

Neck Pain basic level

Overview

Neck pain results when the spine is stressed by injury, poor posture, disease, wear and tear, or poor body mechanics. Acute neck pain is abrupt, intense pain that subsides after a period of days or weeks. It can also radiate to the head, shoulders, arms, or hands. It typically resolves with rest, exercise, and other self-care measures. Some people suffer from chronic pain that continues despite treatment. □□

You play an important role in the prevention and healing process of neck pain. Strong, flexible muscles help to promote a healthy neck that maintains good alignment, allows movement, and provides structural support.

Anatomy of the neck

The neck region of the spinal column is called the cervical spine. Protected within the bones of the cervical spine are the spinal cord, nerves, and blood vessels. The seven cervical bones are called vertebrae and are numbered C1 to C7. Each bone is separated and cushioned by shock-absorbing discs (Fig. 1). Each disc contains a fibrous outer layer called the annulus that surrounds a gel-filled inner layer called the nucleus. The vertebrae are held in place by muscles and ligaments that provide support and enable movement of your head. The spinal nerves exit the spinal column through holes, called foraminae, on both sides of the vertebra. The cervical spine has the most range of motion because of two specialized vertebrae that connect to the skull. These special vertebrae allow your head to bend, turn, and move side to side. The neck can also be a prime location for injury and pain (see Anatomy of the Spine).

Types of neck pain

Neck pain ranges from mild to severe, and is classified as either acute or chronic.

Acute neck pain often relates to soft tissue injury (e.g., sprains of muscles, tendons, or ligaments) or disc herniation. Acute pain occurs suddenly and usually heals within several days to weeks. Its severity relates directly to the extent of tissue injury and resolves over time.

Chronic neck pain persists (lasts more than 3 months) and its source may be hard to determine.

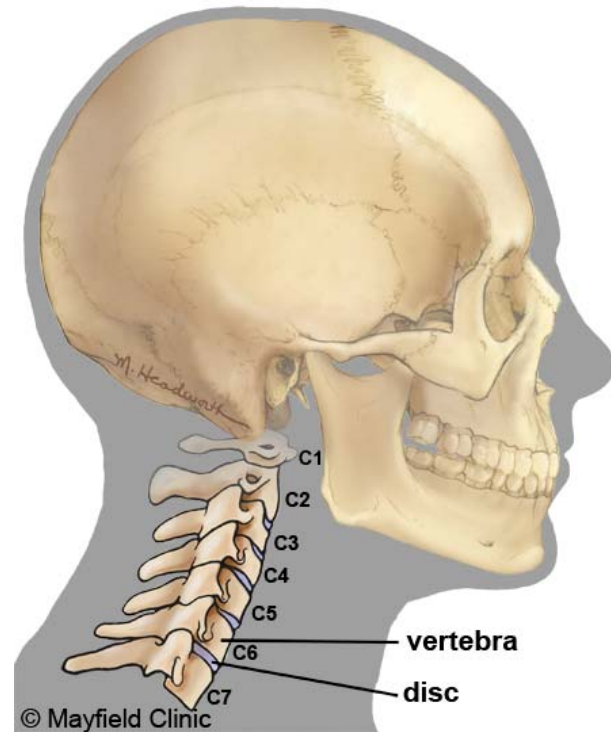


Figure 1. (side view) The cervical region of the spine has seven vertebrae numbered C1 to C7. The neck region has the most range of motion because of two specialized vertebrae that connect to the skull. These specialized vertebrae allow your head to bend, turn, and move side to side.

Chronic pain may be present all the time, or worsen with certain activities, poor posture, and improper body mechanics. Other contributing factors may be related to nerve cell changes, tissue scarring, arthritic changes, or psychological effects of chronic pain. In some cases, the complexity of chronic symptoms requires consultation with pain management specialists (see Pain Management).

What are the symptoms?

