
Medical Policy



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***Current Policy Effective Date: 7/1/26**
(See policy history boxes for previous effective dates)

Title: Headaches-Nerve Blocks/Ganglion Blocks

Description

Nerve and ganglion blocks, such as Sphenopalatine Ganglion (SPG) and Occipital Nerve Blocks, are minimally invasive, image-guided procedures used to treat chronic migraines, cluster headaches, and neuralgias. By injecting local anesthetics (often with steroids) into specific nerve bundles, these treatments interrupt pain signals and can provide relief lasting from days to months.

Medical Policy Statement

The use of nerve blockade for the management of headaches is experimental/investigational. The evidence is insufficient to determine that the technology results in an improvement in the net health outcomes.

Inclusionary and Exclusionary Guidelines

N/A

CPT/HCPCS Level II Codes *(Note: The inclusion of a code in this list is not a guarantee of coverage. Please refer to the medical policy statement to determine the status of a given procedure.)*

Established codes:

N/A

Other codes (investigational, not medically necessary, etc.):

64400	64405	64418	64450	64505	64510
64999					

Note: Individual policy criteria determine the coverage status of the CPT/HCPCS code(s) on this policy. Codes listed in this policy may have different coverage positions (such as established or experimental/investigational) in other medical policies.

Background

Headaches

Headaches are a common and often debilitating condition that causes pain in the head, scalp, or neck. They can vary in severity, frequency, and duration. Headaches can be caused by a wide range of factors, including but not limited to:

- Stress and tension
- Migraines
- Cluster headaches
- Sinusitis
- Dehydration
- Poor posture
- Eye strain
- Certain medications
- Underlying medical conditions: (e.g., high blood pressure, stroke)

There are two types of headaches, primary and secondary. Primary headaches may be caused by dysfunction or over-activity of pain-sensitive features in the head. Secondary headaches are caused by an underlying medical condition.

Migraines are the second-most common headache disorder, with a 1-year migraine prevalence of approximately 12% in the United States. They are characterized by severe pain on 1 or both sides of the head, nausea, and, at times, disturbed vision. Migraines can be categorized by headache frequency, and by the presence or absence of aura. Chronic migraine is defined as attacks on at least 15 days per month for more than 3 months, with features of migraine on at least 8 days per month.^{27,28}

Tension headaches have a prevalence of approximately 40%. Diagnostic criteria include the presence of at least 2 of the following characteristics: bilateral headache location, nonpulsating pain, mild-to-moderate intensity, and headache not aggravated by physical activity; lasting between 30 minutes and 7 days; and not accompanied by nausea vomiting, photophobia, or phonophobia.^{27,28}

Cluster headaches are less common than tension or migraine headaches, with an estimated prevalence of 0.1% of the population. They are characterized by severe unilateral orbital, supraorbital, and/or temporal pain that also includes other symptoms in the eye and/or nose on the same side (e.g., rhinorrhea, eyelid edema or drooping).^{27,28}

Treatment for headaches depends on the underlying cause. Some common treatments include:

Over-the-counter pain relievers: (e.g., ibuprofen, acetaminophen), prescription medications (e.g., triptans, opioids), lifestyle changes: (e.g., stress management, exercise, good posture), and therapies: (e.g., biofeedback, massage).

Nerve Blocks

Nerve blocks are injections that temporarily block pain signals along specific nerves. They are used to manage pain in various situations (e.g., surgery, chronic pain, post-surgical pain, labor/delivery, etc.). Nerve blocks involve injecting a local anesthetic, such as lidocaine or bupivacaine, near the nerve or nerve bundle responsible for the pain. This anesthetic blocks the transmission of pain signals to the brain, resulting in numbness or a reduced sensation in the affected area.

Standard treatment for headaches may not be effective for some individuals and therefore other treatment methods have been proposed. Injection therapy or nerve blocks have been proposed as a treatment for headaches.

Examples of Nerve Blocks Used (this list is not all inclusive):

- Auriculotemporal nerve block
 - C2 ganglion nerve block
 - Occipital nerve block
 - Sphenopalatine nerve block
 - Spinal accessory nerve block
 - Stellate ganglion nerve block
 - Supraorbital nerve block
 - Suprascapular nerve block
 - Supratrochlear block
 - Trigeminal nerve block
 - Temporal branch block
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SUMMARY OF EVIDENCE

For individuals who have chronic headaches who are being considered for invasive treatments with nerve block therapy, the evidence includes RCTs, retrospective studies, cohorts and systematic reviews. Overall, nerve block therapy may be a promising target for treating chronic headaches. However, the studies identified were small, not well designed, and without any replications. Further controlled studies are warranted to replicate and expand on these findings. This is an emerging treatment option which requires more well-designed studies to further explore the efficacy of this treatment modality within a comprehensive headache program. The evidence is insufficient to determine that the technology results in an improvement in the net health outcomes.

