

Nerve Injuries

Nerves are the “telephone wiring” system that carries messages back and forth between the brain and the rest of the body. Some nerves carry messages from the brain to muscles to make the body move. Some nerves carry messages about pain, pressure, and hot or cold from parts of the body to the brain.

A nerve is like a telephone cable wrapped in insulation. The outer layer wraps and protects the nerve (**see Figure 1**). Millions of small nerve ‘wires’ are grouped in bundles inside each nerve to carry the messages. Most nerves in the body have both muscle and sensation fibers.

Causes

Nerves can be easily damaged by pressure, stretching, or cutting. A mild injury to the nerve outer wrap stops the messages for a short time until the wrap repairs itself. This recovery can take seconds to minutes to up to 6 or more weeks. If nerve fibers are broken, the messages stop until the nerves grow back to their muscle or skin areas again. This process can take many months because the nerves grow slowly. Cutting a nerve breaks both the nerve outer wrap and inner fibers, and surgery is needed for repair. Badly damaged nerve may form scar that keeps the nerve fibers from growing. This nerve scar is called a ‘neuroma,’ which can hurt and cause a shocking feeling when touched.

Treatment

If the damaged nerve is not expected to be able to grow back itself, the doctor performs surgery to sew the nerve ends back together (**see Figure 2**). Tiny stitches and sometimes a microscope are used to sew the nerve outer layer. The inner nerve fibers grow back to their muscle or skin areas. The body part may need to be held still with a splint for a short time to keep the nerve from stretching apart again. The nerve is lined up, but some nerve fibers still do not reach their correct muscle or skin areas. If this happens, the feeling or muscle function will not be normal. If the wound is dirty or the nerve has been crushed, the doctor may wait to fix the nerve after the skin has healed to try to get the best result. If there is a gap between the nerve ends, the doctor may need to take a piece of nerve (nerve graft) from another body part to cross the gap. There might always be a numb area where the nerve graft was taken. Shorter gaps can sometimes be crossed with vein pieces or special tubes called “conduits.”

The nerve fibers grow about one inch every month after a nerve is sewn. It may take as long as a year before fingers or toes regain feeling, or muscles are working well again. There might be a ‘pins and needles’ feeling during the healing period. This often signals the growing end of the nerve and its path can be followed.

Figure 1: Nerve with bundles of individual nerve fibers and surrounding outer sheath (“insulation”)

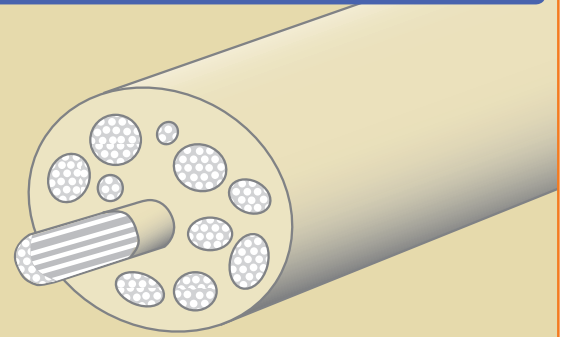
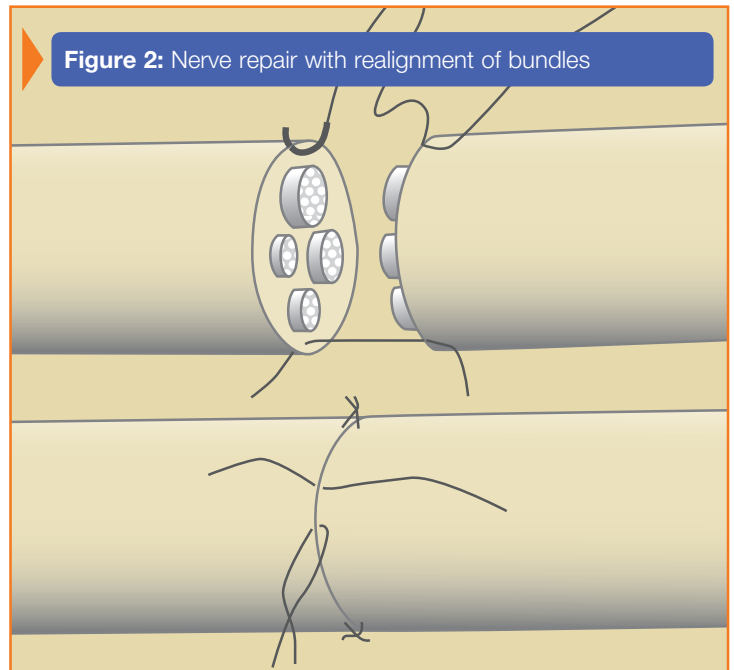


Figure 2: Nerve repair with realignment of bundles



Prognosis

Your doctor may send you to therapy to keep your joints moving until your nerves heal. You will have no feeling where a sensory nerve has been damaged. You must be careful to check for burns or cuts in these parts until your feeling returns. You may need special retraining exercises to improve feeling or strength after nerve recovery. Your results can depend on your age, type of injury, and injured body part. The best recovery comes from having a doctor who is familiar with nerve injuries and proper therapy.