Signs and symptoms of neck pain may be stiffness, tightness, aching, burning or stabbing or shooting pains, pressure, or tingling. Muscles can feel sore or tense in the neck, face, or shoulders. Muscles spasm when they go into a state of extreme contraction (e.g., after whiplash). Movement may be restricted—perhaps you cannot turn your head past a certain point. If nerves are involved, pain, tingling, numbness, or weakness may develop in your shoulders, arms or hands. Where and how the symptoms manifest in the body can also indicate the level (C1 to C7) and type of injury or disease.

Several situations signal the need for prompt medical attention. If nerve compression is severe, symptoms can include pain, numbness, tingling in the arms or legs, loss of bladder or bowel control, or loss of strength and problems with coordination.

Neck pain accompanied by a headache, fever, or nausea could be a symptom of meningitis (an infection of the membranes around your brain) or a hemorrhage in the brain. If your neck is so stiff that you can't touch your chin to your chest, you should seek immediate medical attention.

What are the causes?

Neck pain can result from injury, poor posture, stress, natural wear, disease, and other sources. Poor spinal alignment (e.g., slouching, sleeping on the stomach) and improper movement (e.g., poor lifting technique) stress the cervical spine and make injuries more likely. Neck pain can result from:

Injury or trauma: A significant force can stress the structures of the neck, for example, a whiplash injury, sports injury, or fall. Fractures, such as vertebral compression fractures, can result. A tear in the muscles and ligaments of the neck may predispose the discs to bulge or herniate.

Bulging and herniated disc: The gel-like material within the disc can bulge or rupture through a weak area in the surrounding wall (annulus). Irritation, pain, and swelling occur when this material squeezes out and comes in contact with a spinal nerve.

Pinched nerve: When a spinal nerve is compressed, pain may run down your arm into your hands or fingers, called radiculopathy. Pinched nerve pain differs from carpal tunnel symptoms, which usually involve numbness.

Osteoarthritis (degenerative disc disease): As discs naturally wear out, bone spurs form and the facet joints inflame. The discs dry out and shrink, losing their flexibility and cushioning properties. The disc spaces get smaller. These changes lead to stenosis or disc herniation.

Stenosis: Narrowing of the spinal and nerve root canals occurs as discs bulge or protrude, facet joints enlarge, and ligaments stiffen over time. As the spinal canal narrows, it compresses the cord and nerves, causing them to swell and inflame.

Spondylolysis: A weakness or stress fracture develops in one of the bony bridges that connect the upper and lower facet joints.

Spondylolisthesis: A weakness in the muscles and ligaments predisposes the vertebra to slip out of normal position.

| Test | Structures seen | What it detects | Example |
|---------------------------------------------|------------------------------------|---------------------------------------------------------|---------------------------------------------------------------|
| X-ray | Bone | Extent of wear, bone disease, misalignment | Osteoarthritic changes, fracture, bone spurs, slippage |
| CT | Bone, soft tissue | Relationship of bones, soft tissues, nerve roots | Stenosis, bone spurs, spinal canal narrowing, disc herniation |
| Discogram | Disc | Site of pain origin | Disc herniation |
| MRI | Soft tissue | Detail of soft tissues, discs, nerve roots, spinal cord | Disc herniation, tumor |
| Myelogram (x-ray fluoroscope), CT/myelogram | Spinal canal seen by dye injection | View of spinal cord and nerve roots in relation to bone | Pinched nerve, bony overgrowth, spinal abscess, tumor |
| EMG-NCS | Nerve, muscle | Assessment of muscle (EMG) and nerve (NCG) function | Nerve damage |

Table 1. Diagnostic tests used to evaluate neck pain.

How is a diagnosis made?

A careful medical examination will help determine the type of neck problem, its cause, and the best treatment options. Diagnosis requires evaluation that includes a medical history, physical exam, and sometimes, diagnostic tests (Table 1).

What treatments are available?

In developing a treatment plan, your physician or healthcare provider will assess the type of disease or condition, and its impact. A team approach for treatment of neck problems is often the most effective. Medical treatments include surgical or nonsurgical care and self-care strategies. The goal is to restore function and prevent re-injury.

