

Mechanical versus Chemical Prophylaxis for Deep Venous Thrombosis in Patients undergoing Lumbar Spinal Fusion: Comparative Effectiveness and Cost-Benefit

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## Introduction

Venous thromboembolism is a common preventable cause of morbidity after surgery with an incidence ranging from 0.3 -31% in elective spinal surgery patients. Therefore, patients undergoing any surgical procedure receive routine prophylaxis for DVT. Recently, the added utility of chemical DVT prophylaxis in addition to mechanical DVT prophylaxis has been questioned. We set out to determine comparative effectiveness and cost-benefit of mechanical versus chemical DVT prophylaxis in patients undergoing elective lumbar spinal fusion.

## **Methods**

All patients undergoing lumbar spinal fusion (1-3 levels) for degenerative spine disease at a single medical institution over a 2-year period were enrolled into our prospective registry. During the first year, all patients received mechanical and chemical prophylaxis (subcutaneous heparin twice a day) for DVT [chemical prophylaxis group]. During the second year, patients received mechanical DVT prophylaxis only [mechanical prophylaxis group]. At the end of this 2-year period, we evaluated whether this categorical switch influenced the incidence of DVT and the associated cost-benefit.

## Results

A total of 355 patients (208 in chemical group and 147 in mechanical group) were included in the study. There were no significant differences in the baseline characteristics and treatment variables of the two groups (p>0.05). The categorical switch from chemical to mechanical DVT prophylaxis did not change the incidence of DVT after lumbar fusion surgery in chemical vs. mechanical prophylaxis group [1 (0.48%) vs. 1 (0.68%); p=0.80]. The incidence of bleeding complications such as epidural hematoma was 0.96% in the chemical group vs. 0.68% in the mechanical group. Converting from chemical to mechanical prophylaxis resulted in \$20,937 savings per 150 patients per year, without a rise in perioperative thromboembolism.

## Conclusions

In our experience, mechanical and chemical DVT prophylaxis had equivalent effectiveness in preventing peri-operative DVT after elective lumbar spinal fusion. Use of mechanical instead of chemical DVT prophylaxis can lead to cost savings of up to \$20,937 per 150 patients treated.



Group 1 = Chemical ppx; Group 2 = Mechanical ppx