Rationale

Evidence reviews assess clinical evidence to determine whether the use of a technology improves the net health outcome. Broadly defined, health outcomes are length of life, quality of life, and ability to function including benefits and harms. Every clinical condition has specific outcomes that are important to individuals and to managing the course of that condition. Validated outcome measures are necessary to ascertain whether a condition improves or worsens; and whether the magnitude of that change is clinically significant. The net health outcome is a balance of benefits and harms. The following is a summary of the key literature to date.

HEADACHES

Clinical Context and Therapy Purpose

The purpose of nerve block(s) in individuals who have a headache is to provide a treatment option that is an alternative to or an improvement on existing therapies.

Review of Evidence

Ganglion Nerve Block (e.g., Sphenopalatine ganglion block, Stellate ganglion block, C2 ganglion block)

Cady et al (2014) conducted a double-blind, placebo-controlled study of repetitive transnasal sphenopalatine ganglion blockade (SPG) with Tx360® as acute treatment for chronic migraine (CM).¹ Forty-one subjects were enrolled at 2 headache specialty clinics in the US. Eligible subjects were between 18 and 80 years of age and had a history of CM defined by the second edition of the International Classification of Headache Disorders appendix definition. They were allowed a stable dose of migraine preventive medications that was maintained throughout the study. Following a 28-day baseline period, subjects were randomized by computer-generated lists of 2:1 to receive 0.5% bupivacaine or saline, respectively. The primary endpoint was to compare numeric rating scale scores at pretreatment baseline vs 15 minutes, 30 minutes, and 24 hours post procedure for all 12 treatments. The final dataset included 38 subjects, 26 in the bupivacaine group and 12 in the saline group. A repeated measures analysis of variance showed that subjects receiving treatment with bupivacaine experienced a reduction in the numeric rating scale scores compared with those receiving saline at baseline ($M = 3.78$ vs $M = 3.18$, $P = .10$), 15 minutes ($M = 3.51$ vs $M = 2.53$, $P < .001$), 30 minutes ($M = 3.45$ vs $M = 2.41$, $P < .001$), and 24 hours after treatment ($M = 4.20$ vs $M = 2.85$, $P < .001$), respectively. Headache Impact Test-6 scores were statistically significantly decreased in subjects receiving treatments with bupivacaine from before treatment to the final treatment ($M_{diff} = -4.52$, $P = .005$), whereas no significant change was seen in the saline group ($M_{diff} = -1.50$, $P = .13$).

Ho et al (2017) conducted a systematic review collecting and summarizing the level of evidence supporting the use of sphenopalatine ganglion block, radiofrequency ablation and neurostimulation.² Eighty-three publications were included in this review, of which 60 were studies on sphenopalatine ganglion block, 15 were on radiofrequency ablation, and 8 were on neurostimulation. Of all the studies, 23 have evidence level above case series. Of the 23 studies, 19 were on sphenopalatine ganglion block, 1 study on radiofrequency ablation, and 3

studies on neurostimulation. The rest of the available literature was case reports and case series. The strongest evidence lies in using sphenopalatine ganglion block, radiofrequency ablation and neurostimulation for cluster headache. Sphenopalatine ganglion block also has evidence in treating trigeminal neuralgia, migraines, reducing the needs of analgesics after endoscopic sinus surgery and reducing pain associated with nasal packing removal after nasal operations. Overall, sphenopalatine ganglion is a promising target for treating cluster headache using blocks, radiofrequency ablation and neurostimulation. However, the studies identified were small with no replications. Further controlled studies are warranted to replicate and expand on these findings.

Binfalah et al (2018) conducted an open, uncontrolled, retrospective study in a neurology clinic at a university medical center.³ The patients were recruited to the study if they were between 18 and 60 years of age, have been diagnosed with migraine headache according to International Classification of Headache Disorders-3 Beta since at least one year, and present with moderate to severe headache lasting between 4 and 72 hours not responding to abortive medications. Patients with medication overuse headache, bleeding disorders, abnormal neurological examination, and history of allergy to local anesthetics were not included in the study. Pain was assessed using numeric rating scale (NRS), where 0 is no pain and 10 is worst pain imaginable; this was recorded at baseline, 15 minutes, 2 hours, and 24 hours after the procedure. Each patient received a single treatment of transnasal SPG block with 2 cc of 2% lidocaine in each nostril in the supine position with head extension, delivered using the Sphenocath device. Fifty-five patients received treatment with bilateral transnasal SPG blocks. 72.7% were females. The age range of patients was 19 to 58 years, with a mean age of 37.9 years. The baseline NRS range was 4 to 10, with a mean of 6.8. For the primary end point (headache freedom at 15 minutes, 2 hours, and 24 hours), the percentages were 70.9%, 78.2%, and 70.4%, respectively. Among the secondary efficacy measures, 27.3%, 20%, and 22.2% of patients reported headache relief at 15 minutes, 2 hours, and 24 hours after the procedure, respectively. Adverse events reported by the study population were mild, including transient throat numbness (100%), nausea (10.9%), dizziness (10.9%), vomiting (1.8%), nasal discomfort (18.2%), and worsening of preexisting headache (1.8%). The authors concluded that this is an emerging treatment option which requires more well-designed studies to further explore the efficacy of this treatment modality within a comprehensive headache program.

