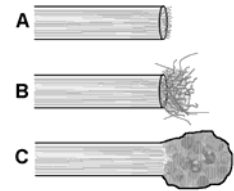


NERVE GRAFT

Nerves are similar to electrical cable and contain many fibres (axons). Some of these fibres are **sensory**, providing feeling in a defined area, and some are **motor**, activating muscles and sweat glands.

When a nerve is injured, the fibres sprout out of the nerve ending and grow across the gap towards the other end of the nerve at about 1mm/day.

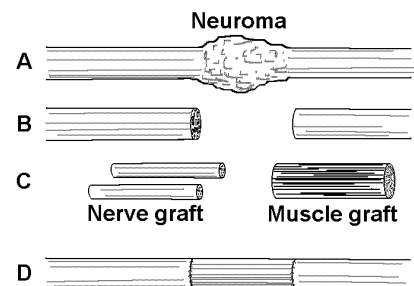
Recovery can fail for many reasons. If the nerve was not repaired, the gap is usually too large for the fibres to find the other end. If the nerve was repaired, good recovery can be prevented by factors such as infection or scarring. Under these circumstances, there is little return of feeling in the area supplied by the nerve. The fibres instead collect on the end of the nerve as a tender lump called a **neuroma**.



Correction requires a graft operation. The neuroma is cut out causing a long gap between the nerve ends. This gap is filled with a graft that is either obtained from another nerve or a number of alternative substitutes. The nerve is sewn into place using an operating microscope (microsurgery)

Nerve grafts are the traditional method of dealing with the problem and remain the “gold standard”. A length is taken from another nerve (usually the sural which is on the outer part of the leg). These grafts probably give you the best return of nerve function. However, it will cause loss of feeling in the area supplied by the donor nerve and an additional scar. The end of the donor nerve will inevitably form a neuroma. The end will be buried away from the skin but sometimes it becomes tender and a further minor operation is needed to deal with this.

Muscle grafts are an alternative technique using a small sliver of muscle that is snap-frozen. This kills the muscle but leaves its structure intact to guide nerve fibres across a gap between nerves. The technique has the advantage of avoiding loss of feeling or causing a neuroma at the donor site. The amount of muscle taken is very small and it will not cause any weakness. It is likely that recovery of nerve function is not quite as good as with nerve grafts.



Artificial grafts have been recently developed consisting of absorbable “plastic” tubes (Neurolac® shown in picture). The nerve ends are placed within the tube and the fibres grow across the gap, being attracted to the other end by chemical signals. Results are encouraging but it is presently limited to gaps of no more than three centimetres.



Nerve function may be initially worse after the any nerve graft operation. Recovery is very slow taking months or years. Function never returns to normal after the graft operation and it cannot be guaranteed that you will not form another neuroma at the graft site.

After the operation, you will be provided with a splint which should be worn for two weeks. This allows some movement but prevents the repair being strained. Movement is important to prevent the nerve graft becoming adherent to surrounding tendons or skin.

The early progress of the recovery will be monitored by your surgeon by tapping the skin beyond the repair. An electric sensation marks where the nerves have grown to. Subsequently, recovery will be shown by return of sensation and muscle power