



Peripheral Nerve Injury

Background and justification

All surgeons undertaking Musculoskeletal Trauma Surgery will be involved in the management of peripheral nerve injury, either as a result of injury or a postoperative complication. Nerve repair and complex nerve injuries (e.g. brachial plexus) is now a specialist field but all surgeons involved in trauma surgery must be able to diagnose nerve injuries and identify those that need referral to a specialist. These audit standards have been distilled from the recent BOA blue book on peripheral nerve injury which provides evidence-based guidelines for management.

Standards for Practice

- A careful examination of the peripheral nervous and vascular systems must be performed and clearly recorded for all injuries. This examination must be repeated and recorded after any manipulation or surgery.
- If a laceration is near a nerve or associated with a neurological deficit, the urgent advice of a surgeon who treats nerve injuries should be obtained.
- If a nerve injury is present with an unstable fracture or dislocation, the urgent priority (after life-saving interventions) is reduction and stabilisation of the skeleton.
- When internal fixation of a fracture associated with a nerve injury is performed, in general, the nerve must be explored. Possible exceptions are an axillary nerve palsy associated with low-energy shoulder trauma and sacro-iliac screw fixation with a lumbosacral plexus injury.
- If a nerve is explored during fracture surgery, this must be clearly recorded in the operation record including an indication of the nerve's relationship to any internal fixation device.
- Nerves will occasionally be damaged during surgery and recognition and urgent treatment is essential.
- Basic science evidence strongly supports very urgent repair as this will give the best possible outcome.
- If a divided nerve is found at surgery, and the surgeon does not have the skills to perform a definitive repair, the nerve ends should be gently opposed with fine, coloured sutures. The patient should then be discussed with a surgeon experienced in nerve repair.
- When a nerve or vascular deficit is identified following surgery, immediate measures include loosening bandages, splitting Plaster of Paris splints (to the skin) and gentle repositioning of the limb. If these measures are ineffective, a senior surgeon should be alerted to decide whether urgent re-exploration is required.
- Painful, postoperative paralysis must be explored urgently. It may be due to compartment syndrome or nerve compression from bone fragments, suture, haematoma or hardware.
- Pain and progressing loss of sensation is the hallmark of critical ischaemia. Immediate surgical exploration is required. By the time paralysis occurs it is too late.
- Neurophysiological investigations are rarely needed in the acute injury and requesting neurophysiology must not delay referral or treatment. MRI is not essential before surgery but can assist in preoperative planning. Referral or surgery should not be delayed to wait for a scan.

Evidence base

Predominantly retrospective case series but with good expert reviews and an evolved, multi-national, professional consensus over 15 years.