Rapid-Inflation Intermittent Pneumatic Compression for Prevention of Deep Venous Thrombosis

Reference:

Scientific Literature Review

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Podiatric Relevance:
Deep venous thrombosis is a potential complication in patients undergoing a variety of orthopedic procedures including skeletal, soft tissue trauma and other elective surgery. This study hypothesizes improvement in prevention of deep venous thrombosis with use of intermittent pneumatic compression in conjunction with chemoprophylaxis.

Methods:
Between January 2001 and October 2002, 1803 patients who underwent a variety of orthopedic procedures were prospectively randomized to receive either chemoprophylaxis alone or a combination of chemoprophylaxis and mechanical prophylaxis. 902 patients were treated with low-molecular weight heparin alone, 901 were treated with low-molecular weight heparin and intermittent pneumatic compression of the calves during their post operative hospital course. The inclusion criteria included ages twenty to eighty-six years and a surgical site in an area other than the upper extremity. Exclusion criteria included surgery sites that would interfere with the application of the pneumatic compression calf cuff and/or patients with an existing deep venous thrombosis.

Results:
In the chemoprophylaxis-only group, fifteen patients (1.7%) were diagnosed with a deep venous thrombosis; three thromboses were symptomatic. In the chemoprophylaxis plus intermittent pneumatic compression group, four patients (0.4%) were diagnosed with deep venous thrombosis; one thrombosis was symptomatic. The difference between the groups with regard to the prevalence of deep venous thrombosis was significant (p=0.007). In the chemoprophylaxis plus intermittent pneumatic compression group, no deep venous thromboses were found in patients who received more than six hours of intermittent pneumatic compression daily.

Conclusions:
Deep venous thrombosis prophylaxis with low-molecular weight heparin augmented with a device that delivers rapid-inflation intermittent pneumatic compression to the calves was found to be significantly more effective when compared with a treatment regimen that involved low-molecular-weight heparin alone.