In 2019, Mehta et al studied the effect of regional anesthetic SPGG on self-reported pain in patients with status migrainosus (SM).⁴ Through a retrospective records review, the authors identified patients with a well-established diagnosis of migraine, based on the International Headache Society criteria. Patients selected for study inclusion were diagnosed with SM, had failed to respond to 2 or more abortive medications, and had received a suprazygomatic SPG block. Patients had also been asked to rate their pain on a 1-10 Likert scale, both before and 30 minutes after the injection. Eighty-eight consecutive patients (20 men and 68 women) received a total of 252 suprazygomatic SPG block procedures in the outpatient headache clinic after traditional medications failed to abort their SM. At 30 minutes following the injections, there was a 67.2% ($\pm 26.6\%$) reduction in pain severity with a median reduction of 5 points (IQR = -6 to -3) on the Likert scale (ranging from 1 to 10). The authors concluded that regional SPG block is potentially effective for immediate relief of SM, further studies are needed to replicate this data.

In 2020, Jespersen et al investigated the analgesic effect of a transnasal sphenopalatine ganglion block with local anesthetics vs. saline.⁵ The authors conducted a blinded, randomised

clinical trial including adults fulfilling the criteria for epidural blood patch (EBP). Participants received a sphenopalatine ganglion block bilaterally with 1 ml of either local anesthetic (lidocaine 4% and ropivacaine 0.5%) or placebo (saline). Primary outcome was pain in upright position 30 min post-block, measured on a 0-100 mm VAS. Forty patients were randomized with an upright median pain intensity of 74 and 84 mm in the local anesthetic and placebo groups at baseline, respectively. At 30 min after sphenopalatine ganglion block, the median pain intensity in upright position was 26 mm in the local anesthetic group vs 37 mm in the placebo group (estimated median difference: 5 mm; 95% confidence interval: -14 to 21; $P=0.53$). In the local anesthetic group, 50% required an EBP compared with 45% in the placebo group ($P=0.76$). The authors concluded that the administration of a sphenopalatine ganglion block with local anesthetic had no statistically significant effect on pain intensity after 30 min compared with placebo.

Kirkpatrick et al (2020) conducted a retrospective cohort study to determine the efficacy of lidocaine versus bupivacaine when performing intranasal sphenopalatine ganglion (SPG) block for the treatment of headaches.⁶ In this study, 386 total procedures were performed. Three hundred and three (78.5%) lidocaine delivered via the SphenoCath device, and 83 (21.5%) bupivacaine delivered via the Tx360 device. Ninety percent (90.2%) of treatments ($n = 348$) decreased the patient's pain level. Of the treatments performed with lidocaine, 89.1% ($n = 270$) resulted in improvement of the patient's pain level with a mean decrease in pain level of 3.1 ($SD \pm 2.3$). Of the treatments performed with bupivacaine, 94.0% ($n = 78$) resulted in improvement of the patient's pain level, with a mean decrease in pain level of 3.0 ($SD \pm 1.9$). No statistically significant difference was found between the 2 anesthetics.

Jamtoy et al (2023) investigated the efficacy and safety of injecting onabotulinum toxin A (BTA) towards the sphenopalatine ganglion (SPG) using the MultiGuide® in patients with persistent idiopathic facial pain (PIFP).⁷ This cross-over, exploratory study compared the injection of 25 units BTA versus placebo in patients who met modified ICDH-3 criteria for PIFP. Daily pain diaries were registered for a 4-week baseline, a 12-week follow-up after each injection, and an 8-week conceptual washout period in between. The primary efficacy endpoint was the change from baseline to weeks 5-8 in average pain intensity using a numeric rating scale. Adverse events were recorded. Of 30 patients who were randomized to treatment, 29 were evaluable. In weeks 5-8, there was no statistically significant difference in average pain intensity between BTA versus placebo (0.00; 95% CI = -0.57 to 0.57) ($P = 0.996$). Following both BTA and placebo injections, five participants reported at least a 30% reduction in average pain during weeks 5-8 ($P = 1.000$). No serious adverse events were reported. Post-hoc analyses indicated a possible carry-over effect.

