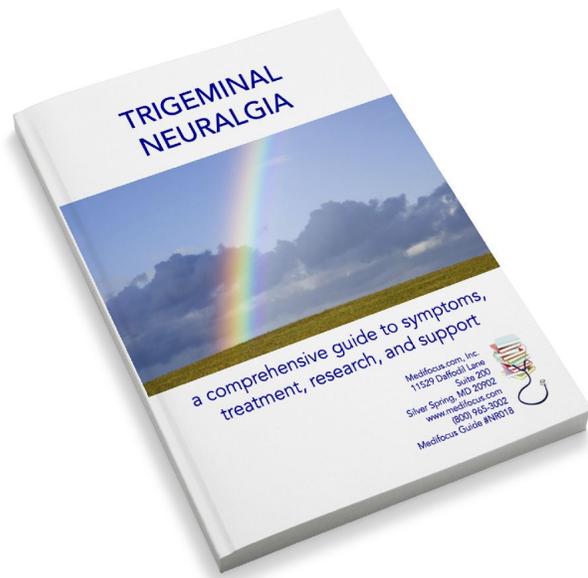


## Preview of the Medifocus Guidebook on: Trigeminal Neuralgia

Updated January 11, 2024



This document is only a SHORT PREVIEW of the **Medifocus Guidebook on Trigeminal Neuralgia**. It is intended primarily to give you a general overview of the **format and structure** of the Guidebook as well as select pages from each major Guidebook section listed in the Table of Contents.

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# 1 - Background Information

## Introduction

Chronic or life-threatening illnesses can have a devastating impact on both the patient and the family. In today's new world of medicine, many consumers have come to realize that they are the ones who are primarily responsible for their own health care as well as for the health care of their loved ones.

When facing a chronic or life-threatening illness, you need to become an educated consumer in order to make an informed health care decision. Essentially that means finding out everything about the illness - the treatment options, the doctors, and the hospitals - so that you can become an educated health care consumer and make the tough decisions. In the past, consumers would go to a library and read everything available about a particular illness or medical condition. In today's world, many turn to the Internet for their medical information needs.

The first sites visited are usually the well known health "portals" or disease organizations and support groups which contain a general overview of the condition for the layperson. That's a good start but soon all of the basic information is exhausted and the need for more advanced information still exists. What are the latest "cutting-edge" treatment options? What are the results of the most up-to-date clinical trials? Who are the most notable experts? Where are the top-ranked medical institutions and hospitals?

The best source for authoritative medical information in the United States is the National Library of Medicine's medical database called PubMed®, that indexes citations and abstracts (brief summaries) of over 7 million articles from more than 3,800 medical journals published worldwide. PubMed® was developed for medical professionals and is the primary source utilized by health care providers for keeping up with the latest advances in clinical medicine.

A typical PubMed® search for a specific disease or condition, however, usually retrieves hundreds or even thousands of "hits" of journal article citations. That's an avalanche of information that needs to be evaluated and transformed into truly useful knowledge. What are the most relevant journal articles? Which ones apply to your specific situation? Which articles are considered to be the most authoritative - the ones your physician would rely on in making clinical decisions? This is where *Medifocus.com* provides an effective solution.

*Medifocus.com* has developed an extensive library of *MediFocus Guidebooks* covering a wide spectrum of chronic and life threatening diseases. Each *MediFocus Guidebook* is a

high quality, up- to-date digest of "professional-level" medical information consisting of the most relevant citations and abstracts of journal articles published in authoritative, trustworthy medical journals. This information represents the latest advances known to modern medicine for the treatment and management of the condition, including published results from clinical trials. Each *Guidebook* also includes a valuable index of leading authors and medical institutions as well as a directory of disease organizations and support groups. *MediFocus Guidebooks* are reviewed, revised and updated every 4-months to ensure that you receive the latest and most up-to-date information about the specific condition.

## About Your MediFocus Guidebook

### ***Introduction***

Your *MediFocus Guidebook* is a valuable resource that represents a comprehensive synthesis of the most up-to-date, advanced medical information published about the condition in well-respected, trustworthy medical journals. It is the same type of professional-level information used by physicians and other health-care professionals to keep abreast of the latest developments in biomedical research and clinical medicine. The *Guidebook* is intended for patients who have a need for more advanced, in-depth medical information than is generally available to consumers from a variety of other resources. The primary goal of a *MediFocus Guidebook* is to educate patients and their families about their treatment options so that they can make informed health-care decisions and become active participants in the medical decision making process.

