

Neurology & Neurosurgery Associates, P.A.

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A disabling and frustrating syndrome

Trigeminal Neuralgia or Tic Douloureux

Trigeminal neuralgia is a devastating but fortunately rare syndrome characterized by paroxysmal, lancinating facial pain. It affects about 150 out of every one million people, is slightly more common in females, and usually affects patients in their fifties. The pain comes in quick electrical bursts lasting only seconds to minutes, but sufferers describe it as a 'red hot wire being twisted in the face'. Such episodes occur in bouts lasting days to weeks and are thankfully followed by remissions lasting weeks to years. The pain can be triggered by common activities such as chewing, shaving, talking, and yawning. The face often has exquisitely sensitive points that trigger the excruciating pain. Even a light breeze can be so feared that the patient wears a scarf over their face and avoids air-conditioning.

Trigeminal neuralgia is the most common abnormality of the fifth cranial nerve, also known as the trigeminal nerve, which is the largest of the nerves emanating directly from the brain. The trigeminal nerve is responsible for sensation of the entire face including the teeth, gums, inside of the mouth, and most of the tongue. The sensory nerves of the face enter the skull through 3 separate paths before merging to form the trigeminal nerve. Their paths meet at the base of the skull in a small recess called Meckel's Cave, at which point the 3 nerve paths join forming the Gasserian Ganglion. From here the trigeminal nerve enters the brainstem. (Figure 1)

There are actually two trigeminal neuralgia syndromes: idiopathic and symptomatic. The symptomatic variant, which is much less common, refers to the concept that something, like a tumor or infection, is causing the pain syndrome. The idiopathic variant is what most people consider true Trigeminal Neuralgia, and its cause is not really known. This idiopathic variant is the subject of this



article. There are several theories as to the etiology and pathogenesis of idiopathic trigeminal neuralgia. Most of these revolve around the idea that a vein or artery is compressing the nerve, which Walter Dandy first

proposed early in the twentieth century. One theory is that the pressure from the offending vascular structure erodes the insulating sheath from around the nerve fibers, allowing the nerve fibers to "short circuit". Another theory is that the brain requires a constant input of information along the normal nerve to prevent pain, referred to as inhibitory action. When the nerve is injured this normal input is halted, causing the brain to sense pain. This inhibitory model is common in brain function and actually explains how several medications function.

Medications are the first form of treatment for trigeminal neuralgia. Most sufferers, at least 70%, can be helped with medications alone. The most effective, and therefore most commonly used drug is carbamazepine (Tegretol). Two other useful medications are phenytoin (Dilantin) and baclofen (Lioresal).

Again, these medications function by increasing the activity of the nerve cells, thus allowing the normal inhibitory function to control the pain. Unfortunately up to 30% of patients become refractory to medical treatment after 2 years, and therefore develop recurrent pain.

There are several surgical options available for patients who do become unresponsive to medical treatment of trigeminal neuralgia. The most common procedure, which is to decompress the trigeminal nerve,

stems from Dandy's observation that trigeminal neuralgia is associated with compression of the nerve by a vascular structure. Peter Janetta popularized this procedure by using the operating microscope, which allowed the surgery to be performed safely through a small opening. The goal of surgery is to find the offending vessel, usually the superior cerebellar artery, and place padding between it and the trigeminal nerve. This procedure, called a MicroVascular Decompression, is effective in 80-90% of patients with low rates of complications, less than 5%. The possible complications range from minor concerns such as facial numbness, to common risks such as hemorrhage and infection, and even to catastrophes such as stroke and death.

Other options include percutaneous methods of attacking the nerve at the base of the skull. These are methods of essentially injuring the nerve to varying degrees without a formal operation. The term percutaneous implies using a needle which is passed through the cheek into Meckel's Cave at the base of the skull. (Figure 2) The various percutaneous methods include using radio frequency or heat, glycerol, or a balloon to "injure" the Gasserian ganglion. Gamma-knife radiosurgery is a newer method that has been developed using radiation and not requiring any cuts or needles. These various methods all work about the same, giving good results in 90-95% of patients. As compared to the microvascular decompressive surgery, the risks of these procedures are lower in terms of catastrophes such as strokes

