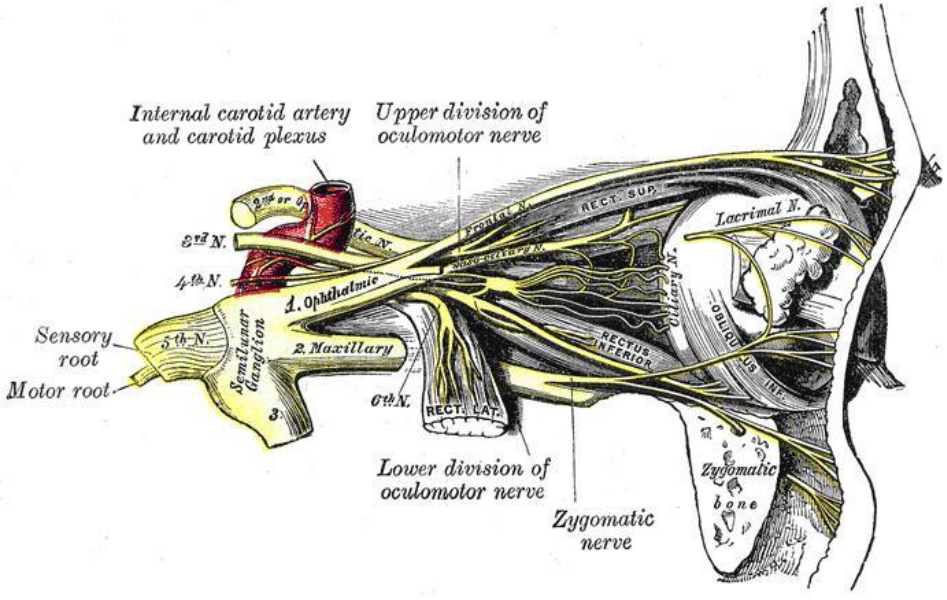
Trigeminal Neuralgia

The head is arguably the most complex and fascinating part of the human body. Think of all the different things that it does: we smell with our nose, we see with our eyes, we taste with our tongues, and we hear with our ears. All of these unique senses, as well as the ability to feel on the skin of the face, to smile and laugh or cry, to chew and swallow, and to talk, are controlled by 12 separate nerves, collectively called "the cranial nerves." For example in the descriptions given above, our sense of smell is carried out by the 1st cranial nerve whilst the simple act of moving our tongue is controlled by the last, or 12th cranial nerve.

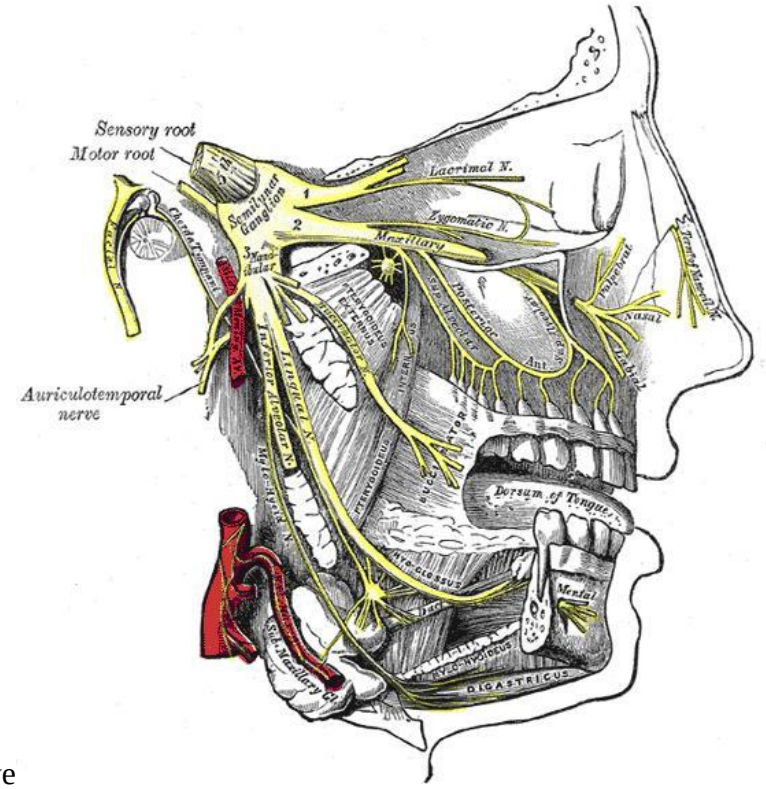
Trigeminal neuralgia is a specific pain syndrome which involves the 5th cranial nerve, called the trigeminal nerve. This nerve, (of which there are two, one on each side), supplies feeling on the skin of the scalp, forehead, cheek, and jaw. The major components of feeling in the human body can be broadly classified as: pain, temperature, touch, vibration, and the sense of position, in other words an awareness of where various parts of our body are in space, at any one time.

As the name implies, the trigeminal nerve splits into three divisions, the first division supplies the skin over the scalp and forehead, the second division supplies the skin over the cheek and upper lip, whilst the third division supplies the skin of the lower lip and jaw. It also supplies feeling inside the mouth, the gums, and the teeth. When you have a toothache, you feel the pain because the sensation travels back along the trigeminal nerve to the brain.