Mantovani et al (2023) conducted a randomized, double-blind study to evaluate the efficacy of an SPG block (SPGB) via a transnasal approach as adjunctive therapy in reducing pain scores during the post craniotomy period (PCP).⁸ In this single-center, double-blind, randomized controlled trial, patients undergoing elective surgery with a supratentorial craniotomy were randomly assigned to a scalp block, local anesthetic infiltration of the wound, and systemic analgesia during the first 48 postoperative hours (standard therapy), or to standard therapy as well as an SPGB (experimental therapy). According to the available evidence, assuming a 50% reduction in the incidence of the main outcome in patients with an SPGB (vs standard treatment), 82 patients were needed to achieve 80% statistical power in an intent-to-treat analysis. Pain intensity was recorded during the first 180 postoperative days at selective time points (5 times in the hospital, 3 times by telephone interview) with different pain rating

systems (a visual analog scale [VAS], numeric rating scale [NRS], and pain assessment in advanced dementia [PAINAD] scale), together with demographic, clinical, and surgical variables and complications. Heart rate and blood pressure were recorded during surgery. Differences in all variables were evaluated using a paired t-test and confirmed through Wilcoxon matched-pairs signed-rank and Kruskal-Wallis tests. No complications occurred among the 83 patients enrolled. Statistically significant differences were found in the mean VAS score at postoperative days 0 ($p = 0.05$), 2 ($p = 0.03$), and 3 ($p = 0.03$). The PAINAD scale score showed significant differences between groups at postoperative days 1 ($p = 0.006$), 2 ($p = 0.001$), 3 ($p = 0.03$), and 4 ($p = 0.05$). The proportion of patients reporting a VAS score ≥ 3 in the first day after surgery was lower in the SPGB group than in the standard treatment group (71.9% vs 89.5%), although this difference did not reach statistical significance. At postoperative day 180, 5 patients (2 in the control group, 3 in the treatment group) developed chronic PCP (NRS score ≥ 3).

In a case report, Moon et al (2020) performed stellate ganglion block (SGB) in 2 patients with migraine that responded poorly to drugs.⁹ Patients 1 and 2 suffered from chronic, bilateral pulsating headache, accompanied by nausea and vomiting. Patient 1 presented with headache of 8 on the visual analog scale (VAS), and 37 on the migraine disability assessment (MIDAS). Patient 2 reported headache of 7 on the VAS, and 32 on the MIDAS. Patient 1 was treated with bilateral SGB every week for a month and then every month for 3 months. Patient 2 received bilateral SGB every 2 weeks for a month and then every month for 3 months. Four months after SGB, patient 1 reported pain intensity of 4 on VAS and 6 on MIDAS and patient 2 rated pain intensity of 3 on VAS, and 6 on MIDAS, respectively. Further studies are needed to replicate SGB as an effective option to improve headache related disability in patients with refractory migraine.

Kim et al (1997) conducted a small study using C2 ganglion blockade for therapeutic and diagnostic reasons of cervicogenic headache (CEH) only.¹⁰ From March 1995 to June 1995, the authors treated 24 cases of chronic headache (CEH:12, tension-type headache (TTH):9, migraine:3) using C2 ganglion blockade with methylprednisolone and mepivacaine. The diagnoses of CEH in this study were established according to the recent diagnostic criteria (Sjaastad et al. 1990). The diagnoses of migraine and TTH were based on the International Headache Society (HIS) criteria. In cases of cervicogenic headaches, 11 patients out of 12 (91.67%) improved after C2 ganglion blockade. In cases of tension-type headaches, 7 patients out of 9 improved (77.78%). In the cases of migraine, 1 patient out of 3 (33.33%) improved.

Occipital Nerve Block

Ashkenazi et al (2008) conducted a randomized comparative study to determine whether adding triamcinolone to local anesthetics increased the efficacy of greater occipital nerve block (GONB) and trigger-point injections (TPIs) for transformed migraine(TM).¹¹ Patients with TM were randomized to receive GONB and TPIs using lidocaine 2% and bupivacaine 0.5% + either saline or triamcinolone 40 mg. The authors assessed the severity of headache and associated symptoms before and 20 minutes after injection. Patients documented headache and severity of associated symptoms for 4 weeks after injections. Changes in symptom severity were compared between the two groups. Thirty-seven patients were included. Twenty minutes after injection, mean headache severity decreased by 3.2 points in group A ($p < 0.01$) and by 3.1 points in group B ($p < 0.01$). Mean neck pain severity decreased by 1.5 points in group A ($p < 0.01$) and by 1.7 points in group B ($p < 0.01$). Mean duration of being headache-free

was 2.7 ± 3.8 days in group A and 1.0 ± 1.1 days in group B ($p = 0.67$). None of the outcome measures differed significantly between the two groups. Both treatments were well tolerated.