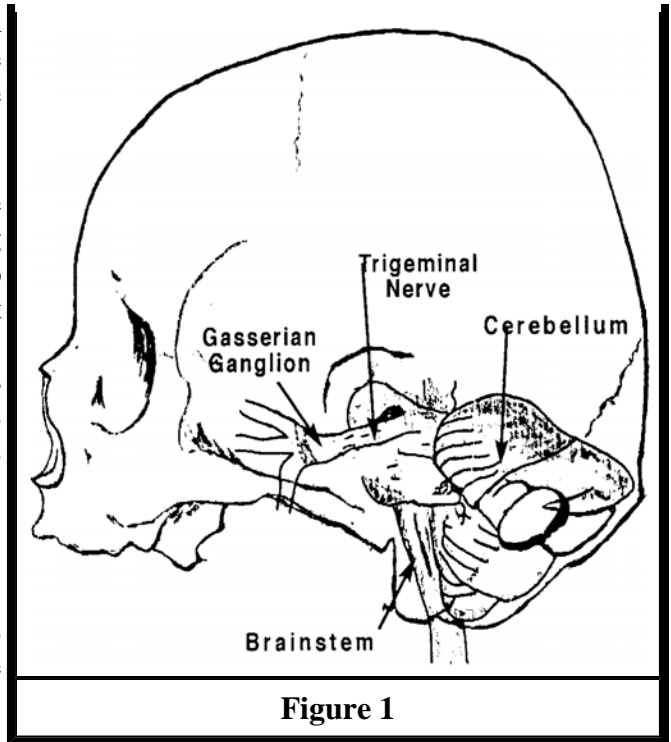


Figure 1

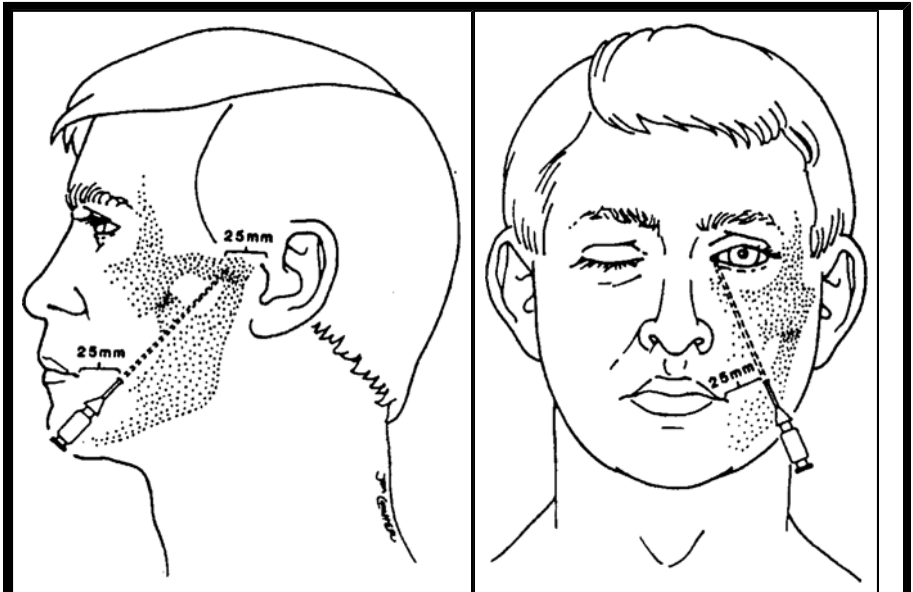


Figure 2: The usual needle entry site is 25 mm lateral to the angle of the mouth. The needle tip is aimed at the medial aspect of the ipsilateral pupil in the left-right (X) plane and at a point 25 mm anterior to the tragus in the anteroposterior (Y) and superior-inferior (Z) planes.

(Figure 2) The various percutaneous methods include using radio frequency or heat, glycerol, or a balloon to "injure" the Gasserian ganglion. Gamma-knife radiosurgery is a newer method that has been developed using radiation and not requiring any cuts or needles. These various methods all work about the same, giving good results in 90-95% of patients. As compared to the microvascular decompressive surgery, the risks of these procedures are lower in terms of catastrophes such as strokes

or death but are higher in terms of more minor complications such as numbness. The negative aspect of the percutaneous procedures is that they often do not give permanent relief. The relief continues in only about 60% of people after several years, then the procedure has to be repeated.

The final option for people who continue to have pain is to cut the trigeminal nerve. The surgery is performed essentially the same as for the microvascular decompression, but the nerve is severed instead of padded. This usually results in permanent relief, but there is an increased incidence of painful numbness in the face. Also there is more concern for future corneal injury due to the fact that the eyeball is completely numb and can be scratched without the usual blink reflex.

At Neurology and Neurosurgery Associates we offer a full range of treatments for Trigeminal Neuralgia. Patients usually first present to the neurologists, who diagnosis the syndrome by listening to the patient's description of the pain and performing a neurologic examination. Then they obtain a MRI of the brain to ensure that there is no underlying tumor or other abnormality. The neurologists usually initiate treatment with the previously mentioned medications. If the patient is not successfully treated with medications they will then refer the patient to the neurosurgeons for surgical treatment. The neurosurgeons routinely offer the Microvascular decompression to all patients that are reasonably healthy as it is considered a safe procedure with a good rate of permanent cure. This operation usually takes around 4 hours and requires approximately 3 days in the hospital. If the patient is not in reason-able health, or they are simply not interested in undergoing a formal operation, they have a choice of two percutaneous procedures at Neurology and Neurosurgery Associates: glycerol or balloon compression rhizotomy. These procedures take about 1 hour and require only an overnight hospitalization.

