Subject: Occipital Nerve Block Therapy for Treatment of Headaches and Occipital Neuralgia	**Original Effective Date:** 4/23/20
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DESCRIPTION OF PROCEDURE/SERVICE/PHARMACEUTICAL [3 5]

Occipital neuralgia

Occipital neuralgia is a distinct type of headache characterized by piercing, throbbing, or electric-shock-like chronic pain in the upper neck, back of the head, and behind the ears, usually on one side of the head. Typically, the pain of occipital neuralgia begins in the neck and then spreads upwards. Some individuals will also experience pain in the scalp, forehead, and behind the eyes. Their scalp may also be tender to the touch, and their eyes especially sensitive to light. The location of pain is related to the areas supplied by the greater and lesser occipital nerves, which run from the area where the spinal column meets the neck, up to the scalp at the back of the head. The pain is caused by irritation or injury to the nerves, which can be the result of trauma to the back of the head, pinching of the nerves by overly tight neck muscles, compression of the nerve as it leaves the spine due to osteoarthritis, or tumors or other types of lesions in the neck. Treatment is generally symptomatic and includes massage and rest. In some cases, antidepressants may be used when the pain is particularly severe. Other treatments may include local nerve blocks and injections of steroids directly into the affected area.

Peripheral nerve blocks (PNBs)

PNBs have been employed in the treatment of a variety of headache disorders for many years. PNBs involve injections of local anesthetic agents around peripheral nerve branches. The most widely used target for PNBs is the greater occipital nerve (GON). Other commonly targeted nerves are the lesser occipital nerve (LON) and several branches of the trigeminal nerve: the supratrochlear (STN), supraorbital (SON) and auriculotemporal (ATN) nerves (Robbins and Blumenfeld, 2017). [5]

- The rationale for using GONB in headache treatment comes from evidence for convergence of sensory input to trigeminal nucleus caudalis neurons from both cervical and trigeminal fibers. Injecting this

region with local anesthetic and corticosteroids decreases sensory input to the trigeminal nucleus caudalis.

- A GON injection involves injecting a small dose of local anesthetic alone or with corticosteroids around the greater occipital nerve, which is located at the back of the head, at the top of the neck. These injections can be performed unilaterally or bilaterally. Although there is no standardized procedure, the nerve is usually infiltrated with a local anesthetic (e.g., lidocaine, bupivacaine, or both) with or without a corticosteroid (e.g. such as methylprednisolone, dexamethasone, or triamcinolone) during GONBs.

Greater Occipital Nerve Block (GONB)

GONB or nerve block therapy has been suggested as a treatment of medically intractable chronic headache types, including migraine, cluster, cervicogenic and occipital neuralgia, using locally injected anesthetics with or without the addition of corticosteroid preparations. However, the published evidence regarding the use of occipital nerve therapy as a treatment option for chronic headache syndromes, including occipital neuralgia, has been largely limited to case series and individual case reports at single institutions and headache centers.

The use of occipital nerve block therapy as a treatment for occipital neuralgia and chronic headaches have shown some improvement in pain management for some individuals in some preliminary studies ranging from no relief to hours or weeks/months of pain relief; however additional randomized, placebo-controlled studies with larger test populations and longer follow-up periods are needed before conclusions regarding the safety and efficacy of this technique can be reached.

U.S. Food and Drug Administration (FDA)

Greater occipital nerve block (GONB) is a procedure and therefore not subject to FDA regulation. However, any medical devices, drugs, biologics, or tests used as a part of this procedure may be subject to FDA regulation.

RECOMMENDATION [9-17 18-20]

Occipital nerve block (ONB) therapy involves injection of a local anesthetic with or without steroid around the greater and lesser occipital nerves located in the back of the head just above the neck area. This policy addresses ONB as a therapy for treatment of various headache syndromes and occipital neuralgia.

