Meta-Analysis and Suggested Guidelines for Prevention of Venous Thrombo-Embolism (VTE) in Foot and Ankle Surgery

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Introduction/Purpose:
Post-operative venous thrombo-embolism (VTE) is a particular risk following lower limb orthopaedic surgery. However, few studies have investigated the risk in those undergoing isolated foot and ankle surgery. Knowledge of the incidence of VTE and the effectiveness of any chemoprophylaxis in these patients is needed in order to counsel patients as to the need for prophylaxis and assess the cost-benefit of such prophylaxis.

Methods:
Meta-analysis was performed following assessment of the methodological quality of each article using the Critical Appraisal Skills Programme (CASP) and Centre for Evidence-Based Medicine (CEBM) level of evidence. A PRISMA compliant search of AMED, EMBASE, HMIC, MEDLINE, BNI and CINAHL was performed. Case reports, non-original data, meta-analyses, evidence level 4 and below, CASP score of 8 or less, patients with pathology proximal to the mid-tibia, studies with less than 12 patients per sub-group were excluded from analysis. 372 papers were identified and 22 papers were included in the final analysis.

Results:
43,381 patients were clinically assessed for the presence of VTE and the incidence (pooled effect size) of VTE without chemoprophylaxis was 0.6% (95% CI 0.4-0.8%) whilst the incidence of VTE with prophylaxis was 1% (95% CI 0.2-1.7%). 1,666 patients were assessed for radiological evidence of DVT and the incidence of VTE without any form of chemoprophylaxis was 12.5% (95% CI 6.8%-18.2 %) whilst the incidence of VTE with prophylaxis was 10.5% (95% CI 5.0 to 15.9 %). There was no significant difference in the rates of VTE with or without chemoprophylaxis whether assessed clinically or by radiological criteria (p=0.31 and p=0.62 respectively). The risk of VTE in those patients with Achilles tendon rupture was much greater than in those with general foot and ankle conditions with a clinical incidence of 7% (95% CI 5.5 to 8.5 %) and radiological incidence of 35.3% (95% CI 26.4 to 44.3 %) although a randomised placebo-controlled trial has demonstrated no effect of chemoprophylaxis following surgery for rupture of the Achilles tendon.

Conclusion:
Clinically apparent VTE following foot and ankle surgery is less than 1% without chemoprophylaxis and is lower than seen in those undergoing generalised lower limb orthopaedic procedures. The incidence of VTE in foot and ankle patients is not reduced following low molecular weight heparin (LMWH) chemoprophylaxis. The incidence of VTE following Achilles tendon rupture is very high whether treated surgically or conservatively. We conclude that with the exception of those with Achilles tendon rupture routine use of chemoprophylaxis is not justified in those undergoing isolated foot and ankle surgery and patient-specific risk factors should be used to assess patients individually. Mechanical prophylaxis using intermittent pneumatic compression may be an alternative targeted method for DVT prophylaxis in lower limb immobilized patients, which should be further studied.