

Original Article

Stratified Meta-Analysis of Intermittent Pneumatic Compression to the Lower Limbs to Prevent Venous Thromboembolism in Hospitalized Patients

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Abstract

Background—Optimal thromboprophylaxis for patients at risk of bleeding remains uncertain. This meta-analysis assessed whether intermittent pneumatic compression (IPC) to the lower limbs was effective in reducing venous thromboembolism (VTE), and whether combining pharmacologic thromboprophylaxis with IPC would enhance its effectiveness.

Methods and Results—Two reviewers searched the MEDLINE, EMBASE, and Cochrane controlled trial register (1966–February 2013) for randomized controlled trials and assessed the outcomes and quality of the trials independently. Trials comparing IPC with pharmacologic thromboprophylaxis, thromboembolic deterrent stockings (TEDS), no prophylaxis, and a combination of IPC and pharmacologic thromboprophylaxis were considered. Trials that used IPC < 24 hours or compared different types of IPC were excluded. A total of 16,164 hospitalized patients from 70 trials met inclusion criteria and were subject to meta-analysis. IPC was more effective than no IPC prophylaxis in reducing deep vein thrombosis (DVT) (7.3% vs. 16.7%, absolute risk reduction [ARR] 9.4%, 95% confidence interval [CI] 7.9–10.9%; relative risk [RR] 0.43, 95%CI 0.36–0.52, $p < 0.01$; $I^2 = 34%$) and pulmonary embolism (PE) (1.2% vs. 2.8%, ARR 1.6%, 95%CI 0.9–2.3%; RR 0.48, 95%CI 0.33–0.69, $p < 0.01$; $I^2 = 0%$). IPC was also more effective than TEDS in reducing DVT, and appeared to be as effective as pharmacologic thromboprophylaxis but with a reduced risk of bleeding (RR 0.41, 95%CI 0.25–0.65, $p < 0.01$; $I^2 = 0%$). Adding pharmacologic thromboprophylaxis to IPC further reduced the risk of DVT (RR 0.54, 95%CI 0.32–0.91, $p = 0.02$; $I^2 = 0%$) compared to IPC alone.

Conclusions—IPC was effective in reducing VTE; combining pharmacologic thromboprophylaxis with IPC was more effective than using IPC alone.

Key Words:

- ▀ venous thromboembolism
- ▀ prevention

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