Hemifacial Spasm

Overview
Hemifacial spasm (HFS) is an involuntary twitching or contraction of the facial muscles on one side of the face. Medication, surgery, and botox injections are treatment options to stop the spasms and relieve the discomfort. Each treatment offers benefits, but each has limitations. You and your doctor should determine which treatment is best.

What is hemifacial spasm?
Hemifacial spasm (also called tic convulsif) is an involuntary twitching of the facial muscles on one side of the face. The facial muscles are controlled by the facial nerve (seventh cranial nerve), which originates at the brainstem and exits the skull below the ear where it separates into five main branches (Fig. 1). The facial nerve is primarily a motor nerve, meaning it controls muscles that move the eyebrows, close the eyes, and move the mouth and lips.

What are the symptoms?
In 92% of cases, the spasm starts near the eye and progresses down the face over time. In the other 8% it starts near the chin and progresses upward. The twitching is usually not painful, but it can be embarrassing and interfere with normal expression and vision.

What are the causes?
Hemifacial spasm can be caused by injury to the facial nerve, a tumor or blood vessel compressing the nerve, or Bell's palsy. The most common cause is compression of your facial nerve by the anterior inferior cerebellar artery where the nerve begins at your brainstem. The compression causes the nerve to misfire making your facial muscles contract. This condition is related to trigeminal neuralgia—an irritation of the fifth cranial nerve that causes severe facial pain. Both hemifacial spasm and trigeminal neuralgia are caused by nerve compression from a blood vessel, yet differ in whether the sensory nerve or motor nerve is compressed.

Who is affected?
Hemifacial spasm is rare, affecting only 8 people in 100,000 in the US. The average age of onset is 44 years and occurs slightly more in women.

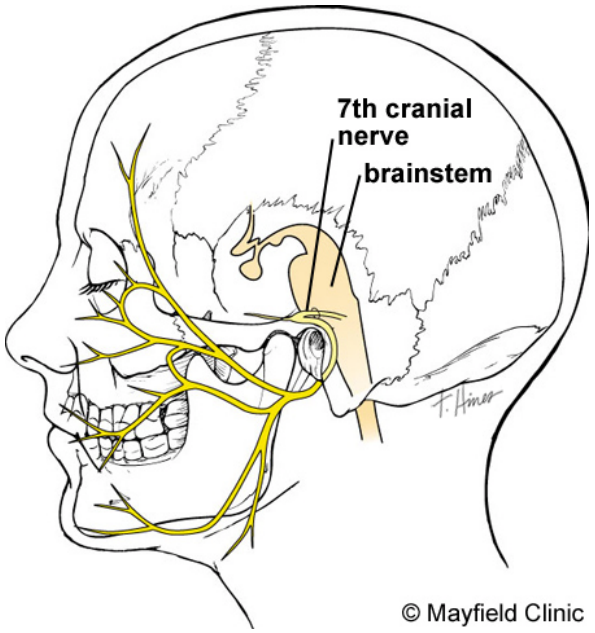


Figure 1. The facial nerve (7th cranial nerve) originates in the brainstem and exits the skull beneath the ear where it has five main branches that control the muscles of facial expression.

How is a diagnosis made?
First, your doctor will carefully review your medical history and perform a neurological exam. An MRI scan may be ordered to rule out other conditions such as a brain tumor, aneurysm, or AVM that may be causing facial nerve compression. Next, you may have an electromyogram (EMG) study of the face. An EMG is often done along with a nerve conduction velocity (NCV) study to measure your muscle and nerve electrical activity.

What treatments are available?
Medication: Your doctor may prescribe anti-convulsant drugs such as carbamazepine (Tegretol) or phenytoin (Dilantin) to block firing of the nerve. Muscle relaxants such as baclofen (Lioresal), diazepam (Valium), and clonazepam (Klonopin) may also be prescribed. These drugs can be successful in treating mild cases but cause side effects (e.g., drowsiness, unsteadiness, nausea, skin rash, dependence). Therefore, patients are monitored routinely and undergo blood tests to ensure that drug levels remain safe and that the patient doesn't develop blood disorders.

Botox injections: Botulinum toxin, or Botox, is a protein produced by the C. botulinum bacteria that

