Instructions for patients with facial nerve palsy

Facial nerve

The facial nerve, also known as the nervus facialis, is the seventh cranial nerve out of the twelve pairs of cranial nerves. It is a mixed nerve, meaning it has both motor and sensory functions. The motor component controls the facial muscles of one side of the face, certain muscles above the hyoid bone, the cervical cutaneous muscle, and the muscle in the middle ear. The secretory-sensory component carries information from the anterior two-thirds of the tongue, the area of the auricle (external ear), and the external auditory canal. It also controls the lacrimal gland and the submandibular salivary gland. Similar to other cranial nerves, it is paired, with a right and left side. The facial nerve originates deep in the brain in the region called the pons, runs close to the vestibulocochlear nerve (also known as the statoacoustic nerve), and passes through anatomically narrow areas where various processes can potentially compress it, leading to dysfunction.

Symptoms of facial nerve palsy

Based on the described anatomy, the following symptoms can arise from facial nerve damage. The most noticeable is a disturbance in facial expression on one side, characterized by asymmetric forehead wrinkling, inability to fully close the eye, inability to purse the lips and whistle, difficulty in inflating the cheeks, inability to bare the teeth, and drooping of the corner of the mouth, which may result in fluid leakage during drinking. In more severe cases, speech may be affected. Depending on the location of the damage, additional symptoms may include tear production impairment (dry eye or excessive tearing), salivary gland dysfunction, altered taste perception, sensitivity to sounds, or "double hearing" (perceiving different pitches in each ear). Occasionally, facial palsy can be preceded by pain behind the ear or in the external auditory canal, and sometimes even headache.

Causes, examinations, treatment

There can be various causes of facial nerve palsy. Previously, it was mainly attributed to exposure to cold (Bell's palsy "e frigore"), but nowadays viral and bacterial infections are the most common causes, followed by autoimmune, vascular, metabolic, post-traumatic, or neoplastic causes.
Facial nerve palsy occurs slightly more frequently in women than in men, but it can also affect children, where it is often associated with neuroborreliosis.
During hospitalization, further investigations are carried out to determine the cause, including cerebrospinal fluid analysis obtained through a lumbar puncture.
This is preceded by a CT scan or magnetic resonance imaging of the head. Based on the results of the fluid analysis, the physician may initiate targeted treatment with antibiotics or antiviral medication. In some cases, additional evaluation by an ear, nose, and throat (ENT) specialist is performed.
Physiotherapy is an integral part of the treatment for facial nerve palsy. Its goals include assisting in the restoration of facial muscle function, preventing unwanted synkinesis (involuntary muscle movements), and providing support to the patient during the recovery

process. The healing process can take several weeks or even months, and in severe cases, complete restoration of facial movements may not be achieved. In selected cases, electromyographic examination (EMG) may be performed to determine the extent of nerve damage and prognosis.
Partial or complete facial nerve palsy can also occur as a postoperative complication, most commonly in the fields of neurosurgery and ENT. In such cases, the degree of anatomical nerve damage during surgery and its regenerative capacity are crucial factors. However, patients should adhere to specific measures, as described below. Spontaneous regeneration of the facial nerve after reconstruction usually occurs within months, making subsequent outpatient physiotherapy appropriate. However, primary wound healing following nerve surgery is of utmost importance. After facial nerve surgery, patients should avoid applying excessive manual pressure in the area beneath the jaw and below the affected side's auricle.
After diagnosis and further investigations have been completed, it is advisable to follow certain guidelines and subsequently consult with a physiotherapist

Regime measures:

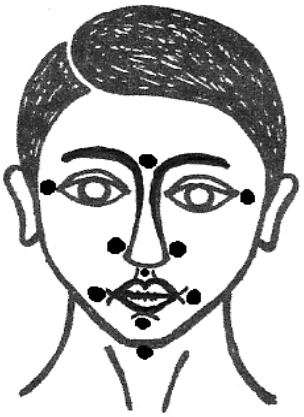
- It is important to protect the affected face from cold by covering it with a scarf, hat, hood, depending on the situation and season. During hospitalization, a folded towel is sufficient to protect against drafts.
- If unable to fully close the eye, it is necessary to apply eye drops several times a day, use an eye ointment at night, and cover the eye with layers of gauze squares and tape.
- During speaking, the patient lightly supports the healthy side near the mouth to minimize asymmetry by relying on the stronger side of the face. It is advisable to avoid prolonged conversations, especially over the phone.
- If possible, the patient should limit facial expressions. Patients with pronounced facial expressions prior to the illness are more susceptible to unwanted facial synkinesis.
- Reading, watching television, and working on the computer should be limited, taking into account the specific patient and the degree of eye involvement.
- The preference for sleeping on one side or the other is debatable. The crucial aspect is for the patient to get enough sleep, ideally alternating sides. However, if there is swelling in the affected facial area, it is more appropriate to sleep on the opposite side.

Physiotherapy during hospitalisation

During hospitalization, the physiotherapist attends to the patient on a daily basis, with therapy possibly reduced to one day on weekends. In the acute stage of facial paralysis, it is important to note that the mobility may initially worsen within the first week, and it should not cause alarm.
The care provided during the acute phase includes:

- Examination: Assessment of facial symmetry at rest and during speech, evaluation of the degree of activity of individual facial muscles through visual observation and palpation.

- Relaxation training for facial and masticatory muscles.
- Gentle facial massage: This helps to relax the healthy side and tonify the affected side.
- Manual vibratory stimulation of individual facial muscles and practice of isolated movements.
- Self-therapy exercises: Training the patient in active exercises of the facial muscles with the use of a mirror for visual feedback.
- Additional therapeutic concepts may be employed, such as Vojta reflex locomotion, stimulation of specific points according to Morales, kinesiotaping, etc.
- Autotherapy
- self-massage of the affected side of the face, from the chin upwards
- light 'pinching' of the entire affected side of the face, especially in the mouth area
- vibrating devices can also be used - gentle vibrations
- exercise in front of a mirror to imagine movement or very gently 'hint' at movement: raising eyebrows/frowning/puckering mouth/smile/pressing lips/blowing both cheeks - possibly with lips held on the affected side
- <u>Pressure point stimulation according to Morales:</u>
    - The points are represented by a black dot in the figure:
        - in the middle line = between the eyes/under the nose/under the lower lip and under the chin;
        - on the sides = outer edge of the eye slit, next to the nasal ridge, next to the corner of the mouth.
    - Stimulation by finger pressure for approximately 20 s for each point.



Outpatient physiotherapy

Subsequent ambulatory care, ideally provided near the patient's place of residence, may include the following in addition to the above-mentioned interventions:

- Gentle electrostimulation is applied in cases of post-traumatic, post-operative, or progressively worsening conditions.
- Acupuncture, performed by a specially trained physician, has been found to be supportive in certain cases, although it is not covered by health insurance.

The use of thermal procedures has certain limitations:

- Thermal procedures are not performed during the acute phase when the cause of the paralysis is being determined.
- In cases of inflammatory (herpetic or bacterial) involvement, thermal procedures should not be applied during antiviral or antibiotic therapy, as well as for three months following the treatment.
- If heat exacerbates pain, it should be avoided.
- The application of heat is suitable for chronic conditions and for addressing incipient or existing contractions (shortening) of facial muscles.