Occipital nerve block therapy is considered experimental, investigational or unproven for the treatment of headache or occipital neuralgia including, but not limited to:

- **Cervicogenic headache**
- **Cluster headache**
- **Diagnostic test**
- **Migraine headache**
- **Neck pain**
- **Tension headache**

Cluster Headache

To date there is insufficient high-level evidence for the efficacy of GON block in the acute or preventive treatment of headache. Current evidence of benefit of GONB in the management of cluster headache is limited to case series showing only temporary symptomatic relief and from non-controlled studies which suggested efficacy of GONB in the treatment of migraine, cluster headache, and chronic daily headache. There are few

well-designed controlled, blinded studies to assess the role of GONB in headache treatment which is needed to determine the patient populations who would benefit the most from this procedure, and to establish the optimal drug combination to use for nerve blockade. Results of case series varied in terms of frequency, intensity and duration of headache relief (Gantenbein, 2012; Peres, 2002). Controlled studies are required to better assess the role of GON block in the treatment of migraine and other headaches.

Cervicogenic Headache

Although there are preliminary results from limited trials demonstrating some efficacy for use of GONB in chronic headache syndromes, such as migraine and cluster headaches, there is lack of well-controlled outcomes studies and more conservative interventions are usually prescribed.

Diagnostic Occipital Nerve Blocks

Occipital nerve blocks have been encouraged as a diagnostic test for cervicogenic headache and occipital neuralgia. The standardization of diagnostic nerve blocks in the diagnosis of CGH remains to be defined. There are no high quality evidence and well-designed clinical trials that clearly indicate that injection of occipital nerves can be used as a specific diagnostic test for headaches and occipital neuralgia.

Greater Occipital Nerve blocks (GONB)

The efficacy of GONB therapy for the treatment of occipital neuralgia has been demonstrated in observational and cohort studies and series of small numbers with only short-term outcomes data. There is no conclusive evidence of the durable therapeutic effect of GONB in occipital neuralgia, further study is needed to confirm its benefits when closely balanced with risk, before a widespread use of GONB can be recommended. Therefore, the use of GONB for prophylaxis and treatment of migraine headache, including for the prevention of debilitating symptoms of chronic migraine (CM) and for the prevention of debilitating symptoms of episodic migraine (EM) or transformed migraine in adult patients, are considered experimental, investigational and unproven due to insufficient evidence in the peer-reviewed medical literature that that have not established long term safety, efficacy and effect on net health outcomes.

Occipital Neuralgia

The current evidence for local injection therapy for occipital neuralgia is limited by small sample sizes, short-to-intermediate follow-up periods, a lack of data regarding optimal patient selection, and a lack of comparisons with conservative treatment approaches. Additional studies are needed to address optimal use for nerve blockade in occipital neuralgia. Furthermore, there was very-low-quality, insufficient evidence to evaluate the efficacy of injections for outcomes, including QOL, headache frequency, or complication rates, as these outcomes were reported in a single study (Cohen et al., 2015). The efficacy of injections versus placebo was not evaluated for patients with occipital neuralgia (Hayes, September 2018).

BACKGROUND/SUMMARY OF MEDICAL EVIDENCE [9-17]

Cervicogenic Headache

A systematic review (2015) evaluated studies of occipital nerve blocks for treatment of headaches, including cervicogenic headache, and concluded that blocks are delivered safely in an outpatient setting by physicians with appropriate training. However, the review noted some limited evidence from 2 studies (1 RCT and 1 uncontrolled trial) that cervicogenic headaches may be effectively treated by occipital nerve blocks (Voigt and Murphy, 2015) (Hayes, September 2018).

A Hayes report for the use of anesthetic-based injections for individuals with cervicogenic headache found overall low-quality body of evidence suggesting that anesthetic-based injections provide superior pain relief compared with placebo and similar pain relief compared with more invasive treatments (Hayes, September 2018). The report concluded that there "remains uncertainty regarding the duration of pain relief, the optimal formulation of anesthetic-based injections, the comparative effectiveness and safety versus conservative treatments, and patient selection criteria."