In 2015, Inan et al conducted a randomized, multicenter, double-blind, and placebo-controlled study to assess the efficacy of greater occipital nerve (GON) blockade at chronic migraine (CM) treatment.¹² Patients with CM were randomly divided into two groups of 42. GON blockade was administered four times (once per week) with saline in group A or bupivacaine in group B. After 4 weeks of treatment, blinding was removed; in group A, GON blockade was achieved using bupivacaine, while group B continued to receive bupivacaine, and blockade was administered once per month, then followed for 2 months. Primary endpoint was the difference in number of headache days, duration of headache, and pain scores. Seventy-two of 84 patients completed the study. After 1 month of treatment, number of headache days had decreased from 16.9 ± 5.7 to 13.2 ± 6.7 in group A ($P = 0.035$) and from 18.1 ± 5.3 to 8.8 ± 4.8 in group B ($P < 0.001$), ($P = 0.004$, between groups); duration of headache (hour) had decreased from 24.2 ± 13.7 to 21.2 ± 13.4 in group A ($P = 0.223$) and from 25.9 ± 16.3 to 19.3 ± 11.5 in group B ($P < 0.001$), ($P = 0.767$, between groups). VAS score decreased from 8.1 ± 0.9 to 6.7 ± 1.6 in group A ($P = 0.002$) and from 8.4 ± 1.5 to 5.3 ± 2.1 in group B ($P < 0.001$), ($P = 0.004$, between groups). After blinding was removed (in 2nd and 3rd month), group A exhibited similar results like group B in 3rd month.

Dilli et al (2015) conducted a randomized, double-blinded, placebo controlled study to determine if occipital nerve block (ONB) with local anesthetics and corticosteroid could be used as a preventive treatment for migraine.¹³ Patients between 18 and 75 years old with ICHD-II-defined episodic (> 1 attack per week) or chronic migraine (modified ICHD-II as patients with > 10 days with consumption of acute medications were permitted into the study) were randomized to receive either 2.5 ml 0.5% bupivacaine plus 0.5 ml (20 mg) methylprednisolone over the ipsilateral (unilateral headache) or bilateral (bilateral headache) ON or 2.75 ml normal saline plus 0.25 ml 1% lidocaine without epinephrine (placebo). Patients completed a one-month headache diary prior to and after the double-blind injection. The primary outcome measure was defined as a 50% or greater reduction in the frequency of days with moderate or severe migraine headache in the four-week post-injection compared to the four-week pre-injection baseline period. Thirty-four patients received active, and 35 patients received placebo treatment. Because of missing data, the full analysis of 33 patients in the active and 30 patients in the placebo group was analyzed for efficacy. In the active and placebo groups respectively, the mean frequency of at least moderate (mean 9.8 versus 9.5) and severe (3.6 versus 4.3) migraine days and acute medication days (7.9 versus 10.0) were not substantially different at baseline. The percentage of patients with at least a 50% reduction in the frequency of moderate or severe headache days was 30% for both groups (10/30 vs nine of 30, $\Delta 0.00$, 95% CI -0.22 to 0.23). The authors concluded that greater ONB does not reduce the frequency of moderate to severe migraine days in patients with episodic or chronic migraine compared to placebo.

Gul et al (2017) explored the efficacy of greater occipital nerve blockade (GON) in chronic migraine (CM) through a placebo-controlled study.¹⁴ The authors included 44 CM patients and randomly divide the patients into two groups, as group A (bupivacaine) and group B (placebo) to our study. GON blockade was administered four times (once per week) with bupivacaine or saline. After 4 weeks of treatment, patients were followed for 3 months, and findings were recorded once every month to compare each month's values with the pretreatment values. The primary endpoint was the difference in the frequency of headache (headache days/month).

VAS pain scores were also recorded. A total of 44 patients had completed the study; no severe adverse effects had occurred. Group A showed a significant decrease in the frequency of headache and VAS scores at the first, second, and third months of follow-up. Similarly, group B showed a significant decrease in the frequency of headache and VAS scores at the first month of follow-up, but second and third months of follow-up showed no significant difference. The authors concluded that more studies are needed to better define the safety and cost-effectiveness of GON blockade in CM.

Cuadrado et al (2017) published an article which assesses the short-term clinical efficacy of GON anesthetic blocks in chronic migraine (CM) and to analyze their effect on pressure pain thresholds (PPTs) in different territories.¹⁵ The study was designed as a double-blind, randomized, placebo-controlled clinical trial. Thirty-six women with CM were treated either with bilateral GON block with bupivacaine 0.5% (n = 18) or a sham procedure with normal saline (n = 18). Headache frequency was recorded a week after and before the procedure. PPT was measured in cephalic points (supraorbital, infraorbital and mental nerves) and extracephalic points (hand, leg) just before the injection (T0), one hour later (T1) and one week later (T2). Anesthetic block was better to placebo in reducing the number of days per week with moderate-or-severe headache (MANOVA; $p = 0.027$), or any headache ($p = 0.04$). Overall, PPTs increased after anesthetic block and decreased after placebo; after the intervention, PPT differences between baseline and T1/T2 among groups were statistically significant for the supraorbital (T0-T1, $p = 0.022$; T0-T2, $p = 0.031$) and infraorbital sites (T0-T1, $p = 0.013$; T0-T2, $p = 0.005$). GON anesthetic blocks appear to be effective in the short term in CM, as measured by a reduction in the number of days with moderate-to-severe headache or any headache during the week following injection. GON block is followed by an increase in PPTs in the trigeminal area, suggesting an effect on central sensitization at the trigeminal nucleus caudalis.