The *Guidebook* production process involves a team of experienced medical research professionals with vast experience in researching the published medical literature. This team approach to the development and production of the *MediFocus Guidebooks* is designed to ensure the accuracy, completeness, and clinical relevance of the information. The *Guidebook* is intended to serve as a basis for a more meaningful discussion between patients and their health-care providers in a joint effort to seek the most appropriate course of treatment for the disease.

### ***Guidebook Organization and Content***

#### **Section 1 - Background Information**

This section provides detailed information about the organization and content of the *Guidebook* including tips and suggestions for conducting additional research about the condition.

#### **Section 2 - The Intelligent Patient Overview**

This section of your *MediFocus Guidebook* represents a detailed overview of the disease or condition specifically written from the patient's perspective. It is designed to satisfy the basic informational needs of consumers and their families who are confronted with the illness and are facing difficult choices. Important aspects which are addressed in "The Intelligent Patient" section include:

- The etiology or cause of the disease
- Signs and symptoms
- How the condition is diagnosed
- The current standard of care for the disease
- Treatment options

- New developments
- Important questions to ask your health care provider

### **Section 3 - Guide to the Medical Literature**

This is a roadmap to important and up-to-date medical literature published about the condition from authoritative, trustworthy medical journals. This is the same information that is used by physicians and researchers to keep up with the latest developments and breakthroughs in clinical medicine and biomedical research. A broad spectrum of articles is included in each *MediFocus Guidebook* to provide information about standard treatments, treatment options, new clinical developments, and advances in research. To facilitate your review and analysis of this information, the articles are grouped by specific categories. A typical *MediFocus Guidebook* usually contains one or more of the following article groupings:

- *Review Articles*: Articles included in this category are broad in scope and are intended to provide the reader with a detailed overview of the condition including such important aspects as its cause, diagnosis, treatment, and new advances.
- *General Interest Articles*: These articles are broad in scope and contain supplementary information about the condition that may be of interest to select groups of patients.
- *Drug Therapy*: Articles that provide information about the effectiveness of specific drugs or other biological agents for the treatment of the condition.
- *Surgical Therapy*: Articles that provide information about specific surgical treatments for the condition.
- *Clinical Trials*: Articles in this category summarize studies which compare the safety and efficacy of a new, experimental treatment modality to currently available standard treatments for the condition. In many cases, clinical trials represent the latest advances in the field and may be considered as being on the "cutting edge" of medicine. Some of these experimental treatments may have already been incorporated into clinical practice.

The following information is provided for each of the articles referenced in this section of your *MediFocus Guidebook*:

- Article title
- Author Name(s)
- Institution where the study was done
- Journal reference (Volume, page numbers, year of publication)

- Link to Abstract (brief summary of the actual article)

*Linking to Abstracts:* Most of the medical journal articles referenced in this section of your *MediFocus Guidebook* include an abstract (brief summary of the actual article) that can be accessed online via the National Library of Medicine's PubMed® database. You can easily access the individual abstracts online via PubMed® from the "electronic" format of your *MediFocus Guidebook* by clicking on the corresponding URL address that is provided for each cited article. If you purchased a printed copy of a *MediFocus Guidebook*, you can still access the article abstracts online by entering the individual URL address for a particular article into your web browser.

## **Section 4 - Centers of Research**

We've compiled a unique directory of doctors, researchers, medical centers, and research institutions with specialized research interest, and in many cases, clinical expertise in the management of the specific medical condition. The "Centers of Research" directory is a valuable resource for quickly identifying and locating leading medical authorities and medical institutions within the United States and other countries that are considered to be at the forefront in clinical research and treatment of the condition.

Inclusion of the names of specific doctors, researchers, hospitals, medical centers, or research institutions in this *Guidebook* does not imply endorsement by Medifocus.com, Inc. or any of its affiliates. Consumers are encouraged to conduct additional research to identify health-care professionals, hospitals, and medical institutions with expertise in providing specific medical advice, guidance, and treatment for this condition.