Self care: Most neck problems resolve with self-care measures such as rest, ice or heat, massage, over-the-counter pain relievers, or gentle stretches (see Self Care for Neck and Back Pain). Applying ice and then heat is helpful to relax the muscles and decrease muscle inflammation. We generally recommend that you apply an ice pack for 20 minutes several times a day during the first 48 hours. A warm shower or a heating pad on the low setting may help relax tight muscles. A short period of bed rest is okay, but more than a couple of days does more harm than good. If home treatments aren't working within the first couple of days, see your doctor.

Medications: Your doctor may prescribe nonsteroidal anti-inflammatory drugs (ibuprofen or naproxen) to reduce inflammation and relieve pain. If you have spasms, a muscle relaxant may be prescribed. If the pain is severe, an analgesic that can be taken with the NSAID or muscle relaxant may be prescribed.

Steroids can be used to reduce the swelling and inflammation of the nerves. They are taken orally (as a Medrol dose pack) in a tapering dosage over a five-day period or as an injection directly into the source of pain (see epidural steroid injections and facet injections). Steroids may provide almost immediate pain relief within 24-hours.

Physical therapy: The goal of physical therapy is to help you return to full activity as soon as possible and prevent re-injury. Physical therapists can instruct you on proper posture, lifting, and walking techniques, and they'll work with you to strengthen your neck, arm, and chest muscles. Exercise and strengthening exercises are key elements to your treatment and should become part of your life-long daily routine. Massage, ultrasound, diathermy, heat, and traction may also be recommended for short periods. Patients may also benefit from chiropractic manipulation and acupuncture.

Surgery: Surgery is rarely recommended unless you have muscle weakness, a proven disc herniation, cervical cord compression, problems with balance and coordination, or if the pain is severe and not resolved after a reasonable course of nonsurgical treatment.

Recovery and prevention

Most people with acute neck pain respond rapidly to treatment; 90% are symptom-free within 1 to 2 weeks. A positive mental attitude, regular activity, and a prompt return to work are all very important elements of this recovery. If regular job duties cannot be performed initially, it is in the patient's best interest to return to some kind of modified (light or restricted) duty. Your health care provider can give prescriptions for such activity for limited periods of time.

Recurrences of neck pain are common. The key to avoiding recurrence is prevention:

- Proper lifting techniques
- Good posture during sitting, standing, moving, and sleeping
- Appropriate exercise
- An ergonomic work area
- Healthy weight and lean body mass
- A positive attitude and relaxation techniques
- No smoking

Healthy supporting muscles can help keep your spine in proper alignment, promote healing after injury, and relieve chronic symptoms. Strong, flexible muscles maintain good spine alignment, allow movement, and provide structural support. When neck pain does occur, there are many options to aid in its diagnosis and treatment for each individual's needs.

Sources & Links

If you have more questions, please contact the Mayfield Spine Institute at 800-325-7787 or 513-221-1100. Additional info is available on the web.

www.spine-health.com
www.allaboutbackandneckpain.com
www.spineuniverse.com
www.neurosurgerytoday.org

Glossary

acute: a condition of quick onset lasting a short time, opposite of chronic.

arthritis: joint inflammation caused by infection, immune deficiency (rheumatoid arthritis), or degeneration of the cartilage that causes pain, swelling, redness, warmth, and restricted movement.

chronic: a condition of slow progression and continuing over a long period of time, opposite of acute.

osteoporosis: loss of bone or atrophy of skeletal tissue that causes bones to weaken and become brittle, and prone to fracture. Preventive measures include adequate calcium and regular exercise to stimulate bone metabolism.

radiculopathy: refers to any disease affecting the spinal nerve roots. Also used to describe pain along the sciatic nerve that radiates down the leg.

spinal cord: part of the central nervous system enclosed and protected by the spinal vertebrae; conducts messages (impulses) back and forth between your brain and body to control sensation and movement.

vertebra (plural vertebrae): 1 of 33 bones that form the spinal column. From top to bottom, there are 7 cervical, 12 thoracic, 5 lumbar, 5 sacral, and 4 coccygeal vertebrae. The top 24 bones are moveable.

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