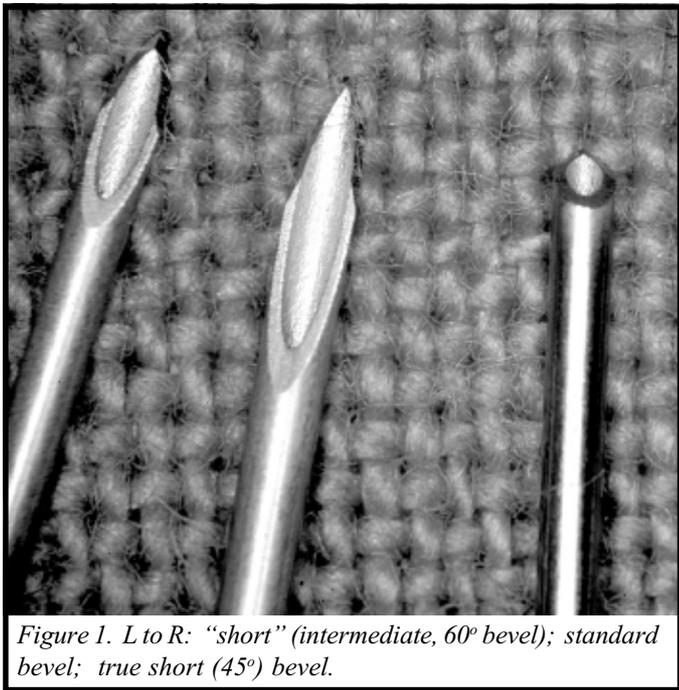


REGIONAL BLOCKS AT THE WRIST

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Regional blocks at the wrist are easy to perform and are useful for a number of situations:

- supplementing arm blocks and Bier's blocks particularly for postoperative pain relief
- minor surgery or dressings on the hand and fingers
- repairing hand trauma
- pain relief - such as burns to hand or fingers



General principles of regional anaesthesia applied to wrist blocks

- **Equipment.** A small "short bevel" is best. (figure 1) Monoject make an excellent 1/8 inch 27 gauge "intermediate" bevel needle which is good for wrist and other blocks, particularly in children and around the face. Long bevel ("standard") needles make blocking difficult as it is harder to feel the tissues because the long bevel may "straddle" two tissue planes. The true short bevel needles (45° are not suitable for this kind of block (and are usually too large). The 60° bevel (like those found on the needles of most intravenous cannula sets) are best.
- **Tissue planes and anatomy.** All regional blocks depend on a knowledge of the tissue planes in which nerves travel. As long as the local

anaesthetic is in the right plane reasonably near the nerve(s) it will spread to block the nerve.

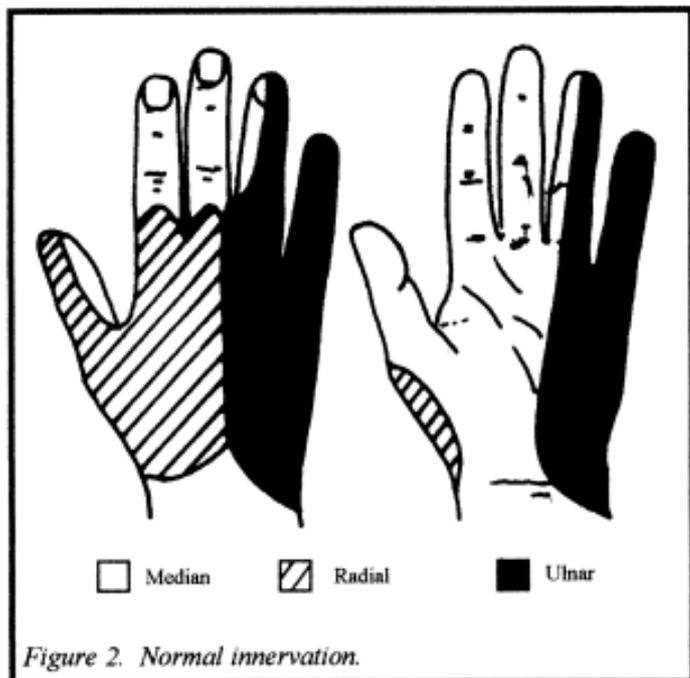
- **Raising the rate of success.** Thinking three dimensionally is vital, even in these simple blocks. "Feeling" the texture of the tissues with the tip of the needle using a very light finger-tip grip on the syringe and moving the tip slightly from side to side will identify the tissue - skin, subcutaneous fat, fascial layers, tendon sheath etc. They all have a distinctive feel. A needle tip in flexor carpi ulnaris does not help an ulnar nerve block.
- **Drugs and dosage.** There is practically no chance of toxic doses of local anaesthetic except for accidental intravascular injection in very small children. It is therefore of little use to interrupt the smooth flow of your technique by drawing back to look for blood. Use the smallest syringe possible for the dose required. The doses mentioned are for adults. Lignocaine 1-2% with adrenaline (1:100,000 or weaker) will give two hours' anaesthesia or more, and 0.5% bupivacaine plain will at least double that.
- **Technique - how not to hurt.** Many children and some adults respond poorly to regional anaesthesia. Demonstrating that the blocks themselves are not very painful is a good starting point for successful management. Advancing needles slowly with a little local is helpful, (and slow injection of the local). To perfect your technique, try blocking your own nerves - if there is someone you do not want to hurt, it's you!