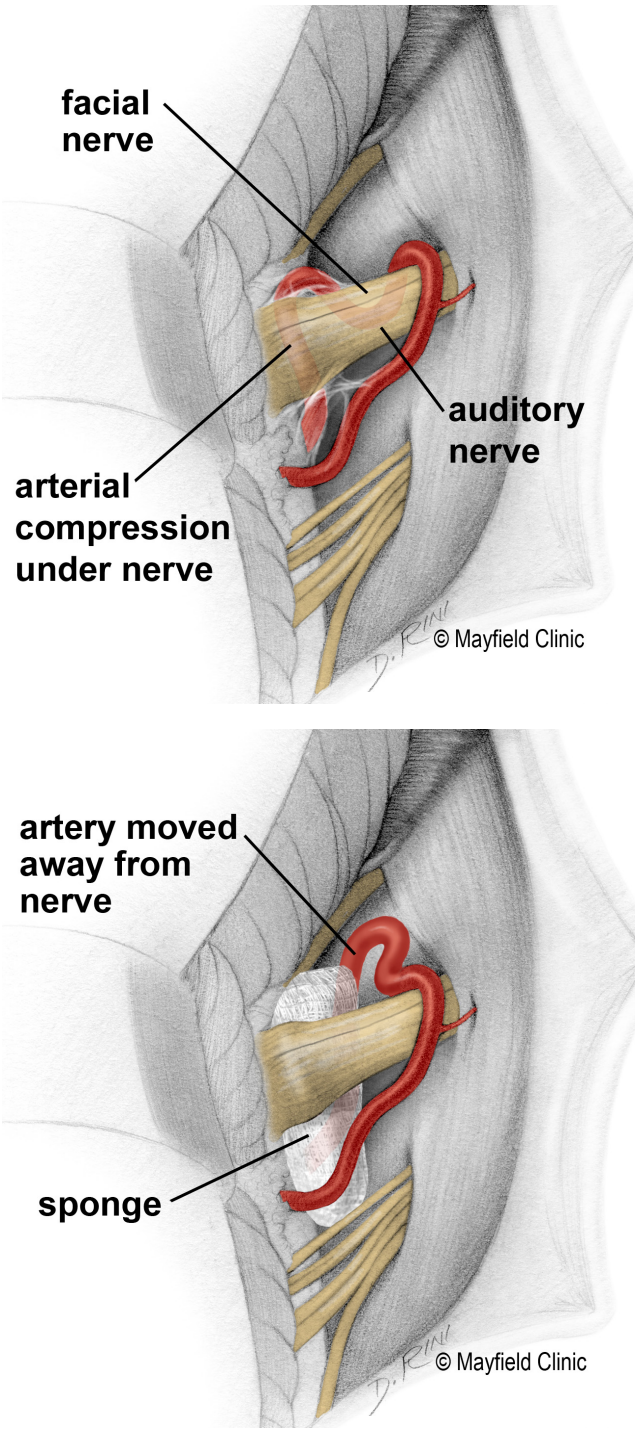
cause muscle paralysis by blocking the electrical messages that "tell" the muscle to move. Messages are carried by a neurotransmitter called acetycholine. Botox blocks the release of acetycholine; as a result, the muscle doesn't receive the message to contract. A very fine needle is used to deliver 1 to 3 injections into your facial muscles. Your doctor will decide which muscles. Botox usually works within three days and usually lasts for three months. Botox injections can be repeated indefinitely, however the effectiveness diminishes over the years due to the buildup of antibodies. Side effects include temporary facial weakness, drooping eyelid, eye irritation and sensitivity.

Surgery: Medications and injections sometimes fail to control spasms or cause side effects. A procedure, called microvascular decompression**,** can relieve the nerve compression. A neurosurgeon makes a hole in the bone (craniotomy) at the back of your head to expose the facial nerve at the brainstem. A Teflon sponge is placed between the offending blood vessel and the facial nerve (Fig. 2). About 90% of patients return to their regular life style after two months. Like all surgeries, there are risks. More frequent side effects include decreased hearing and facial weakness. Your surgeon will use intra-operative monitoring of the 7th (facial) and 8th (hearing) nerves during surgery to decrease these complications. In 90% of surgical cases there appears to be a blood vessel compressing the nerve. In general, results of surgery including (1):

- 85% experience immediate relief from spasms
- 9% report diminished spasms
- 2% report delay in facial spasm in the month following surgery
- 7% experience a recurrence of spasms after surgery

Clinical trials

Clinical trials are research studies in which new treatments—drugs, diagnostics, procedures, and other therapies—are tested in people to see if they are safe and effective. Research is always being conducted to improve the standard of medical care. Information about current clinical trials, including eligibility, protocol, and locations, are found on the Web. Studies can be sponsored by the National Institutes of Health (see www.clinicaltrials.gov) as well as private industry and pharmaceutical companies (see www.centerwatch.com).



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Sources & links

If you have more questions or would like to schedule an appointment with one of our neurosurgeons, please call (515) 241-5760. Our offices are located on the Iowa Methodist Campus.

Sources

1. Payner TD, Tew JM Jr: Recurrence of hemifacial spasm after microvascular decompression. Neurosurgery 38:686-691, 1996.
2. Samii M, Günther T, Iaconetta G, et.al.: Microvascular decompression to treat hemifacial spasm: long-term results for a consecutive series of 143 patients. Neurosurgery 50:712-719, 2002

Links

www.hfs-assn.org

Glossary

anticonvulsants: drugs that stop or prevent convulsions or seizures. Used in patients with facial pain to block firing of nerves in order to control pain.

Bell's palsy: a weakness or paralysis on one side of the face caused by viral or physical damage to the facial nerve.

Botox: (Botulinum toxin, type A) a protein produced by the C. botulinum bacteria that blocks the neurotransmitter acetylcholine and relaxes muscles. Used as a treatment for uncontrollable muscle spasms and cosmetically to reduce appearance of wrinkles.

facial nerve: (seventh cranial nerve) a sensory and motor nerve that sends signals to your facial muscles, taste buds on the front of your tongue, sublingual salivary glands, and lacrimal glands. A small branch goes to your ear to help regulate hearing.

microvascular decompression: surgical placement of a sponge between an offending vessel and nerve to prevent compression and misfiring of the nerve.

trigeminal neuralgia: a painful disorder of the fifth cranial nerve (trigeminal nerve). Irritation of this nerve can cause intense pain that usually affects one side of the face usually in the forehead, cheek, jaw, or teeth.

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