Trigeminal neuralgia is a disabling and frustrating syndrome. Most patients have symptoms for weeks before the diagnosis and treatment is initiated. In fact, it is common for patients to first present to their dentists and not be diagnosed until after having dental surgery. At Neurology and Neurosurgery Associates we are fully prepared to diagnose and treat trigeminal neuralgia. Please let us know if we can help you or your loved one with this frustrating and painful disease.

Lloyd I. Maliner, M.D.

Neurosurgeon

Neurosurgery Clinics of North America 8:1, W.B. Saunders Co., 1997.

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"Involved in the entire diagnostic process

Major Role of Physician's Assistant

Physician's assistant (PA) plays a major role in the medical field. PA's are being utilized in all medical and surgical specialties. Their educational levels prior to achieving the PA degree is varied such a RN, pharmacist, biologist, etc. The PA degree, which ranges from a Bachelor's to a Master's, includes 12 months of didactic courses and 12 months of clinical affiliations. After graduation one then enhances their training by joining a specialty team. Depending upon what specialty they are employed in, their roles may vary. In this article we will talk about the neurosurgical PA specialty. Victoria Wilcox works as a PA for this group under the direct supervision of the neurosurgeons.

Victoria Wilcox graduated from Nova Southeastern University. She brings nine years of experience of neurological and orthopedic conditions when she worked as an Occupational Therapist.

In a typical day in the neurosurgical office, Victoria finds herself involved in the entire diagnostic process of the

patient. She gathers the data from the history and physical exam from each patient using the following criteria.

1. History:

- **Pain:** Quality, Frequency, Duration and Activity that worsens/improves
- **Weakness/Paresthesia:** Location, Progression, Intermittent / Ongoing, Bowel & Bladder Dysfunction and Footdrop
- **Past History:** Medical, Surgical, Social and Medications / Allergies

The physical exam done on each patient is specific to neurosurgery. Along with the other physical findings, it is important to note these individual characteristic features.

2. Physical Exam:

Cognitive Status, General Appearance, ROM/Muscle Strength, Cranial Nerves II-XII, Cerebellar Function, Gait Analysis, Sensory, Deep Tendon Reflexes and keeping in mind pathological lesions performing specific tests i.e. straight leg raise, Hoffman's sign, Babinski.

The final process involved with the patient, depending on prior diagnostic tests, allows the PA to diagnose and review the treatment plan with the surgeon. This then leads to discussion with the patient.

Physician's assistant augment the evaluation and treatment but do not replace the treatment of the surgeon. If at any time a patient feels uncomfortable with the involvement of the P.A., that patient should voice his / her concern.

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Multiple Sclerosis Evolution in Treatment

There are now three agents that help prevent the relapses of multiple sclerosis. These include:

- 1) Copaxone, which is given subcutaneously every day.
- 2) Avonex, which is an interferon and is given once a week intramuscularly.
- 3) Betaseron, an interferon that is given every other day.

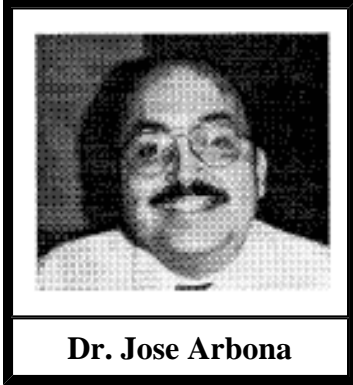
All three of these agents have side effects, but the Copaxone has the fewer of the three. They are all effective in preventing relapses of the disease by one third. The interferons cause side effects which simulate the flu (muscle aches and pain, fever, chills). Copaxone, on the other hand, has only minor side effects.

An oral form of Copaxone is in the works.

Pulsed steroids remain the mainstay of symptomatic treatment and in some instances for prevention.

My own preference is to combine Copaxone with Avonex. Avonex has an effect upon the T-cells, while Copaxone acts as a myelin shield. With this combination, perhaps patients would have a marked reduction in the number of attacks, perhaps by two-thirds. Undoubtedly there will be new drugs in the near future.

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Jose Arbona M.D., Board Certified Neurologist Joins Neurology and Neurosurgery Associates, PA

Dr. Jose Arbona and family come to us from Kalamazoo, Michigan. Dr. Arbona practices a broad range of adult neurology. However, he has special training and interest in the field of electromyography.

He attended medical school at University of Puerto Rico and then moved to Detroit, Michigan where he did his Neurology Residency and electromyography Fellowship training at Wayne State University. We welcome Dr. Arbona and his family to our group.

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● Neurology and Neurosurgery Associates, PA.

50 2nd Street S.E.

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Additional offices available to patients of Neurology and Neurosurgery Associates P.A. located at:

● Cypress Medical Building

1705 US Hwy 27 North, Suite 201

Davenport, FL 33837

● *Sebring Office

Rehabilitation Center

6325 US Hwy 27 North, Suite 201

Sebring, FL 33870

 *Lakeland Office

519 Buena Vista

Lakeland, FL 33805

***New Locations**

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