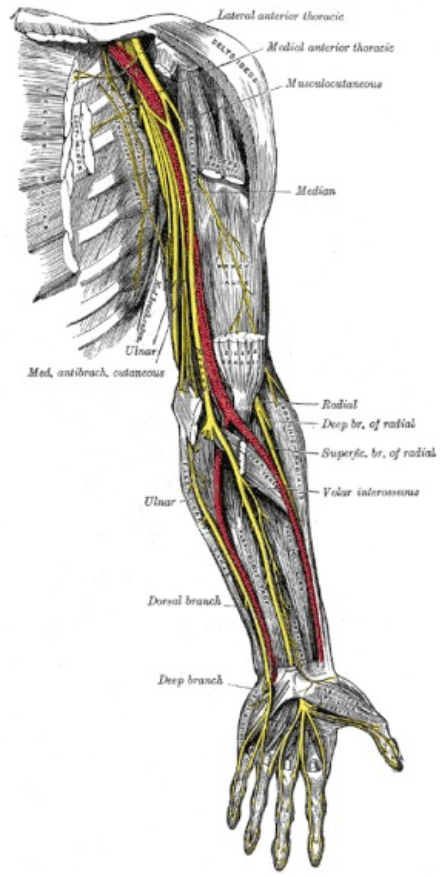
Radial nerve

Radial nerve is the largest branch of the **brachial plexus** (C5 to T1) and it carries both sensory and motor neurons fibers.

Origin

The nerve has its origin in each one of the plexus nerve roots but arises mainly from the *posterior cord* and divides into two terminal branches, designated superficial and deep, that supply muscular and cutaneous branches to the posterior aspect of the arm and forearm.



Radial Nerve Course

Course

After leaving the posterior cord of the brachial plexus it goes through the arm, first in the posterior compartment of the arm, and later in the anterior compartment, and continues in the posterior compartment of the forearm. The nerve ends in the dorsal part of the hand as a sensory nerve.

Innervation

Motor innervation

The radial nerve supplies motor innervation to the muscles in the posterior aspect of the upper limb, more specifically to the triceps brachii, supinator, anconeus, the extensor muscles of the forearm, and brachioradialis.

Cutaneous innervation

The radial nerve supplies cutaneous innervation to the posterior arm and the dorsal part of the hand.

Pathologies and Complications

Common conditions

Radial nerve entrapment- Happens when the radial nerve gets injured or compressed (squeezed) anywhere along its path. It can result in pain and sensory and/or movement issues depending on where it's compressed.

Radial tunnel syndrome- Happens when the radial nerve is compressed specifically in the radial tunnel. This is a natural tunnel formed by muscles and ligaments in your elbow and forearm area that your radial nerve runs through. If you have this syndrome, the area around your elbow may hurt and you may have weakness in your forearm and wrist.

Radial nerve palsy- "Palsy" means weakness or paralysis. This can happen when you sleep on an outstretched arm, have compression in your armpit from crutches or have a humerus bone fracture. If you injure your radial nerve, you may have symptoms like weakness and numbness. You may not be able to control the muscles that this nerve supplies. It's the main cause of wrist drop.

Wartenberg syndrome / *cheiralgia paresthetica-* This is a type of mononeuropathy that affects your radial nerve. It happens when muscles trap or compress the nerve's superficial sensory branch in your wrist.

Exams and Tests

The health care provider will take a detailed history to find out what you may have been doing just before the symptoms started, and to learn about any other medical problems you may have.

An exam of the arm, hand, and wrist may find:

1. Decreased ability to extend the arm below the elbow
2. Decreased ability to rotate the arm outwards (supination)
3. Difficulty lifting the wrist or fingers (extensor muscle weakness)
4. Muscle loss (atrophy) in the forearm
5. Weakness of the wrist and finger
6. Wrist or finger drop

Tests may be needed, depending on the history, symptoms, and findings from the physical exam. Tests for nerve dysfunction may include:

1. Different blood tests
2. EMG
3. MRI of the head, neck, and shoulder to look for other causes
4. Nerve biopsy (rarely needed)
5. Nerve conduction tests

Treatment

The goal of treatment is to allow you to use the hand and arm as much as possible. The health care provider should find and treat the cause, if possible. In some cases, no treatment is needed and you will recover slowly on your own.

Surgery to remove masses that press on the nerve may help.

REFERENCES

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[1] (http://depts.washington.edu/msatlas/images/127.jpg) Image about Radial Nerve [2] (http://www.nlm.nih.gov/medlineplus/ency/article/000790.htm) Radial never dysfunction