Allen et al (2018) conducted a retrospective cohort study to assess the efficacy of GON block in acute treatment of migraine headaches, with a focus on pain relief.¹⁶ A total of 562 patients met inclusion criteria; 423 were women (75%). Mean age was 58.6 ± 16.7 years. Of these 562, 459 patients (82%) rated their response to GON block as moderate or significant. No statistically significant relationship existed between previous treatment regimens and response to GON block. GON block was equally effective across the different age and sex groups.

Supraorbital Nerve Block/Supratrochlear Nerve Block/Temporal Nerve Block

In 2009, Guillen et al compared the efficacy of supratrochlear and supraorbital nerve block with cold air analgesia in controlling the pain experienced during photodynamic therapy (PDT).¹⁷ A controlled open clinical trial was conducted in 34 patients having multiple actinic keratoses in the frontal region treated with PDT. On one side of the frontal region the supratrochlear and supraorbital nerves were blocked, while on the other side cold air was used as the method of analgesia. Pain was recorded on a visual analogue scale after treatment. Thirty-one of 34 patients reported less pain in the zone treated with nerve block. This difference was statistically significant. Further studies are needed to replicate these findings.

In 2019, Ozer et al conducted a single-blind, randomized, placebo-controlled study to evaluate the efficacy of GON and supraorbital nerve (SON) blockage together for the preventive treatment of migraine without aura.¹⁸ Eighty-seven patients diagnosed with migraine without aura were included in the study. Patients were divided randomly. One group was injected with 1% lidocaine; the other group was injected with 0.9% saline. GON and SON injections were

done bilaterally. The injections were repeated weekly for 3 weeks. Patients were followed up for 2 months to assess clinical response. Seventy-one patients completed the study. After 2 months, the number of headache days decreased from 12.8 ± 10.9 to 5.3 ± 7.4 , and VAS decreased from 8.3 ± 1.0 to 5.5 ± 1.9 in the blockade group. The number of headache days decreased from 12.4 ± 10.3 to 7.5 ± 7.2 and VAS decreased from 8.2 ± 1.1 to 7.4 ± 1.3 in the placebo group. Response was seen in 65.1% of the patients in the blockade group (65.4% for episodic migraine, 64.7% for chronic migraine) and 28.6% of the patients in the placebo group.

Liu et al 2024 conducted a randomized controlled crossover trial evaluating the effectiveness of short-term supraorbital nerve stimulation (SNS) and the supraorbital nerve block (SNB) for herpes zoster ophthalmicus (HZO).¹⁹ Patients with acute or subacute ophthalmic herpetic neuralgia were recruited. The patients were randomly assigned to receive either SNS or SNB. The primary outcome being measured was each patient's Visual Analog Scale (VAS) score at 4 weeks. The secondary outcomes under measurement were the proportion of patients who achieved $\geq 50\%$ pain relief, sleep quality, medicine consumption, and adverse events. Crossover after 4 weeks was permitted, and patients were followed up to 12 weeks. Overall, 50 patients were included ($n = 25/\text{group}$). At 4 weeks, the patients who received SNS achieved greater pain relief, as indicated by their significantly different VAS scores from those of the SNB group (mean difference: -1.4 [95% CI, -2.29 to -0.51], $P < 0.05$). Both groups showed a decrease in pain level from the baseline (all $P < 0.05$). Overall, 72% and 44% of the SNS and SNB patients experienced $\geq 50\%$ pain relief, respectively (OR: 0.31 [95% CI, 0.09 to 0.99], $P < 0.05$), and 68% and 32% of SNS and SNB patients, respectively, had VAS scores < 3 (OR: 0.22 [95% CI, 0.07 to 0.73], $P < 0.05$). Compared to the SNB group, the SNS group had better sleep quality, lower ophthalmic neuralgia, a lower proportion of further treatment, and lower analgesic intake. Overall, 18 patients received SNS alone, and 16 patients crossed over from SNB to SNS. The VAS scores, sleep quality, ophthalmic neuralgia, and trend of medicine intake were not significantly different between the groups (all $P > 0.05$). This study was nonblind.

Auriculotemporal Nerve Block

Miller et al (2019) conducted an uncontrolled open-label prospective study to study the efficacy and safety of multiple cranial nerve blocks (supraorbital, supratrochlear, auriculotemporal) for the treatment of chronic headaches.²⁰ In this study 119 patients with chronic cluster headache, chronic migraine, short lasting unilateral neuralgiform attack disorders, new daily persistent headaches, hemicrania continua and chronic paroxysmal hemicrania were examined. All had failed to respond to greater occipital nerve blocks. Response was defined as a 50% reduction in either daily attack frequency or moderate-to-severe headache days after 2 weeks. The response rate of the whole cohort was 55.4%: Chronic cluster headache, 69.2%; chronic migraine, 49.0%; short lasting unilateral neuralgiform attack disorders, 56.3%; new daily persistent headache, 10.0%; hemicrania continua, 83.3%; and chronic paroxysmal hemicrania, 25.0%. Time to benefit was between 0.50 and 33.58 hours. Benefit was maintained for up to 4 weeks in over half of responders in all groups except chronic migraine and paroxysmal hemicrania. Only minor adverse events were recorded.

