

Potential role of electrostimulation in augmentation of venous blood flow after total knee replacement: A pilot study

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Abstract

Aim

To investigate the potential role of a novel electrostimulation device in augmenting the femoral vein venous blood flow following total knee replacement surgery.

Material and methods

A total of 30 consecutive patients undergoing total knee replacement were allocated to receive either peroneal nerve electrostimulation plus low molecular weight heparin and below-knee compression stockings (Group 1, electrostimulation group, n=15, mean age: 63.40±5.91 years, male: female ratio 9:6) or low molecular weight heparin and below-knee compression stockings alone (Group 2, control group, n=15, mean age: 63.86±7.47 years, male: female ratio 8:7). Electrostimulation was performed for 1 h in every 4 h after the operation. Peak blood velocity in the femoral vein was evaluated with Duplex ultrasonography in supine position. Presence of leg edema and calf diameter was also taken into consideration as outcome measures, which were recorded both before surgery and at the time of discharge from hospital.

Results

Postoperative peak blood flow velocity in the femoral vein was significantly higher in electrostimulation group compared to control group (17.46±2.86 cm/s vs. 13.84±3.58 cm/s, p<0.02). Electrostimulation group achieved a significant increase in peak blood flow velocity in the femoral vein after the operation (mean increase 67.48±17.38%, p<0.001).

Conclusion

Electrostimulation of the common peroneal nerve enhanced venous flow in the lower limb and may potentially be of use as a supplementary technique in deep venous prophylaxis following lower limb orthopaedic operations.