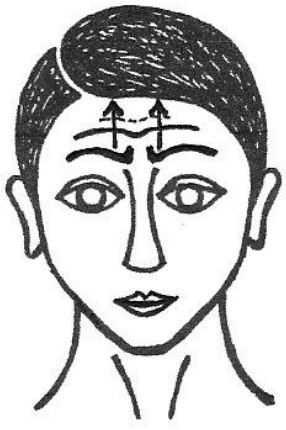
Tips for performing thermal procedures:

- Steam application to the affected side of the face using repeatedly heated cotton towels, covered with additional dry fabric. The towels should be changed every 3 minutes, with a total application time of 20-25 minutes.
- Dry heat from "instant" compresses, where heat is generated by chemical reactions or special gel-filled bags that are heated in water. A cotton fabric is placed between the bag and the skin, and the bag is usually covered with a terry towel. The application time is 20-25 minutes.
- Fabric bags filled with less heat-retaining materials (buckwheat, cereal husks, legumes) can be heated at low power in a microwave oven. The application time is 20-25 minutes.

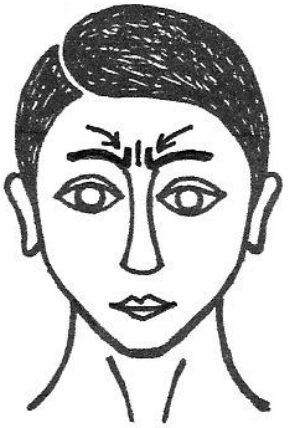
Authors: A team of physiotherapists from the Department of Rehabilitation and Sports Medicine, 2nd Faculty of Medicine, Charles University, and Motol University Hospital, in collaboration with the Department of Neurology, 2nd Faculty of Medicine, Charles University, and Motol University Hospital; Visual documentation: David Stránský.

Examples of active excercises for facial muscles

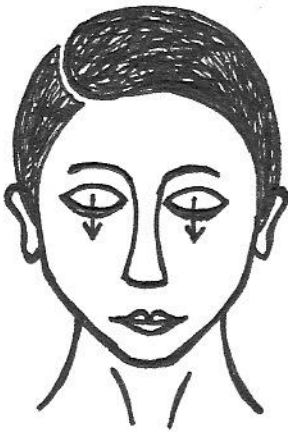
Ideally after consulting with a physiotherapist!



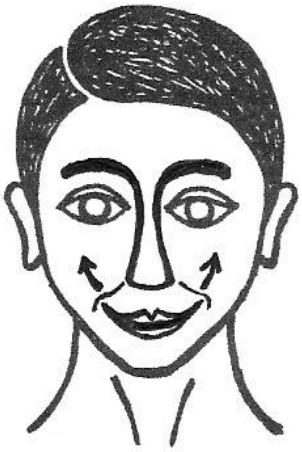
Forehead wrinkling - without moving the mouth



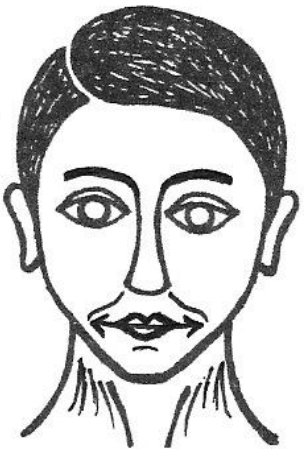
Furrowing the brow - again, without moving the mouth



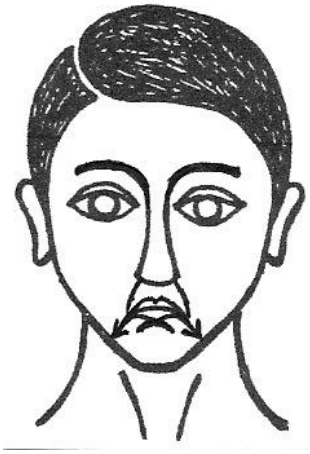
Eye closure - be careful not to raise the corner of the mouth upwards



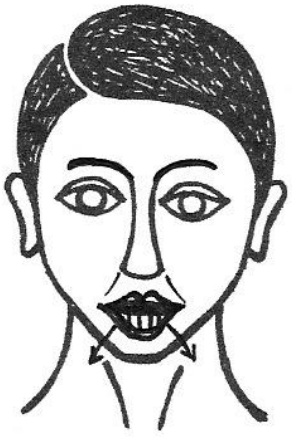
Lifting the corners of the mouth diagonally upwards - without squinting the eyes.