## **Section 5 - Tips on Finding and Choosing a Doctor**

One of the most important decisions confronting patients who have been diagnosed with a serious medical condition is finding and choosing a qualified physician who will deliver high-level, quality medical care in accordance with currently accepted guidelines and standards of care. Finding the "best" doctor to manage your condition, however, can be a frustrating and time-consuming experience unless you know what you are looking for and how to go about finding it. This section of your *Guidebook* offers important tips for how to find physicians as well as suggestions for how to make informed choices about choosing a doctor who is right for you.

## **Section 6 - Directory of Organizations**

This section of your *Guidebook* is a directory of select disease organizations and support groups that are in the business of helping patients and their families by providing access to information, resources, and services. Many of these organizations can answer your questions, enable you to network with other patients, and help you find a doctor in your geographical area who specializes in managing your condition.

## 2 - The Intelligent Patient Overview

# TRIGEMINAL NEURALGIA

### Introduction to Trigeminal Neuralgia

#### ***What is Trigeminal Neuralgia?***

The *Cranial Nerves* are 12 pairs of nerves that originate in the brain that provide sensory and motor functions to the head and neck region. These 12 cranial nerves are designated by the Roman numerals I thru XII. One nerve of each pair of cranial nerves innervates the right side of the head or neck while the second nerve of each pair innervates the left side.

The *Trigeminal Nerve*, designated as cranial nerve V, is the fifth and largest of the cranial nerves. It provides nerve sensation to the face, mouth, and the front of the scalp, as well as controlling the muscles involved in chewing (mastication). The trigeminal nerve is also responsible for sensations such as taste, touch, and pain to the face.

The trigeminal nerve has three branches.

- The *ophthalmic branch* runs through the eye, forehead and nose.
- The *maxillary branch* runs through the upper teeth, gums, lips, cheek, lower eyelid and side of the nose.
- The *mandibular branch* runs through the lower teeth, gums and lip. It also controls jaw movement for mastication or chewing.

The three branches of the trigeminal nerve come together in the middle fossa of the skull in an area called the *trigeminal ganglion* (also called the *Gasserian ganglion*). From there, the trigeminal nerve root continues along the side of the brain stem and inserts into a portion of the brainstem called the *pons*.

*Trigeminal neuralgia* (TN), formerly called *tic douloureux*, is the most common facial pain syndrome and is often described as "the most terrible pain known to man". It is characterized by sudden (paroxysmal) attacks of facial pain described as intense, sharp, electric-shock like, or stabbing. The pain is most commonly felt in the cheekbone, nose, upper lip and upper teeth. In some people, the pain also extends to the lower lip, teeth, and chin. Pain is usually felt on one side of the face (*unilateral*) and lasts from a few seconds to two minutes. People with TN report that the intermittent pain attacks and the anticipatory anxiety of not knowing when they will occur result in a significant deterioration of quality of life and interfere with daily activities such as eating and sleeping. Typically, TN is caused by compression of the trigeminal nerve by a blood vessel near the brainstem. In many cases, however, a specific cause cannot be identified. This is referred to as *idiopathic trigeminal neuralgia*.

## ***Epidemiology of Trigeminal Neuralgia***

Various studies in the literature have estimated the incidence of TN to range from 4 to 27 cases per 100,000 per year. Epidemiological studies have revealed the following features of patients with TN:

- The condition affects women more often than men. In one large study published in 2016, the proportion of women to men with TN was about 3 to 1.
- TN is most commonly observed in people between the ages of 37 to 67 years. The average age of onset of classic TN is 53, while patients with secondary TN tend to be about 10 years younger with an average age of onset of 43 years.
- TN affects the maxillary and mandibular branches of the trigeminal nerve more often than the ophthalmic branch. One study reported the division of pain in patients with TN to be:
  - 44% in the maxillary branch
  - 35% in the mandibular branch
  - 19% in the ophthalmic branch
- Previously it was thought that pain worsens over time and that chronic TN is characterized by longer lasting, refractory pain that is resistant to all medications. More recent research, however, has found that in the majority of patients with TN, the pain does not increase in frequency or duration nor does it become refractory to medications. In fact, many patients with TN experience unpredictable periods of complete remission between paroxysmal attacks that may last for months or even years.