The FIRST DIVISION of the trigeminal nerve



The SECOND AND THIRD DIVISION of the trigeminal



nerve

What is neuralgia?
To a neurologist this term has a quite specific meaning. The best word to describe the characteristic of the pain of trigeminal neuralgia is "wincing." This is because the pain, when it comes, is so sudden, unexpected, and so sharp, almost like an electric shock, that it literally will make the patient wince and grimace and utter a cry of pain and sometimes reflexively clutch the side of the face. Indeed, if the pain does not cause this sharp wincing effect, then it is not considered to be strictly neuralgia.

What has made the diagnosis somewhat difficult in the past, is that the term neuralgia has been used incorrectly and too broadly. The literal meaning is "nerve pain" and so it has been used in the past to describe any sort of severe pain. Sometimes a bad toothache was described as neuralgia or the pain of an infected sinus. Such pain, however, is usually dull, aching, and boring in quality. This is not what most neurologists would regard as neuralgia in the sense of the sharp wincing pain described in trigeminal neuralgia.

The vast majority of causes of this condition are called "idiopathic." This implies that there is no obvious cause or explanation. Many neurologists now accept, especially in older patients, that there may be a blood vessel that lies near the nerve at it's beginning in the brain, which occasionally touches the nerve. It is thought that this may eventually rub the insulation, or myelin, around the nerve quite thin and lead to "short circuits" within the nerve fibers and literally send an electric shock-like impulse down the nerve to the

face. Normally blood vessels and nerves lie close together but never touch, but as we get older the blood vessels, especially, become somewhat tortuous and stiff and even kinked and in this situation they may well occasionally rub against the nerve.

In younger patients, there may be another explanation, for example in multiple sclerosis a plaque or scar in the brainstem may develop at the origin of the trigeminal nerve. Rarely a slow-growing tumor may be found in and around the trigeminal nerve closely related to the hearing nerve inside the skull.

Incidence

Trigeminal neuralgia is one of the more common neurologic problems, especially in the elderly, and about 15,000 people will be diagnosed with the condition each year for the first time in the United States alone.

Symptoms and examination

Besides the typical and diagnostic sharp wincing pain, there are several other distinctive features of trigeminal neuralgia. Firstly, patients will often notice that a gentle touch to the skin of the face will provoke a spasm of pain. The simple act of shaving or applying make-up or even the wind blowing onto the face may "trigger" an attack. The neuralgia becomes even more disabling when such common things as chewing, laughing, talking, or cleaning one's teeth provokes the pain. These are called "trigger factors" and these factors are part of the definition of trigeminal neuralgia. Finally, and again this is part of the diagnosis, the pain must be strictly on one side of the face, either right or left, but not on both sides of the face at the same time.

Importantly, especially in idiopathic trigeminal neuralgia, when the face is examined, there must be no evidence of any abnormality; in other words, a person must be able to feel normally over the face and scalp. If there is any evidence of a permanent or fixed numbness then it is important that investigations are undertaken to exclude a tumor or a cyst, or multiple sclerosis. Your neurologist will normally order an MRI scan of the brain and trigeminal nerve because sometimes a kinked or abnormal blood vessel that may be touching the nerve can be seen.

Treatment

The vast majority of patients with trigeminal neuralgia will be treated medically. In a small proportion of patients surgical intervention is sometimes justified. The drug that seems to be most successful is the same as that used to treat epilepsy.

The most common anticonvulsant used is carbamazepine, also known as Tegretol. The dosage required must be tailored to each individual patient, and your doctor will slowly and progressively increase the
medication until the neuralgia settles. Many patients respond to a small dose, whereas others seem to require much larger doses, sometimes at the risk of causing unacceptable side-effects such as dizziness or
drowsiness or loss of balance.

Other anticonvulsants may be chosen, especially if there is any sensitivity to carbamazepine. Rarely if one drug does not work, your neurologist may recommend a combination of two anticonvulsant drugs.

Surgery is generally a last resort and indicated in those people who do not respond to medication or who require large doses and develop unacceptable side-effects, or who have an adverse reaction to the
medication. The surgical treatment can be as minor as blocking the branches of the trigeminal nerve near the jaw or angle of the mouth, when the surgeon will often use an injection of alcohol or high-frequency radio waves or freeze the nerve, in an attempt to "stun the nerve" so that it will not transmit the sharp, shock-like pains toward the face. These procedures are generally not permanent.

The more invasive option is a relatively major neurosurgical procedure on the brain. In this case the surgeon will try and separate the trigeminal nerve root from the kinked blood vessel and often will
place a piece of fat or tissue between the two so they do not rub together as before. This is called a microvascular decompression. It is the most successful surgical method for dealing with trigeminal neuralgia
but equally the most invasive so that generally the management of trigeminal neuralgia involves firstly drugs, secondly an attempted at some form of local block of the nerve near the ear or jaw, and then finally consideration of decompression of the nerve.

Summary
Idiopathic trigeminal neuralgia is a sharp, wincing-like pain produced when a kinked blood vessel rubs the insulation from the nearby trigeminal nerve. These spasms of pain tend to come as episodes often
lasting weeks or sometimes months and the majority of people notice that often the neuralgia settles spontaneously. For this reason treatment is usually conservative in the first instance using drugs to settle things down in the hope that the pain will not return when the medication is ceased. If, however, there are unacceptable side-effects from the medication, or the pain does not dissipate with drugs or persists for many months, then a surgical option may be offered.

This information was written by Graham Norton FRACP, and is herewith used with permission. It was last reviewed April 8, 2006.