BLOCKS AT THE WRIST

Note that variation of innervation may occur. Normal innervation is shown in figure 2.

The main nerves are radial, median and ulnar. But other descending cutaneous branches may need to be blocked with a subcutaneous "ring" (using the method described in blocking the radial nerve). Wrist blocks have the following characteristics:

- in most patients (except the very large) they can all be done with a very small needle.



- intraneural injection (direct injection into the nerve) is possible and must be avoided. Ask the patient to report sudden onset of pain or paraesthesia during the block immediately. If this is felt, stop, inject a very small quantity of local anaesthetic then continue if no further pain or paraesthesia occurs. Alternatively withdraw slightly, and try again.
- they are easy and reliable.
- in the vast majority of patients, the whole hand can be anaesthetised with three nerves blocks.

Radial nerve block at the wrist

Anatomy. The nerve divides into two major branches about two finger breadths proximal to the distal wrist crease (or anatomical snuff box)

- it is usually found just beside the cephalic vein (often anteriorly) and can be rolled under the finger in thin people
- it lies on the tough superficial fascia

Performing the block. Using the 27G needle (if available) three finger breadths from the distal wrist crease (or anatomical snuff box), carefully avoiding veins, gently feel for the tough fascia with the needle tip. Then, using 2-5ml of local anaesthetic use either of the following techniques to block the nerve:

- **method 1** - carefully holding the needle steady, straddle the needle with index and middle fingers (figure 3) and press them firmly against the

radius. Slowly inject the anaesthetic. It has no choice but to spread across the path of the nerve - and the veins are not punctured.

- **method 2** - deposit the dose in one "bleb" then press it with your thumb across the path of the nerve(s) first one way, then the other.



Median nerve block at the wrist

Anatomy. At the distal wrist crease it enters the carpal tunnel where it should not be blocked (neuritis may result). Usually the nerve is best found just under the tendon of palmaris longus (PL) - figure 4a. If this tendon is absent, it lies deep to the fascia just medial to flexor carpi radialis (FCR) - figure 4b. A superficial branch lies just in front of PL and supplies the proximal part of the front of the hand.

Performing the block. (figure 4) Using the 27G needle three finger breadths from the distal wrist crease, feel down from the groove between PL and FCR at an angle to take the tip of the needle directly under the PL tendon. Advance slowly, feeling to avoid tendon sheath and watching out for paraesthesia. Inject 3-5ml of local anaesthetic. For the superficial branch, on withdrawing the needle, place 2 ml subcutaneously immediately superficial to PL. Spread this across the line of the superficial branch with your thumb.