## ***Classification of Trigeminal Neuralgia***

In 2016, the International Association for the Study of Pain (IASP) produced an independent classification system for trigeminal neuralgia. According to the IASP definition, TN refers to oral and facial pain that is restricted to one or more branches of the trigeminal nerve. Typically, the pain affects only one side of the face (unilateral pain), however, patients with multiple sclerosis may experience pain on both sides of the face (bilateral pain). The onset of TN pain is sudden (paroxysmal) and typically lasts for a few seconds but no more than 2-minutes. The pain usually comes on spontaneously but can also be triggered by certain innocuous stimuli or movements, such as a light touch to the face or chewing. This condition is the typical or "classic" form of trigeminal neuralgia, sometimes designated as TN-1.

Some patients with TN, in addition to experiencing typical attacks of sudden sharp pain also develop a continuous, dull "background" pain along the same distribution of the trigeminal nerve. This "background" pain persists and is continuously present between the typical episodes of sudden, sharp, stabbing pain attacks. This condition is called the "atypical" form of trigeminal neuralgia, sometimes referred to as TN-2.

The IASP classifies TN into the following 3 types based on the underlying causes of the condition:

- Idiopathic TN - no apparent cause can be identified.
- Classic TN - caused by a blood vessel compressing the trigeminal nerve root.
- Secondary TN - most frequently caused by multiple sclerosis or a benign tumor at the cerebellopontine angle, which is an area located between the *cerebellum* and the *pons* (a part of the brainstem).

For more information about the IASP classification of TN, please follow this link:

<https://academic.oup.com/bjaed/article/16/10/353/2288647>

## ***What Causes Trigeminal Neuralgia?***

The most common cause of classic TN is compression of the trigeminal nerve root near the brainstem by a blood vessel. This condition in which a nerve is compressed by a blood vessel is known as "neurovascular contact". Imaging studies with magnetic resonance imaging (MRI) have demonstrated neurovascular contact in 70% to 83% of patients with classic TN. Neurovascular contact causes morphological changes of the trigeminal nerve including distortion, dislocation, and flattening. The constant compression of the trigeminal nerve root leads to loss of the *myelin sheath*, the protective covering that surrounds and insulates nerve fibers. Once the myelin sheath has been damaged, the nerve becomes "hyper-excitabile" to the point where even a minor stimulus, such as a light touch to the face, can elicit sharp, stabbing pain.

In about 15% to 20% of patients with classic TN, the underlying cause is either multiple sclerosis or a benign tumor of the cerebellopontine angle. These tumors include such as epidermoid tumors, meningiomas, neurinomas, arteriovenous malformations, or aneurysms.

The prevalence of TN in patients with multiple sclerosis has been estimated to be in the range of 2% to 5%. Patients with multiple sclerosis have about a 20-fold higher risk for developing TN than those without multiple sclerosis. Trigeminal neuralgia secondary to multiple sclerosis is also thought to be caused by damage to the myelin sheath, a condition known as *demyelination*. Up to 10% of patients with multiple sclerosis who develop TN experience bilateral pain affecting both sides of the face.

It's important to note that a subset of patients have what is known as "idiopathic TN", where the cause of their trigeminal neuralgia cannot be identified. These patients don't have either multiple sclerosis or a cerebellopontine angle tumor nor is there MRI evidence of a blood vessel compressing the trigeminal nerve root. Patients with idiopathic TN are, therefore, not considered good candidates for *microvascular decompression*, a surgical procedure often used to eliminate the compression of the nerve by a blood vessel.

## ***Trigeminal Neuralgia Triggers***

Many patients describe a specific triggering event that can precipitate an attack of classic TN. These triggers include:

- Chewing
- Talking
- Swallowing
- Brushing teeth
- Face washing
- Shaving
- Vibration
- Exposure to cold or a cool breeze across the face
- Light touch to the specific areas of the face, or any vibration

## ***Risk Factors for Trigeminal Neuralgia***

A risk factor is anything that increases the chances that a person will develop a particular disease or condition. Risk factors for trigeminal neuralgia (TN) include:

- Age - Average onset of TN occurs most frequently in people 50 years of age or older.
- Gender - Women are 1.5 times more likely to develop TN than men.
- Family history of facial pain - Approximately 5% of patients report a family history of facial pain, perhaps because an inherited pattern of blood vessel formation may increase the likelihood of irritation to the trigeminal nerve.
- Multiple sclerosis - Approximately 2-5% of patients with TN also suffer from multiple sclerosis.

