

## With many treatment options available, trigeminal neuralgia pain can be curbed

Achieving real and long-lasting pain relief from trigeminal neuralgia usually requires trying several different approaches before arriving at the right one.

Reasons? There are a number of different trigeminal neuralgia sub-types, and the way each manifests pain symptoms can vary greatly from one patient to the next.

Fortunately, quite a few treatment options exist to cover all of the sub-types. Each has been found safe and effective. (The latest to be so deemed being microvascular decompression for persistent or recurrent trigeminal neuralgia. Researchers presenting findings at the recent American Association of Neurological Surgeons annual meeting in Philadelphia cited a Drexel University College of Medicine study showing microvascular decompression's success rate to be upward of 80%.)

### Use care in diagnosing

The International Association for the Study of Pain characterizes trigeminal neuralgia (TN) as a sudden, usually unilateral, severe, brief, stabbing, recurrent pain that occurs in the distribution of one or more branches of the fifth cranial nerve.

Sufferers find it so painful that, in some instances, they are unable to speak or eat. A fairly recent study estimated that fully one-third of TN patients experience difficulty performing work at their place of employment because of the pain. Between attacks, fear of an episode's onset can become so overwhelming that

some patients become incapable of any other thought.

TN typically onsets after around age 50 and occurs in roughly six of every 100,000 women and in nearly four of every 100,000 men. Hypertension or multiple sclerosis are considered to be risk factors.

The pathophysiology of this condition is not fully understood. It is generally thought that pulsatile vascular indentation (i.e. compression) of the trigeminal nerve root entry zone, leading to focal demyelination and aberrant neural discharges, is the cause in a majority of cases. Age-related redundant looping of intracranial vessels apparently results in neurovascular contact as these vessels pass alongside cranial nerves emerging from the brainstem in the posterior fossa. An artery – chiefly the superior cerebellar artery or one of its branches – most often proves to be the vessel at fault (although venous compression of the nerve root itself can also be the source of the trouble).

Diagnosis is reached by a careful clinical history. Symptoms suggestive of TN include recurrent attacks of severe, paroxysmal facial pain. This pain may strike once or in rapid succession, lasting several seconds or longer each time. If in succession, the strikes can occur in intervals of minutes or even hours. In any event, the pain is described as sharp or piercing. Almost invariably it will be unilateral in terms of location and will somewhat equally affect the mandibular and maxillary divisions of the trigeminal nerve, with the minuscule remaining balance spilling over into the ophthalmic division.

### From meds to surgery

The starting point for treatment is drug therapy, for it happens that TN very often responds to antiepileptic drugs. Thus, carbamazepine is considered to be the drug of first choice. With carbamazepine, the dose must be titrated according to pain; there can occur a loss of efficacy over time and this will necessitate dose incrementation (or the addition or substitution of a second drug).

Also effective as TN pain relievers are oxcarbazepine and baclofen. Gabapentin and phenytoin are used, as well, but the evidence of their efficacy is not quite as strong. Investigators report seeing promise in still other drugs, chiefly pregabalin, lamotrigine and botulinum toxin. Short-term relief is possible with fosphenytoin, sumatriptan or lidocaine, researchers have found. However, traditional analgesics – such as NSAIDs, tricyclics or opioids – have been shown to produce no meaningful effect on TN pain.

Surgical treatments are generally reserved for patients with debilitating pain refractory to the aforementioned drugs. Interestingly, some patients who experience substantial pain relief from drug therapy nonetheless express a desire for surgical treatment – the reason being that they want to avoid cognitive or motor side effects, of which there exists a risk from long-term medication use.

Surgical options include: balloon compression; radiofrequency thermocoagulation or glycerol rhizotomy; subcutaneous alcohol branch blockade; and stereotactic Gamma Knife® radiosurgery. In all such cases, the greatest margins of safety and efficacy

are achieved by surgeons who perform trigeminal nerve procedures frequently.

#### **Proven effective, safe**

Percutaneous balloon compression of the gasserian ganglion has been shown to achieve very good rates of efficacy – in the range of 95% on average the first time it is performed. Its disadvantage is that at least some degree of facial numbness may occur in consequence.

Radiofrequency thermocoagulation of the trigeminal nerve likewise carries with it an efficacy rate of approximately 95%. Studies indicate that pain recurs in only about 10% to 25% of cases. Similar good rates of efficacy are seen with glycerol rhizotomy, a related gasserian ganglion procedure. Glycerol's strong suit is its ability to exert a selective neuroablative effect on the large myelinated fibers damaged by the pathologic process underlying trigeminal neuralgia. The rhizotomy procedure entails lateral insertion of a needle through the cheek to the corner of the mouth and, from there, to points anterior the external auditory canal and medial aspect of the ipsilateral orbit. Fluoroscopy confirms the appropriate location of the needle. The glycerol is then slowly injected. Pain relief is achieved almost immediately, and the patient is able to engage in normal activities within a matter of a few hours thereafter.

Gamma Knife surgery, meanwhile, is increasingly being used as a first-line modality, owing to high patient satisfaction levels and favorably low risk-benefit ratios. Here, a highly focused beam of 70 Gy to 90 Gy of radiation (or lower for previously irradiated patients) is delivered stereotactically to a 4 mm target field corresponding to the retrogasserian cisternal portion of the trigeminal nerve. But unlike glycerol rhizotomy, pain relief is not near-immediate; it usually requires the passage of 30 to 60 days before relief can be fully enjoyed. (Outcome studies have reported pain relief in the range of at least 81% and, in 75% of cases, a complete absence of pain.)

#### **Conclusions**

The pain of trigeminal neuralgia is notoriously unpleasant, leaving most patients desperate for relief. Treatment

options are several; virtually all offer the possibility of very good outcomes.

Medications are the most conservative approach and are designated the treatment of first resort.

When pain proves refractory to treatment with medication, surgical procedures should be given great consideration.

The greatest margins of safety and efficacy are achieved by surgeons who perform trigeminal nerve procedures frequently.

My own approach to treating trigeminal neuralgia mirrors all of the above. Over many years, and beginning with my time in training at the Mayo Clinic, I've developed a deep understanding of the ordeal trigeminal neuralgia patients typically go through in their quest to obtain real and long-lasting pain relief – which is why, when you refer to me, I can help your patients afflicted with this condition get back to enjoying life.

Please consider utilizing me in this regard. You and your patients will appreciate my accessibility and eagerness to answer questions. Moreover, satisfied by the services and support I can provide, your patients after treatment will return to you more willing than ever to continue entrusting you with their ongoing care.

For further information about trigeminal neuralgia, my approaches to treatment and information about my other neurology-specific surgical services, please call me at (414) 385-7150.



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