ARJOHUNTLEIGH

The Importance of Deep Vein Thrombosis Prophylaxis in Orthopaedic Patients

For more than 30 years multiple national and international evidence based guidelines and consensus papers have highlighted how patients undergoing major orthopaedic surgery are at very high risk of venous thromboembolism (VTE)[1-10]. Without prophylaxis, patients undergoing hip and knee arthroplasty have been found to have a deep vein thrombosis (DVT) prevalence of up to 70%[1,2,9-11].

VTE is the most commonly seen post-operative complication following joint replacement in the lower extremity[6,11]. A study conducted in 220 acute US hospitals, identified that following major orthopaedic surgery, those patients who developed VTE had significantly longer hospital stays and in-patient costs were twice as much as standard care[12].

Why does both hip and knee arthroplasty surgery place the patient at risk of VTE development?

Hip arthroplasty

To enable femoral preparation and insertion of the prosthesis, the lower leg is disarticulated. This results in obstruction and kinking of the femoral vein, producing an endothelial injury which then can potentiate thrombus formation and propagation[4,13]. Heat activated cement may also be used, which has the potential to cause vascular damage[13].

Knee arthroplasty

During knee replacement surgery, a tourniquet is used to reduce blood loss and also to maintain a clear surgical field. This causes damage to the endothelial lining of the vein, increasing risk of thrombus formation[13]. Without prophylaxis, the total DVT rate is greater in knee replacement surgery compared to hip replacements[10].

Venous stasis

Both during and after surgery, patients who have undergone lower limb orthopaedic surgery have a marked decrease in pulsatile blood flow, due to loss of normal physiological muscle contraction in the lower limbs[14]. Patients are not able to perform active dorsal to plantar flexion and are also immobile for long periods of time during recovery.

Alteration in fibrinolytic activity

Vessel damage and bone trauma during the operative procedure leads to the enhanced release of circulating procoagulants. It has been established for many years that major surgery and trauma are accompanied by a recognised reduction in the spontaneous fibrinolytic activity of the blood, a process called 'fibrinolytic shutdown'[23-27]. This phenomenon is reported to commence during or soon after the surgical procedure and last for at least 3 days[23,26].

Mechanical and biochemical effects of FLOWTRON® DVT Prophylaxis Systems

Prevention of venous stasis

FLOWTRON Systems actively augment venous blood flow[14-21]. This reduces stasis, flushes valve pockets where many thrombi originate, decreases venous hypertension and decreases interstitial oedema[22].

Increased fibrinolytic activity

Use of *FLOWTRON* Systems results in an increase in the fibrinolytic activity of the blood[28,29], a suppression of procoagulant factors[30] and may assist in the reversal or prevention of fibrinolytic shutdown.

Clinical studies using the *FLOWTRON* DVT Prophylaxis Systems

Clinical studies undertaken in elective orthopaedic surgical patients utilising ***FLOWTRON*** **Systems have**

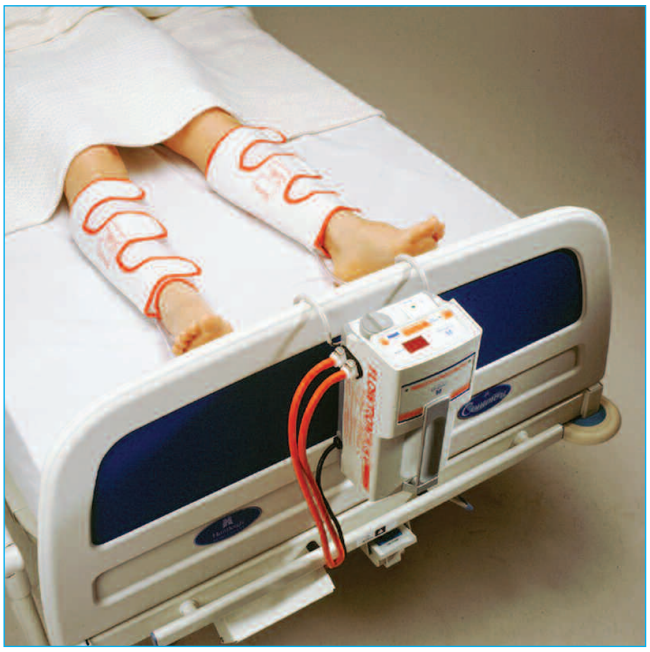
established high levels of efficacy combined with excellent patient concordance and freedom from adverse effects [11,13,14,31-36].

An additional benefit found that when *FLOWTRON* Systems were used as the method of prophylaxis compared to low molecular weight heparin (LMWH), the operative field was easier to work in and drier [31,32,36].

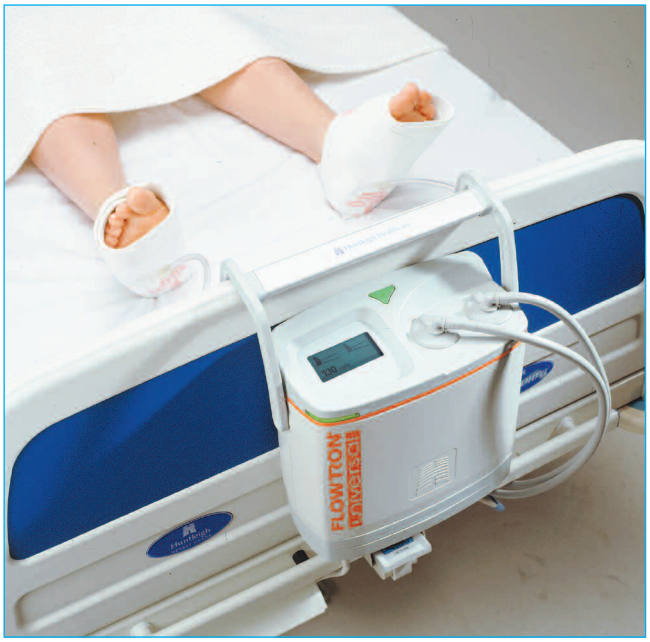
Significant cost savings have also been reported in a randomised controlled trial of 442 patients comparing use of *FLOWTRON* DVT Prophylaxis Systems with Enoxaparin [37]. Over a 23 month period, similar incidence rates of VTE were recorded in each cohort and a cost saving of US $67,300 was made in the *FLOWTRON* Systems group. The paper highlights how the use of ***FLOWTRON* Systems for the prevention of DVT is a safe and cost effective alternative to LMWH**.

Duration of prophylaxis

Thromboprophylaxis using IPC should be commenced intra-operatively as DVT often develops as a result of the surgical procedure [4]. Evidence based guidelines and consensus papers [3,8,10] highlight the requirement for prolonged prophylaxis of up to 4-6 weeks post-operatively. Use of IPC can be continued for as long as tolerated by the patient and if necessary switched to chemical prophylaxis for the duration of the post-operative at risk period [3].



FLOWTRON Excel DVT Prophylaxis System



FLOWTRON Universal DVT Prophylaxis System

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