

## Application of Caprini Index in Burn Patients for DVT Prophylaxis: Our Experience

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### Abstract

**Objective:** Venous thromboembolism (VTE)/ Deep venous thrombosis (DVT) is one of the major causes of morbidity in burn patients. There are various prophylactic measures been described for preventing VTE/DVT. We report our experience over one year period. **Methods:** Patients admitted to our Burn Unit over the period 2015–2016 and was put on thrombolytic prophylaxis were identified. Their records were retrospectively analysed for demographic factors, extent and severity of burn injury and outcome. **Results:** A total of 14 patient's records were analysed. None of them were diagnosed as developed DVT. There were no complications associated with DVT prophylaxis. **Conclusion:** The sample size in our study is much less. However we have not encountered any DVT or the complications associated with the DVT prophylaxis based on Caprini risk assessment tool.

**Keywords:** DVT Prophylaxis; Caprini Score.

### Introduction

Venous Thrombo-Embolism (VTE) in trauma patients causes significant morbidity and mortality. Burn patients would appear to be at high risk for VTE due their immobility, repeated operative procedures, infection and frequent and prolonged use of indwelling venous catheters.<sup>1</sup>It has been reported that

the incidence of Deep Venous Thrombosis(DVT) in trauma patients is as high as 60%, and the incidence of pulmonary embolism is (PE) up to 6% in patients without VTE prophylactic measures [2]. Though there are much evidence that VTE prophylactic measures reduce the incidence of DVT and PE, numerous studies show that prophylactic measures are not followed/ under-utilized [3,4]. Accurate assessment of individual patient's VTE risk is important to provide appropriate prophylactic measures [3]. VTE prevention for at-risk patients provides a good opportunity to improve the patient safety in hospitals because of its efficacy, cost effectiveness, and benefit-risk ratio [5]. Several risk assessment models have been described in the literature to stratify the patients according to their risk of VTE [6,7,8]. We adopted the Caprini risk assessment model for the burn patients and prescribed a prophylaxis regimen for each risk level and we have shared our experience.

### Materials and Methods

This study is a retrospective analysis of thermal burn patient's records those were admitted in burns ward, Jipmer - Tertiary burn care centre and was prescribed on DVT prophylaxis based on Caprini risk assessment model over the period of one year (2015-2016). The analysis was done by collecting the information from medical registration department and hospital information system of Jipmer. Patients who expired due to other causes and patients previously on anti - coagulation therapy were excluded from the study. Total number of patients analysed were 14 ranging from 18 to 65 years of age. Minimum body surface area involved by burns was 15% and maximum was 65%. During admission, patient's VTE risk was calculated and prophylactic therapy for VTE was started based on

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**Table 1:** Patient demographics

Patient No	Age(Yrs)/ Sex(M/F)	Total Body surface area(TBSA) of burns(%)	Caprini risk assessment score/ Risk level (Low, Moderate, High, Highest)	Total number of surgeries underwent by the patient	Duration of prophylactic Treatment (Days)	Duration of stay in hospital (Days)
1	18/F	45	5/Highest	2	26	35
2	32/M	30	4/High	2	15	20
3	48/M	25	4/High	1	15	20
4	29/F	50	7/Highest	3	35	46
5	36/F	30	4/High	2	16	23
6	33/M	55	6/Highest	3	38	52
7	35/F	40	5/Highest	3	24	35
8	65/F	15	9/Highest	1	14	20
9	52/M	35	4/High	2	18	23
10	43/F	40	5/Highest	2	24	33
11	20/F	20	2/Moderate	1	9	15
12	24/F	30	3/High	2	14	20
13	36/M	65	8/Highest	4	40	62
14	48/F	45	6/Highest	3	34	39

Caprini risk assessment model along with the routine burn care. All the patient details are described in table 1.

### Results

There were 14 cases in the burns ward during the study period. Out of which 9 (64%) were female and 5 (36%) were male. The mean age of the study population was 37.07 yrs. Majority of the study population were categorized under highest risk (57%), 36% had high risk and 7% had moderate risk. The average burn size was 37.5% of TBSA. The mean duration of stay in hospital was around 31 days. The average number of surgical procedures performed was 2.2. All the patients included in the study were discharged after complete wound healing. None of them developed DVT/ VTE during the period of hospital stay.

### Discussion

Burns patients are at a higher risk for developing thromboembolic events. Stasis and hypercoagulable state in burns makes these patients more prone for DVT [9]. There is no consensus on the ideal method of DVT prophylaxis in burn patients. There is a varied school of thought in literature with authors suggesting selective use of prophylactic subcutaneous heparin or low molecular weight heparin, based on the presence of certain risk factors like age, obesity, previous history of DVT, degree of burns, previous surgeries and associated morbid diseases [10]. Selecting an appropriate prophylactic treatment is important due to side effects like bleeding. O'Shaughnessy et al. has reported 20% incidence of confirmed VTE in low risk patients based on Kucher risk assessment method which is

based on minimal number of risk factors [8]. According to Caprini model, individual risk factors like patient's age, nature of surgery, associated comorbidities, ambulatory status, previous history of thrombosis, and certain laboratory parameters etc, were assessed and risk levels were stratified. Patients with low risk were advised only early ambulation, moderate risk patients were given elastic stockings (ES) or low molecular weight heparin (LMWH), high risk patients were prescribed intermittent pneumatic compression (IPC) or LMWH or in combination with elastic stockings and highest risk patients were given low dose unfractionated heparin, LMWH, warfarin, factor X inhibitor alone or in combination with ES or IPC based on Caprini assessment risk score [11].

### Conclusion

Burns patients are more prone for developing DVT / VTE. So individualised risk assessment and specific prophylactic regimens based on risk assessment are mandatory in reducing these complications. In this study, risk assessment and prophylactic regimen was based on Caprini model and the incidence of DVT/ VTE events was 0% even in highest risk group. The Sample size of this study is small, further large randomized control trials are required to validate the results.

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