

PSP

PLASTIC SURGERY PRACTICE

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Bruce Almighty

Dermatologist
Bruce Strober, MD, PhD,
changes lives

*Bruce Strober, MD
Dermatology*

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Headache Helper

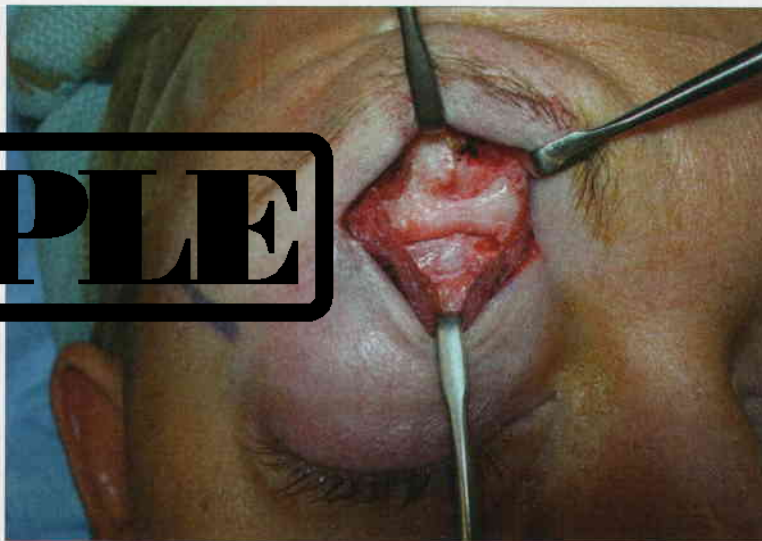
Can plastic surgery really cure migraine headache?

By Michael A. Fallucco, MD

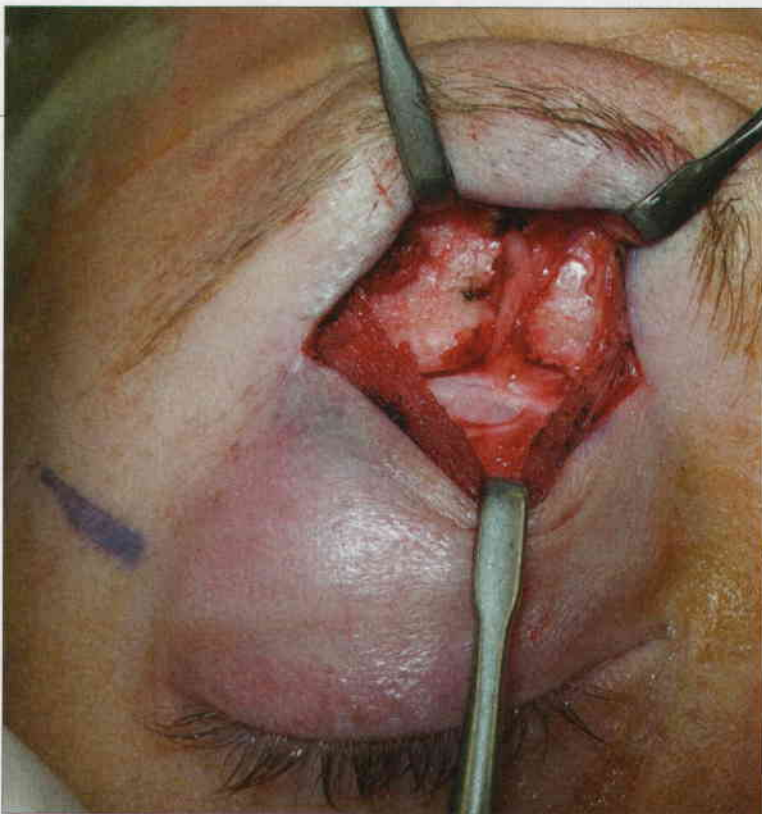
Plastic surgeons often receive referrals to perform aesthetic procedures and/or reconstructive ones, but a growing number are now also getting tapped to do migraine surgery. At first glance, plastic surgeons and migraine patients may seem like strange bedfellows, but another staple of the plastic surgeon's armamentarium, Botox (onabotulinumtoxin A), is also approved to treat chronic migraines.

More than 29.5 million Americans suffer from migraine, with women being affected three times more often than men, according to the National Headache Foundation. Previously, a diagnosis of migraine headache meant missed days of school and work, and also took its toll on other aspects of a person's life and lifestyle. Many of the medications that treat migraines can have troubling side effects or are ineffective if they are not taken at the first sign of migraine.

Now with the identification and treatment of focal peripheral nerve compression sites in the head and neck, plastic surgeons can alleviate headache pain once and for all. The idea to surgically treat migraine headaches has been attempted since the 1960s and underwent refinements in large part due to recent innovations by Bahman Guyuron, MD, a plastic surgeon in Cleveland. Plastic surgeons who focus on surgery of the peripheral nerve have demonstrated impressive 5-year results in



Bony foramen compression site for supraorbital neurovascular bundle.



Bony foraminotomy to decompress the supraorbital nerve.



Michael A. Fallucco, MD

terms of severity, frequency, and duration of headache pain.

WHO IS A CANDIDATE FOR MIGRAINE SURGERY?

A neurologist or primary care physician familiar with the standard guidelines from the International Headache Society should first evaluate a patient with chronic daily headache pain. Once this evaluation is complete, the first step in determining if a patient is a candidate for migraine surgery is to identify if they have a peripheral trigger site that represents nerve compression. There are four main trigger sites related to

Migraine News

The FDA recently approved the Zecuity (sumatriptan) skin patch system for adults who have migraines with or without aura. The single-use, battery-powered patch offers relief of migraine-related nausea as well as migraine headaches.