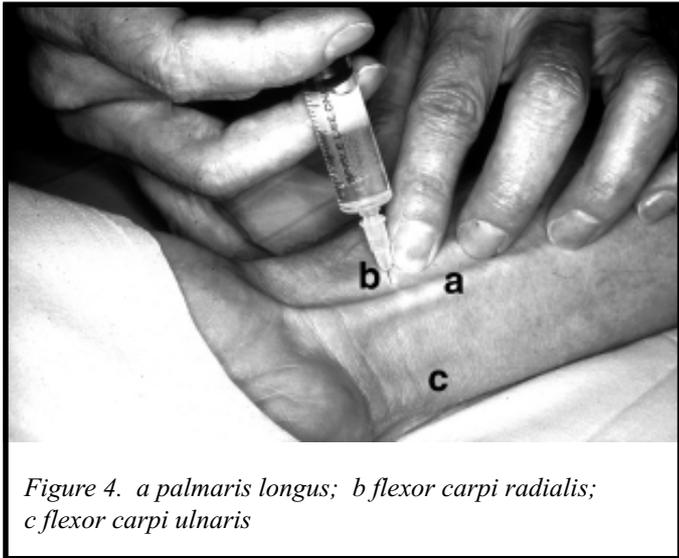


Figure 4. a palmaris longus; b flexor carpi radialis; c flexor carpi ulnaris

Ulnar nerve block at the wrist

Anatomy. By the time the ulnar nerve has reached the distal wrist crease it has divided into anterior and posterior branches. It is a mixed sensory and motor (small muscles of the hand) nerve and is found deep to the tendon of flexor carpi ulnaris (FCU) - figure 4c

Performing the block. Using the 27G needle three finger breadths from the distal wrist crease (to block the nerve before it branches) from either the anterior or the posterior aspect of FCU, advance slowly, feeling to avoid the FCU sheath, aiming to place the tip of the needle directly deep to the tendon. Look out for paraesthesia. Inject 3-5ml of local anaesthetic.

TOPICAL ANAESTHESIA FOR EYE SURGERY

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Local anaesthesia is currently performed for many ophthalmic procedures as it is associated with reduced morbidity and mortality when compared with general anaesthesia. Additional benefits include early patient mobilisation, improved patient satisfaction and reduced hospital stay. A variety of different methods of administration are described which may be broadly divided into 'injections' or 'topical applications'. 'Injection' techniques all involve needle perforation of the peri-orbital skin or conjunctiva and injection of local anaesthetic into the peri-orbital or orbital tissues. Orbital injections are occasionally associated with serious sight or even life-threatening complications. In contrast 'topical' anaesthesia, where local anaesthetic eye drops are applied to the surface of the eye, is non-invasive and has virtually no complications. It is becoming increasingly popular for phacoemulsification cataract surgery although many other procedures may also be performed topically (see Table 1).

Although topical anaesthesia is an extremely simple it may add to the complexities of surgery as operating conditions may be more challenging. Alterations in the practice of both ophthalmic anaesthetist and surgeon may be required. In addition, topical anaesthesia demands understanding and increased co-operation from the patient. This article aims to raise awareness and elaborate upon these changes.

Pre-assessment

Careful patient selection is essential if topical anaesthesia is to be used safely and effectively. Patients need to be co-operative, not unduly anxious, and scheduled for straightforward surgery. During the operation the patient must lie still and be comfortable in the supine position. They must also be able to co-operate and carry out instructions. The lack of akinesia (eye muscle paralysis) may be used by the surgeon as the patient can be asked to consciously fix or alter their gaze during the operation. In addition, because visual function is maintained the patient may be more aware of the operative procedures. Some patients find this stressful and often request sedation.

Short acting intravenous drugs such as midazolam and alfentanil are popular choices although pre-medication with oral benzodiazepines maybe just as effective. Sedation should only be given to help the patient to relax, and not to treat pain during surgery. Patients should be easily rousable and be able to respond when spoken to.

Unfortunately the administration of sedation may generate several problems such as confusion, disorientation and reduced co-operation which result in difficulties for the surgeon. Respiratory depression and a compromised airway can also occur. In the elderly where the sedative effects of these drugs are particularly unpredictable, airway obstruction and respiratory arrests have been reported.