Foot Pumps - Orthopaedic - Full Clinical Guideline

Reference no.: CG-L/2023/007

1. Introduction

Mechanical foot pumps are designed to mimic the natural physiological processes which maintain the blood circulation in the lower limbs. The system has been demonstrated to improve both arterial flow and venous return in the patient who, as a result of trauma or disease, is either immobile or partially mobile. The system produces a high velocity surge of venous return resulting in a turbulent flow that will reduce the likelihood of thrombi formation.

2. Aim and Purpose

This guideline explains the correct use of mechanical foot pumps used following orthopaedic surgery to the spine; pelvis; or lower limb, or any other orthopaedic condition that has an impact on the patient's normal mobility state.

3. Guideline

Indications for Use

Patient's undergoing elective orthopaedic surgery use standard impulse devices according to thromboprophylaxis guidelines.

For patient's following trauma with lower limb fractures to minimise/ reduce oedema

- Standard impulse devices to be applied to injuries not requiring POP of the ankle and foot
- Mobile patients' with grossly oedematous lower limb(s)

Contra-indications for use

Any reported allergy to the materials used in the manufacture of impulse pads.

Duration of Therapy

Therapy must be maintained throughout the 24 hour period until discontinued.

Boots must be removed:

- When the patient is standing and/or walking
- For daily hygiene purposes
- For inspection of the skin at least four times daily

Boots must then be replaced immediately and therapy recommenced.

Therapy will be commenced and maintained at 130mmHg unless otherwise directed by the medical team. Patients that experience discomfort or pain at this setting should be discussed with the medical team.

Patients should be given additional instructions regarding active ankle exercises by both nursing and physiotherapy staff.

Therapy should continue until patient is beginning to mobilise regularly, even whilst sitting out. Patients should be mobilising short distances at least 3 times per day before removal of foot pumps.

Mobile trauma patients may need to continue therapy when at rest according the nature and severity of injury – this should be guided by the medical team.

Patients who are subject to prolonged periods of bed rest will usually maintain the therapy for the duration of their immobility and will be guided by the medical team.

Application

Check the pump and boots to ensure they are in working condition prior to application.

Always use a protective skin cover. This may be anti-embolic stockings where appropriate or stockinette. Orthopaedic padding should not be used.

Post-operative patients should have therapy commenced in first stage recovery

Trauma patients should have therapy commenced as soon as possible after admission.

Standard boots must be fitted according to manufacturer's instructions, selecting the correct size for the patient's foot. The securing strap that fits around the ankle should be fitted to medial aspect of the boot in a straight line. The strap should not circle the ankle and be fastened to the top of the foot as this may cause a tourniquet effect.

Check pump settings and switch on to commence therapy.

If the pump alarms attend to it immediately, check for fitting of the boot and kinking or disconnection of the hoses. If necessary change the boots or pump unit.

Patients should be instructed not to elevate the limb above the level of the heart as this can cause inadequate filling of the venous plexus within the foot.

Reapplication of the foot pumps

Mechanical foot pumps should be reapplied and therapy recommenced immediately after any reason to remove them. However, the following should be observed if for any reason the foot pumps are not reapplied immediately:

First ensure patient is receiving appropriate other methods of thromboprophylaxis, if not consult with medical staff.

Guidance for the mobile patient.	If boots have been off for less than 2 hours replace them and recommence therapy straight away
If patient has been mobilising, receiving physiotherapy or similar	
	If boots have been off for more than 2 hours consult medical team, who will assess the patient and document treatment instructions in the medical notes

Guidance for the immobile patient	If boots have been off for less than 1 hour replace them and recommence therapy straight away
If patient is on bed rest or immobile in chair	
	If boots have been off for more than 1 hour consult medical team, who will assess the patient and document treatment instructions in the medical notes

4. References

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Fordyce MJ, Ling RS. (1992)*A venous foot pump reduces thrombosis after hip replacement*. J Bone Joint Surg Br 1992; 74: 45-9

NICE (2007) *Venous Thromboembolism: Reducing the risk of venous thromboembolism (deep vein thrombosis and pulmonary embolism) in inpatients admitted to hospital.* National Institute of Clinical Excellence CG92

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5. Documentation Controls

Development of Guideline	Nursing staff, Trauma and Orthopaedics
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