Garcia et al (2020) conducted a prospective, randomized, crossover experiment study in 11 healthy adult rabbits.²¹ The rabbits underwent general anesthesia and injections of the greater auricular and auriculotemporal nerves using either bupivacaine (0.3 mL/kg, 0.5%) or the same volume of saline. After anesthesia, the efficacy and duration of nerve blocks were assessed using analgesiometry forceps on the pinna and cotton-tipped applicators within the vertical ear

canal. Rabbits were monitored for abnormal carriage of the ear and auriculopalpebral nerve block of the ipsilateral eye. The greater auricular nerve was successfully blocked in 12/16 (75%) ears for mean $\pm$ standard deviation duration of 88 ± 52 minutes. In successfully blocked ears, altered ear position was noted in five/16 (31%) cases. The auriculotemporal nerve was blocked in one/16 ears for 120 minutes. The auriculopalpebral nerve was inadvertently blocked in three/16 ears. Food intake and fecal output decreased significantly during the treatment day but returned to pretreatment values after 24 hours. There was no change in body weight or fecal pellet diameter for either treatment. The results suggest that duration of the greater auricular nerve block with 0.5% bupivacaine was short-lived in the live rabbit. Auriculotemporal nerve block was only achieved in one ear; therefore, further studies are warranted to evaluate the contribution of these blocks in the pain management of rabbits undergoing auricular surgery.

Trigeminal Nerve Block

Han et al (2017) conducted a study evaluating the clinical outcome of the trigeminal nerve block (Tnb) with alcohol in the treatment of medically intractable trigeminal neuralgia (TN).²² Six hundred thirty-two patients were diagnosed with TN between March 2000 and February 2010. Four hundred sixty-five out of 632 underwent Tnb with alcohol under a fluoroscope. Pain relief duration was analyzed and compared in the individual branch blocks. Outcomes were compared between patients with and without a previous Tnb with alcohol. Tnb with alcohol were performed in a total of 710 (1-465, 2-155, 3-55, 4-23, 5-8, 6-4) cases for a series of consecutive 465 patients during the study period. Forty hundred sixty two out of the 465 patients experienced immediate complete pain relief (99%) at the first Tnb. Of the 465 patients, 218 patients (46.9%) did not require any further treatment after the first Tnb with alcohol during an entire study period. One hundred fifty-nine (34.2 %) out of the 465 patients experienced recurring pain after the first block, among whom 155 patients received subsequent blocks, and the remaining 4 patients decided to take medication. According to the Kaplan-Meier analysis, the probabilities of remaining pain relief for 1, 2, 3, and 5 years after the procedures were 86.2%, 65.5%, 52.5%, and 33.4%, respectively. There was no significant difference in the probability of pain relief duration between patients with and without previous Tnb with alcohol. Median (95% CI) pain relief durations of the first and repeated blocks were 39 (36-51) and 37 (28-54) months, respectively. There was no significant difference in occurrence of complications between patients with and without previous Tnb with alcohol ($p < 0.076$). All the complications recovered spontaneously within 6 months. There was no mortality related to the procedure.

Srejic et al (2023) conducted a prospective, randomized, double-blinded clinical trial to evaluate if bilateral superficial trigeminal nerve blocks are effective in abolishing post operative headache pain in pituitary transsphenoidal neurosurgery cases.²³ Forty-nine patients, following induction of general anesthesia for their transsphenoidal surgery, were prospectively randomized in a double-blinded fashion to receive additional regional anesthesia as either a block (0.5% ropivacaine with epi 1:200,000) or placebo/sham (0.9% normal saline). The primary endpoint of the study was systemic morphine PCA opioid consumption by the two groups in the first 6-hours postoperatively. The secondary endpoints included (1) pain exposure experienced postoperatively, (2) incidence of postoperative nausea and vomiting, and (3) time to eligibility for PACU discharge. Of the 49 patients that were enrolled, 3 patients were excluded due to protocol violations. Ultimately, there was no statistically significant difference between morphine PCA use in the 6 hours postoperatively between the block and placebo/sham groups. There was, however, a slight visual tendency in the block group for

higher pain scores, morphine uses $p=0.046$, and delayed PACU discharge. False discovery rate corrected comparisons at each time point and then revealed no statistically significant difference between the two groups. There were no differences between the two groups for secondary endpoints. It was found that a 6-hour postoperative headache after endoscopic transsphenoidal pituitary surgery likely has a more complicated mechanism involving more than the superficial trigeminovascular system and perhaps is neuro-modulated by other brain nuclei.

Seo et al (2020) reported on the efficacy and safety of percutaneous trigeminal nerve block in elderly patients with TN at an outpatient clinic.²⁴ Twenty-one patients older than 65 years with TN received percutaneous nerve block at the outpatient clinic. The authors used bupivacaine (1 mL/injection site) to block the supraorbital, infraorbital, superior alveolar, mental, and inferior alveolar nerves according to pain sites of patients. All patients reported some relief from pain, which decreased by approximately 78% after 2 weeks of nerve block. The effect lasted for more than 4 weeks in 12 patients and for 6 weeks in two patients.

