helping with data collection and laboratory analyses.

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