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By identifying and treating the nerve compression causing the headache pain cascade, we can improve quality of life.

the trigeminal and occipital nerve branches: frontal, occipital, temporal, and nasal. Irritation of the peripheral nerves at these trigger sites can produce a cascade of neurochemical signals, causing irritation of the Dura mater and producing headache symptoms. Pain is distracting, and I find that if I ask patients to focus on "where does their pain start," it helps identify their pain generator.

Case Example:

A 41-year-old female presents a 4-year history of headache pain that begins above her eyebrows and affects her temples. She has migraine pain 16 days out of the month for greater than 4 hours per episode. She rates her pain as an 8 out of 10 in severity. Her migraine disability assessment test (MIDAS) score is 60. She has been evaluated by her neurologist, underwent MRI and CT of the head and neck, and tried dietary restriction, physical therapy, and massage without lasting relief. She does not awaken with headaches.

This patient is likely describing a frontal trigger site. It is important to stratify these patients into treatment categories. In this case, she meets the classification of chronic daily headaches and has greater than 15 episodes per month for longer than 3 months that last greater than 4 hours per episode. In addition, her MIDAS score of greater than 21 puts her in the most severe, class IV "Severe Disability" classification. As such, she is a candidate for surgical evaluation. Pain is subjective, and objective measurements such as the MIDAS score should be utilized to allow clear communication of severity among providers.

Of note, it is important that this patient has had a previous neurology workup to rule out any "red flags." Last, she does not awaken with headaches, which helps to rule out the nasal trigger site. Periocular symptoms can fall into the frontal or nasal trigger subset, and this simple question, "Do you wake up in the morning with headaches?" can help identify the correct trigger site.

TRIGGER SITE VERIFICATION

Once we have identified the patient's primary trigger site from case history and physical examination, we test our hypothesis that this truly is their migraine pain generator. In the case example above, we know that the frontal trigger site refers to the sensory territories of the supraorbital (SON), supratrochlear (STN), and zygomaticotemporal (ZTN) nerve branches of the trigeminal nerve division. The next step in trigger site verification is to

determine if we can "turn this site off."

A local anesthetic block is a quick, reliable way to accomplish this goal. Local anesthetic (a mixture of 1% lidocaine with 0.25% marcaine both without epinephrine) placed at the SON, STN, and ZTN's exit sites onto the forehead will dramatically reduce a patient's visual analogue pain scale if this is the source of their ongoing pain. Similar strategies for temporal and occipital trigger site identification are performed in a step-wise manner based on a patient's pain description. Nasal trigger site identification is confirmed with a

Is it a Migraine?

- Pain has a pulsating or throbbing quality.
- Moderate to intense pain affecting daily activities.
- Nausea or vomiting.
- Sensitivity to light or sound.
- Attacks last 4 to 72 hours, sometimes longer.
- Visual disturbances or aura.
- Exertion such as climbing stairs makes headache worse.

(COURTESY OF NATIONAL HEADACHE FOUNDATION)

CT scan of the sinuses rather than a local anesthetic block. In my experience, greater than a third of patients have more than one migraine trigger site.

KEYS TO A SUCCESSFUL MIGRAINE SURGERY PROCEDURE

Surgical deactivation of the identified peripheral migraine trigger site is performed under general anesthesia. In the frontal trigger site case described above, I prefer the direct transpalpebral approach to the endoscopic technique. The direct approach allows decompression of a confluence of periosteum that tightly envelopes the supraorbital and supratrochlear nerves as they transition from their intra-conal pathway to the frontal exit. The direct approach also permits complete visualization of the second compression site at the frontal exit on the supraorbital rim. This is either a bony foramen, a notch with a fascial band, or a combination thereof. When a foramen is present, this represents a fixed, nonexpanding bony aperture for supraorbital neurovascular passage.

I use a rongeur to perform a foraminotomy and bipolar cautery to coagulate the artery and/or prominent vein with the net result of SON decompression at this fixed opening. When a notch provides the SON frontal exit, there are four main variations. Without knowledge of these, surgeons may incompletely release the SON at this site. For instance, if the SON branches into its superficial and deep branches proximal to notch exit, a horizontal or vertical septae would provide a separate tunnel for each branch. Decompression of only the fascial band surrounding the medial or superficial branch will still perpetuate a pain syndrome from the lateral or deep branch of the SON. Decompression of the STN at the supraorbital rim typically involves fascial band release. However, a bony foramen may more rarely be present.

Glabella myofascial resection of the corrugator supercilli, depressor supercil, and procerus muscles is the next step to decompress the SON and STN on the forehead. Once I have freed the SON and STN from their frontal exits, I use a freer to expand the fascial tunnels that these nerves traverse through the myofascial complex. This allows safe bipolar myofascial resection free from any thermal injury to the nerves. To fill the void from muscle resection and surround the decompressed nerves with healthy tissue, I drape fat from the upper middle orbital fat pad along the supraorbital rim.

The lateral extension of the transpalpebral approach allows neurectomy of the zygomaticotemporal nerve with an aesthetically acceptable scar. The zygomaticofrontal suture line provides a landmark to consistently identifying this nerve. A freer elevator allows periosteum release from the posterior lateral orbital rim, revealing the ZTN.

Closure is performed in a similar manner to an upper-lid blepharoplasty.

PUTTING IT ALL TOGETHER

As more and more patients seek surgical treatment for their headache pain, plastic surgeons are uniquely suited to help move this field forward and provide relief for appropriately selected patients. By identifying and treating the nerve compression causing the headache pain cascade, we can greatly improve quality of life of many migraine patients. ■

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