The **Intelligent Patient Overview** in the complete **Medifocus Guidebook on Trigeminal Neuralgia** also includes the following additional sections:

- **Diagnosis of Trigeminal Neuralgia**
- **Treatment Options for Trigeminal Neuralgia**
- **The Role of Complementary Therapies in Trigeminal Neuralgia**
- **Psychosocial Impact of Trigeminal Neuralgia**
- **Questions to Ask Your Health Care Provider About Trigeminal Neuralgia**

To Order the Complete **Guidebook on Trigeminal Neuralgia** [Click Here](#)  
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## 3 - Guide to the Medical Literature

### Introduction

This section of your *MediFocus Guidebook* is a comprehensive bibliography of important recent medical literature published about the condition from authoritative, trustworthy medical journals. This is the same information that is used by physicians and researchers to keep up with the latest advances in clinical medicine and biomedical research. A broad spectrum of articles is included in each *MediFocus Guidebook* to provide information about standard treatments, treatment options, new developments, and advances in research.

To facilitate your review and analysis of this information, the articles in this *MediFocus Guidebook* are grouped in the following categories:

- Review Articles - 35 Articles
- General Interest Articles - 23 Articles
- Drug Therapy Articles - 11 Articles
- Clinical Trials Articles - 6 Articles
- Stereotactic Radiosurgery Articles - 7 Articles
- Microvascular Decompression Articles - 18 Articles
- Percutaneous Procedures Articles - 15 Articles

The following information is provided for each of the articles referenced in this section of your *MediFocus Guidebook*:

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- Name of the authors
- Institution where the study was done
- Journal reference (Volume, page numbers, year of publication)
- Link to Abstract (brief summary of the actual article)

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## 4 - Centers of Research

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Use the *Centers of Research* directory to contact, consult, or network with leading experts in the field and to locate a hospital or medical center that can help you.

The following information is provided in the *Centers of Research* directory:

- **Geographic Location**

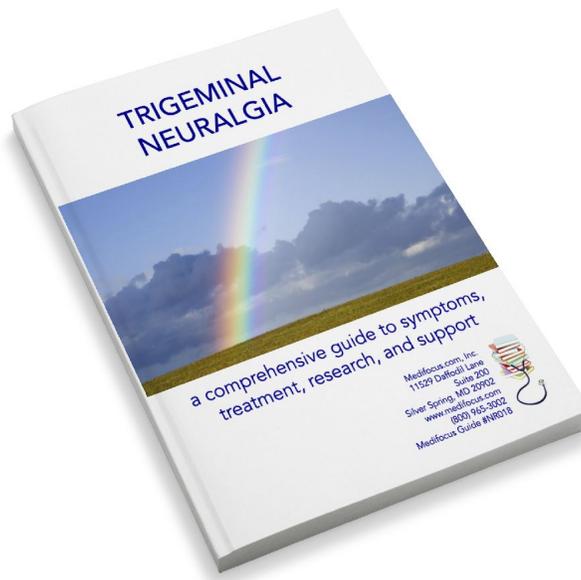
- United States: the information is divided by individual states listed in alphabetical order. Not all states may be included.
- Other Countries: information is presented for select countries worldwide listed in alphabetical order. Not all countries may be included.

- **Names of Authors**

- Select names of individual authors (doctors, researchers, or other health-care professionals) with specialized research interest, and in many cases, clinical expertise in the management of this specific medical condition, who have recently published articles in leading medical journals about the condition.
- E-mail addresses for individual authors, if listed on their specific publications, is also provided.

- **Institutional Affiliations**

- Next to each individual author's name is their **institutional affiliation** (hospital, medical center, or research institution) where the study was conducted as listed in their publication(s).
- In many cases, information about the specific **department** within the medical institution where the individual author was located at the time the study was conducted is also provided.



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