

## Facial Nerve Problems

Twitching, weakness, or paralysis of the face are symptoms of a disorder involving the facial nerve, not a disease in itself. Abnormal movement or paralysis of the face can result from infection, injury, or tumors, and an evaluation by your physician is needed to determine the cause. An ENT-head and neck surgeon has special training and experience in managing facial nerve disorders.

### What Is The Facial Nerve?

The facial nerve resembles a telephone cable and contains 7,000 individual nerve fibers. Each fiber carries electrical impulses to a specific facial muscle. Information passing along the fibers of this nerve allows us to laugh, cry, smile, or frown, hence the name, "the nerve of facial expression."

When half or more of these individual nerve fibers are interrupted, facial weakness occurs. If these nerve fibers are irritated, then movements of the facial muscles appear as spasms or twitching. The facial nerve not only carries nerve impulses to the muscles of the face, but also to the tear glands, to the saliva glands, and to the muscle of the stirrup bone in the middle ear (the stapes). It also transmits taste from the front of the tongue. Since the function of the facial nerve is so complex, many symptoms may occur when the fibers of the facial nerve are disrupted. A disorder of the facial nerve may result in twitching, weakness, or paralysis of the face, in dryness of the eye or the mouth, or in disturbance of taste.

### How Does The Facial Nerve Work?

The anatomy of the facial nerve is very complex. The facial nerve passes through the base of the skull in transit from the brain to the muscles of facial expression. After leaving the brain, the facial nerve enters the bone of the ear (temporal bone) through a small bony tube (the internal auditory canal) in very close association with the hearing and balance nerves. Along its inch-and-a-half course through a small canal within the temporal bone, the facial nerve winds around the three middle ear bones, in back of the eardrum, and then through the mastoid (the bony area behind the part of the ear that is visible). After the facial nerve leaves the mastoid, it passes through the salivary gland in the face (parotid gland) and divides into many branches, which supply the various facial muscles. The facial nerve gives off many branches as it courses through the temporal bone: to the tear gland, to the stapes muscle, to the tongue (for taste sensation), and to the saliva glands.

### Bell's Palsy And Other Causes

The most common cause of facial weakness which comes on suddenly is referred to as "Bell's palsy." This disorder is probably due to the body's response to a virus: in reaction to the virus the facial nerve within the ear (temporal) bone swells, and this pressure on the nerve in the bony canal damages it.

In order to be sure that this is the cause of the facial weakness, and not something else, a special set of questions will be asked. After an examination of the head, neck, and ears, a series of tests may be performed. The most common tests are:

- Hearing Test: Determines if the cause of damage to the nerve has involved the hearing nerve, inner ear, or delicate hearing mechanism.
- Balance Test: Evaluates balance nerve involvement.
- Tear Test: Measures the eye's ability to produce tears. Eye drops may be necessary to prevent drying of the surface of the eye cornea).
- Imaging: CT (computerized tomography) or MRI (magnetic resonance imaging) determine if there is infection, tumor, bone fracture, or other abnormality in the area of the facial nerve.
- Electrical Test: Stimulates the facial nerve to assess how badly the nerve is damaged. This test may have to be repeated at frequent intervals to see if the disease is progressing.

#### Diagnosis, Prognosis, And Treatment Of Bell's Palsy

The three questions most often asked by the patient are: What is the cause (diagnosis)?, When can I expect recovery (prognosis)?, and What can be done to bring about the best recovery at the earliest possible moment (treatment)? In order to answer these questions, your doctor must perform an extensive evaluation to determine the cause and which area of the facial nerve is involved, so that the best treatment can be prescribed.

#### Treatment

The results of diagnostic testing will determine treatment.

- If infection is the cause, then an antibiotic to fight bacteria (as in middle ear infections) or antiviral agents (to fight syndromes caused by viruses like Ramsay Hunt) may be used.
- If simple swelling is believed to be responsible for the facial nerve disorder, then steroids are often prescribed.

- In certain circumstances, surgical removal of the bone around the nerve (decompression) may be appropriate.

## Help Your Recovery

When the facial nerve is paralyzed, considerable attention must be given to maintaining a healthy eye, which requires a constant flow of tears. These tears are spread out over the eye by blinking, but blinking is diminished or eliminated in facial nerve paralysis. Diminished blinking and the absence of tearing together can reduce or eliminate the flow of tears across the eyeball, resulting in drying, erosion, and ulcer formation on the cornea and possible loss of the eye.

Closing the eye with a finger is an effective way of keeping the eye moist. Use the back of the finger to ensure that the eye is not injured with the finger-tip. Protective glasses or clear eye patches are often used to keep the eye moist, and to keep foreign materials from entering the eye.

If the eye is dry, you may be advised to use artificial tears to keep it moist. The drops should be used as directed by your doctor. You may have to put one or two drops in the affected eye every hour while you are awake, and place ointment in your eye at bedtime.

## Rehabilitation

Patients with permanent facial paralysis may be rehabilitated through a variety of surgical procedures including eyelid weights or springs, muscle transfers and nerve substitutions. Some patients may benefit from a special form of physical therapy called facial retraining. Other medical treatments for complications of facial paralysis including excessive motion of the face or muscle spasm may involve surgical division of overactive muscles or weakening them by chemical injection. If these procedures are needed, your physician will discuss them with you.

## Conclusion

Disorders of the facial nerve, including paralysis, are not rare and have a variety of causes. The appropriate diagnosis and treatment are very important to achieving the best possible recovery of facial

nerve function. Even patients with permanent facial nerve injury can be helped by surgical procedures, if performed in timely manner, designed to improve facial function.