



Support Group Leader Training – Section 2-Lesson 5

Subject: Surgery Options

Surgery

Surgical treatments are generally attempted only when medical treatments are not effective or when there are serious side effects. There are 5 surgical options that are commonly used to treat trigeminal neuralgia.

In many cases these surgical procedures are not as successful for “atypical trigeminal neuralgia” or “atypical facial pain” and can actually make the pain worse. Thus, it is important to identify whether a condition is “atypical”. If the pain is constant or has a burning component, then the condition could have “atypical” features.

These surgical options are only helpful for people with classic symptoms of TN.

A special MRI – “thin-cut 3D volume acquisition” performed with contrast injection, can detect in 80% of patients whether a blood vessel is pressing on the trigeminal nerve causing TN pain.

If there is pressure, surgical options include:

1. Microvascular Decompression (MVD) – move the vessel away from the nerve.
2. Percutaneous Procedures (via the cheek)
 - Glycerol Injection – coat the nerve with glycerol
 - Balloon Compression – squeeze the nerve
 - Radio Frequency Lesion – heat the nerve
3. Stereotactic Radio Surgery – deaden the nerve (Gamma Knife/LINAC)

Experts believe that in most cases of classic trigeminal neuralgia, there is neurovascular compression at the trigeminal nerve root.

It is also believed that the continuous pulsations of the compression caused damage to the nerve.

Deciding on Surgery

When making a decision about surgery and on which procedure, you should ask your doctor questions about the different procedures and about their experience with these procedures.

Some questions you might want to ask are:

- What studies have been done on the procedure?
- What are possible complications?
- How safe is the procedure?
- What is a realistic success rate?
- How many procedures has the surgeon performed?
- Does he/she perform the procedure often?

The surgeon's skill often makes the difference in what surgical procedures the patient is offered. If surgeons do not have success with a certain procedure, they tend not to offer it as an option to the patient.

Microvascular Decompression (MVD)

(Report of the Trigeminal Neuralgia Association, Second National Conference, November 11-15, 1998 Orlando FL)

An MVD is a major operation, requiring general anaesthesia and microsurgery. (On a scale of one to ten, if ten is extremely serious surgery, an MVD is about a three, according to Dr. Jannetta.)

The surgeon makes a thumb-sized opening in the bone of the skull, exposes the trigeminal nerve and examines it through a powerful microscope, looking for blood vessels that appear to be jammed up against it.

Small veins may simply be coagulated and dispensed with, but arteries must be lifted and padding inserted between the nerve and the blood vessel to protect the nerve.

Neurosurgeon Peter J. Jannetta: During the operation, we monitor electrical signals from the auditory nerve in order to prevent hearing loss (a relatively rare complication). An MVD takes one to two hours, skin to skin, and if it gets rid of the pain people generally feel incredibly well incredibly soon afterward.

How often do you fail to find a blood vessel compressing the nerve?

Dr. Jannetta: "That never happens. The trick is to find all of the vessels because some very small ones may be involved."

How can I find a skilled neurosurgeon to do an MVD?

Neurosurgeon Stephen J. Haines: "Look for someone who regularly performs microsurgery and has learned the MVD procedure from an expert."

Is there a correlation between head injuries and TN?

Dr. Jannetta: “I believe there is. I have seen many TN patients who were injured when a car was rear-ended; others fell and hit their head. Some begin to have TN pain right after the accident. The longer the interval elapses, the less likely the injury is to be related to the TN.”

Can an MVD cure TN forever?

Neurosurgeon Kim J. Burchiel: “The MVD is the only surgery where there’s evidence that long-lasting relief is possible. Of patients who have an MVD, 10 to 15% get no relief from the surgery. Eighty-five to 90% feel much better after the procedure, but for 5 to 10% of these patients pain comes back within the first year after the MVD.

With each year that passes after the operation, another 2% have a return of pain. When that happens, sometimes we operate and re-explore. Often we don’t find anything, but the patient still benefits from the surgery, maybe from having the nerve rubbed and slightly injured.

