

COMPARTMENT SYNDROME OF THE LIMBS

Date	Version
October 2016	V1

Purpose

Following the national introduction of Regional Trauma Networks, all Major Trauma Networks (MTN's) are required to have a policy to ensure that major trauma patients who develop compartment syndrome are treated appropriately

The purpose of this policy is to provide direction and guidance for appropriate actions from clinicians within Peninsula Trauma Network.

Who should read this document?

Peninsula Trauma Network Leads
 TU and MTC Clinical Leads for Major Trauma and Trauma Team Leaders
 All Clinicians in relevant specialities

Accountabilities

Production	Charlotte Angel, T&O Registrar Col Scott A Adams
Review and approval	PTN Clinical Advisory Group
Ratification	PTN Clinical Advisory Group
Dissemination	All PTN acute Trusts
Compliance	All Parties

Links to other policies and procedures

PTN Open Fracture Policy
 PTN and SVTN Paediatric Policy

Version History

V1	SA Adams	Clinical Lead, Peninsula Trauma Centre
V2		
Last Approval		Due for Review
		Annually

COMPARTMENT SYNDROME OF THE LIMBS

1. This policy applies to all patients within the Peninsula Trauma network, irrespective of whether they receive their care in an MTC or TU. And applies 7 days a week.
2. This policy should be read in conjunction with the:
 - Peninsula Trauma Network Open Fracture policy
3. Assessment for compartment syndrome should be part of the routine evaluation of patients who present with significant limb injuries, prolonged pre-hospital tourniquet application, after surgery for limb injuries, and after any prolonged surgical procedure which may result in hypoperfusion of a limb.
4. Clear documentation should include: the time and mechanism of injury, time of evaluation, level of pain, level of consciousness, neurovascular status, response to analgesia and whether a regional anaesthetic has been given.
5. The key clinical findings are pain out of proportion to the associated injury and pain on passive movement of the muscles of the involved compartments. Limb neurology and perfusion, including capillary refill and distal pulses, should be clearly documented but do not contribute to early diagnosis of the condition.

NB: Pulses are normally present in compartment syndrome – absent pulses are usually due to systemic hypotension, arterial occlusion or vascular injury.

6. Patients documented to be at risk of compartment syndrome (especially tibial and forearm fractures, high energy wrist fractures, crush injuries, re-perfused ischaemic limbs) should have routine nursing limb observations for these early signs and these should be recorded. These observations should be performed hourly whilst the patient is deemed still to be at risk. If pain scores are not reducing, then senior clinical review is mandated.
7. In high-risk patients, regional anaesthesia should be avoided as it can mask the symptoms of compartment syndrome. In addition patient-controlled analgesia with intravenous opiates can also mask the symptoms. When evaluating these patients, the rate and dose of opiates and other analgesics must be taken into consideration and recorded in the medical records.
8. Patients with symptoms or clinical signs of compartment syndrome should have all circumferential dressings released to skin, cast loosened sufficiently to relieve potential compression and the limb elevated to heart level. Measures should be taken to maintain a normal blood pressure. Patients should be re-evaluated within 30 minutes. If symptoms persist then urgent surgical decompression should be performed. Alternatively, in situations where the clinician is not completely convinced by the clinical signs, compartment pressure measurements should be undertaken. All actions should be recorded in the medical records.

9. Compartment syndrome is a surgical emergency and surgery should occur within an hour of the decision to operate.
 10. For patients with diagnostic uncertainty and those with risk factors where clinical assessment is not possible (e.g. patients with reduced level of consciousness), and intra-compartmental pressure monitoring is not available; compartment pressure monitoring should be performed at multiple sites within 5cm distal and proximal to the injury, in all compartments of the affected limb.
 11. All hospitals treating patients with significant injuries should have the capability to perform intra-compartmental pressure monitoring. The pressure sensor should be placed into the compartment(s) suspected of being abnormal or at risk.
 12. All patients having compartment pressure measurements should have their diastolic blood pressure recorded; a difference between the diastolic blood pressure and the compartment pressure of less than 30 mmHg suggests an increased risk of compartment syndrome. It is recommended these should either proceed to surgical decompression or continue to be monitored depending on the consultant decision.
 13. If the absolute compartment pressure is greater than 40mmHg, with clinical symptoms, urgent surgical decompression should be considered unless there are other life-threatening conditions that take priority.
 14. Surgery should involve immediate open fascial decompression of all involved compartments, taking into account possible reconstructive options. Necrotic muscle should be excised. The compartments decompressed must be documented in the operation record. All patients should undergo re-exploration at approximately 48 hours, or earlier if clinically indicated. Early involvement by a plastic surgeon may be required to achieve appropriate soft tissue coverage.
 15. For lower leg fasciotomies it is recommended to perform a two-incision four-compartment decompression (BOAST 4).
 16. There is no consensus for the management of foot compartment syndrome.
 17. Patients with late presentation or diagnosis (greater than 12 hours) have a high risk of complications with surgery. Decision-making is difficult and should involve two consultants. Non-operative management is an option.
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