Pulling the corners of the mouth sideways - it is a small range of motion.

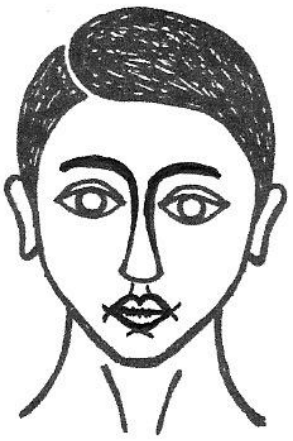


Pulling the corners of the mouth diagonally downwards - during the movement, the platysma muscle on the neck may be involved.



Pulling the lower lip downwards or showing the lower teeth

Protrusion of the lower lip upwards or lifting of the upper lip with the lower.



Pouting of the lips – do not close the eye

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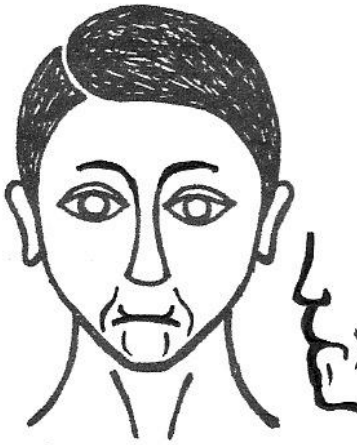
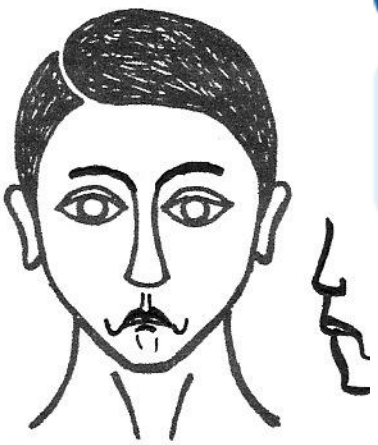
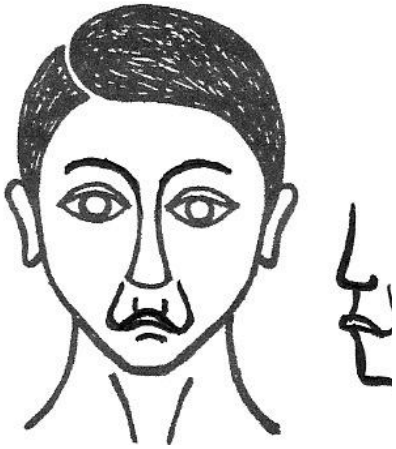
Inflating the healthy cheek or blowing air from one cheek to the other.



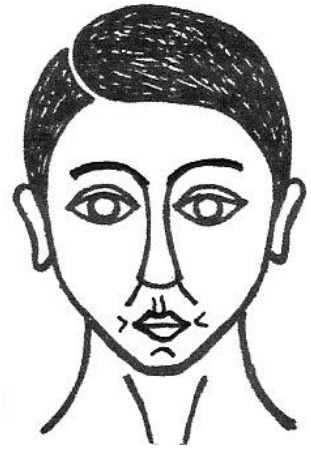
Drawing the lips between the teeth



Crossing the upper lip over the lower lip.



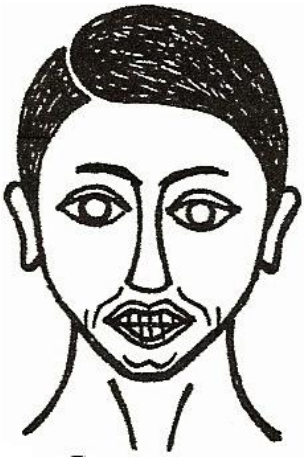
Crossing the lower lip over the upper lip.



"Pouting" - bringing the corners of the mouth together without puckering.

"Carp" - protruding the partially open lips forward.

Whistling or attempting to whistle - be careful not to close the eye.



Baring the teeth

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