Suprascapular Nerve Block/Spinal Accessory Nerve Block

No RCTs, case studies or other literature was found regarding suprascapular or spinal accessory nerve blocks for headaches.

SUPPLEMENTAL INFORMATION

American Headache Society (AHS)²⁵

The AHS released a consensus statement (2021) regarding updates on integrating new migraine treatments into clinical practice. Nerve blocks were not mentioned in this consensus statement.

American Society of Interventional Pain Physicians (ASIPP)

ASIPP does not have guidelines on nerve block therapy for headaches.

National Institute for Health and Care Excellence (NICE)

NICE does not have any position statements or guidelines were found on nerves block therapy for headaches.

American Academy of Neurology (AAN)²⁶

AAN released evidence-based guidelines for migraine headaches in 2000. This guideline does not mention nerve blocks as a therapeutic option. Guideline was retired. No updated are expected.

ONGOING AND UNPUBLISHED CLINICAL TRIALS

Some currently unpublished trials that might influence this review are listed in Table 1.

Table 1. Summary of Key Trials

NCT No.	Trial Name	Planned Enrollment	Completion Date
Ongoing			
NCT06646081	The Impact of Greater Occipital Nerve and Stellate Ganglion Block Treatments on Sleep in Chronic Headache Management	86	July 2026 (not yet recruiting)

NCT06008795	BLOCK-SAH - PPF-Block for Post-SAH Headache (BLOCK-SAH)	195	Jan 2027
NCT06684249	Efficacy of Nerve Block Versus Botox in Chronic Migraine Management	64	Jul 2026 (recruiting)
NCT06621329	Transnasal Sphenopalatine Ganglion Block for Treatment of Acute Subarachnoid Hemorrhage Associated Headache	40	Oct 2026 (recruiting)
NCT06069791	Greater Occipital Nerve Blockade in Veterans with Post-concussion Headache: Sub-study 1	12	Mar 2026 (recruiting)
NCT05734625	Efficacy of Nerve Blocks for Episodic Migraine	60	Jul 2026 (recruiting)
NCT06432127	Role of Ultrasound Guide Greater Occipital Nerve Block at Second Cervical Vertebra in Migraine Headache Prophylaxis	108	Jan 2027 (not yet recruiting)

Regulatory Status

The administration of an anesthetic nerve block is considered a medical procedure and, as such, is not subject to regulation by the U.S. Food and Drug Administration.

Government Regulations

National:

No NCD was found for nerves blocks as a therapy for headaches.

Local:

No LCD was found for nerves blocks as a therapy for headaches.

(The above Medicare information is current as of the review date for this policy. However, the coverage issues and policies maintained by the Centers for Medicare & Medicare Services [CMS, formerly HCFA] are updated and/or revised periodically. Therefore, the most current CMS information may not be contained in this document. For the most current information, the reader should contact an official Medicare source.)

Related Policies

- Surgical Deactivation of Headache Trigger Sites
 - Oxygen Therapy for the Treatment of Cluster Headaches
 - Botulinum Toxin Type A Botox® (pharmacy policy)
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Joint BCBSM/BCN Medical Policy History

Policy Effective Date	BCBSM Signature Date	BCN Signature Date	Comments
7/1/25	4/15/25		Joint policy established
7/1/26	4/21/26		Routine policy maintenance, no change in status. Vendor managed: N/A (ds)

Next Review Date: 2nd Qtr., 2027

Pre-Consolidation Medical Policy History

Original Policy Date	Comments
BCN:	Revised:
BCBSM:	Revised:

BLUE CARE NETWORK BENEFIT COVERAGE
POLICY: HEADACHES-NERVE BLOCKS/GANGLION BLOCKS

I. Coverage Determination:

Commercial HMO (includes Self-Funded groups unless otherwise specified)	Not covered
BCNA (Medicare Advantage)	See government section
BCN65 (Medicare Complementary)	Coinsurance covered if primary Medicare covers the service.

II. Administrative Guidelines:

- The member's contract must be active at the time the service is rendered.
- Coverage is based on each member's certificate and is not guaranteed. Please consult the individual member's certificate for details. Additional information regarding coverage or benefits may also be obtained through customer or provider inquiry services at BCN.
- The service must be authorized by the member's PCP except for Self-Referral Option (SRO) members seeking Tier 2 coverage.
- Services must be performed by a BCN-contracted provider, if available, except for Self-Referral Option (SRO) members seeking Tier 2 coverage.
- Payment is based on BCN payment rules, individual certificate and certificate riders.
- Appropriate copayments will apply. Refer to certificate and applicable riders for detailed information.
- CPT - HCPCS codes are used for descriptive purposes only and are not a guarantee of coverage.