The average pain-free interval in our MVD study was 15 years – patients had a 50-50 chance of being pain-free at 15 years. Dr. Jannetta’s data show that after 15 years his patients have a 70 to 75% chance of being pain-free.

In short, the vast majority of MVD patients do very well long-term and don’t have a recurrence. However, even with MVDs some patients have a return of pain and we don’t know why. Perhaps a new blood vessel begins pressing on the trigeminal nerve, or the nerve was irreversibly injured before the procedure.”

If pain returns after an MVD, what kind of surgery should you have?

Neurosurgeon Jeffrey A. Brown: “An older person not in good health should probably have one of the percutaneous procedures, while a younger individual who wants to avoid numbness might want a second MVD.”

Dr. Burchiel: “A patient who had an MVD done by “Dr. Nobody” should see a neurosurgeon with specific training and experience in doing MVDs. Neurosurgeons love this operation even if they do only two a year. A person who does only two a year doesn’t have enough experience. Just rubbing the nerve could give you six years pain free even though the surgeon missed the real problem.”

What is the success rate for repeat MVDs?

Dr. Haines: “Probably 50 to 70% – not as good as the first time.”

Is there a greater risk of complications with a second MVD?

Dr. Haines: “Yes, the risk of numbness, hearing loss, and other problems is greater the second time. With experience, a surgeon’s results with repeat surgeries improve, but they’re never as good as the first time.”

Is there an age limit for MVDs?

Neurosurgical resident B.T. Ogungbo: “Some surgeons refuse to do microvascular decompressions on patients over a certain age. To compare MVD outcomes of older and younger individuals, we reviewed the medical records of 62 trigeminal neuralgia patients who had had an MVD and also contacted them by phone. Forty were over 65 and 22 were under 65 when they had the surgery. Two people in the younger group had serious complications (a cardiac arrest and a brain abscess). In the older group, one patient became temporarily confused, and that was the only severe complication.

We concluded that MVD's are safe for older people, and that patients should be selected based on their physiological, not their chronological, age."

Other Surgical Methods

PERCUTANEOUS PROCEDURES (THROUGH THE CHEEK SURGERY): RADIOFREQUENCY RHIZOTOMY (RF)

Also a form of through-the-cheek surgery, RF uses an electrode and a type of current similar to that of a microwave to "heat" a portion of the Trigeminal nerve and damage it. The procedure is done on an outpatient basis.

GLYCEROL RHIZOTOMY

In this outpatient procedure, the surgeon inserts a needle through the cheek and injects glycerol into the trigeminal cistern. The glycerol, with the consistency of honey, strips away some of the trigeminal nerve's insulation.

BALLOON COMPRESSION

In this outpatient procedure, a cannula (a tube) is inserted through a puncture in the cheek and guided to a natural hole at the base of the skull. A soft catheter (a smaller tube) with a tiny balloon attached is threaded through the cannula and extended about an inch beyond it. X-rays help the surgeon place the balloon in the right position. Then it's inflated so that it squeezes the trigeminal nerve for one minute. The amount of pressure is carefully measured.

STEREOTACTIC RADIOSURGERY (SRS) Gamma Knife / LINAC

No incision is necessary for radiosurgery and it's an outpatient procedure. Surgeons use highly focused beams of radiation to damage a site on the Trigeminal nerve. In the weeks following the treatment, a lesion (injury) gradually develops where the radiation occurred.

THE LINAC – LINEAR ACCELERATOR

The linear accelerator uses high-energy X-rays delivered by a sequence of arcs to the target – within the brain or areas outside of the brain. MRI images are used to locate the trigeminal nerve root and together with a CT on the day of treatment, the team then plans the treatment delivery. The patient's head is immobilised in a metal frame, and a 4-mm collimator and 7-arc technique is employed to deliver a dose of 70 Gy in a single fraction to the root of the trigeminal nerve. The beam comes out of a part of the accelerator called a gantry, which rotates around the patient head. Response to treatment could take 2 to 4 weeks.

Please complete the Knowledge Test – Surgery Options – Quiz 5 - before moving to the next training file