Occipital Neuralgia

According to the American Association of Neurological Surgeons (AANS), "Often, occipital neuralgia symptoms will improve or disappear with heat, rest, physical therapy including massage, anti-inflammatory medications, and muscle relaxants… Percutaneous nerve blocks may not only be helpful in diagnosing occipital neuralgia, but can also help alleviate pain. Nerve blocks involve either the occipital nerves or in some patients, the C2 and/or C3 ganglion nerves. It is important to keep in mind that repeat blocks using steroids may cause serious adverse effects (AANS, 2013)."

A Hayes report for the use of anesthetic-based injections in patients with occipital neuralgia, the report found very-low-quality body of evidence suggesting that anesthetics plus steroid injections provide inferior pain relief compared with more invasive treatments (Hayes, September 2018).

Migraine Headache

Migraine is a chronic neurologic disease that is recurrent in nature and classically presents as moderate-to-severe head pain lasting on average from 4 to 72 hours. It is typically unilateral with a pulsating quality, accompanied by nausea, vomiting, photophobia, and/or phonophobia, and may be preceded by aura that consists of sensory, motor, or language symptoms. The involvement of the trigeminovascular system (TVS) is broadly accepted, however the pathophysiology of migraine, both episodic and chronic, is not fully understood.

According to the *International Classification of Headache Disorders (ICHD)*, 3rd edition (beta version)[3] chronic migraine (CM) is defined as headache occurring on 15 or more days/month for more than 3 months, which, on at least 8 days/month, has the features of migraine headache.

- CM is the most commonly used term to indicate a progression from or complication of migraine; however, the ICHD-3 definition of CM is more indicative of migraine that retains its clinical characteristics but with an increase in the number of headache days.
- First-line prophylactic agents are propranolol, amitriptyline, and topiramate; valproic acid and its derivatives are first line for men and for women who do not have childbearing potential. The choice among migraine prophylactic agents depends upon individual patient factors and comorbid conditions. For patients with chronic migraine who have failed treatment with first-line agents,

second-line pharmacologic agents include: onabotulinumtoxinA injections, CGRP antagonists (subcutaneous erenumab, fremanezumab, or galcanezumab), or verapamil, other beta blockers, gabapentin, magnesium, riboflavin, candesartan, and other tricyclic antidepressants (AHS, 2019). [8]

- Alternatives for those who fail treatment with first and second-line agents: Third-line agents include feverfew, tizanidine, memantine, pregabalin, cyproheptadine, and zonisamide.
- Treatments for patients refractory to conventional treatment (e.g., management of lifestyle and headache triggers or acute or preventive migraine medication) include neuromodulatory therapies, such as GONB, occipital or vagal nerve stimulation, transcranial magnetic stimulation, and surgical decompression of the GON (Weatherall, 2015; Su and Yu, 2018). At the present time, there are no migraine-related standardization of GONB treatment protocols (Hayes, Sep 2019).
- National Institute for Health and Clinical Excellence (NICE)
  According to NICE Clinical Guidance on Occipital Nerve Stimulation for Intractable Chronic Migraine (2013): "The evidence on occipital nerve stimulation (ONS) for intractable chronic migraine shows some efficacy in the short term but there is very little evidence about long-term outcomes. With regard to safety, there is a risk of complications, needing further surgery."

Greater occipital nerve blocks (GONB)

GONBs are frequently used to treat migraine headaches even though a paucity of supporting clinical evidence exists. Despite some favorable clinical experience reported, there is a lack of high-quality published evidence and clinical trials supporting in the efficacy of GONB in migraine treatment:

- The efficacy of GONB therapy for the treatment of occipital neuralgia, efficacy has only been demonstrated in observational and cohort studies and series of small numbers with only short-term outcomes data. Taking into consideration that there is no conclusive evidence of the durable therapeutic effect of GONB in occipital neuralgia, further study is needed to confirm its benefits when closely balanced with risk, before a widespread use of GONB can be recommended.
- Although studies have been conducted and reported variable results and conclusions, there is heterogeneity in treatment and migraine types across studies due to the lack of standardization of GONB treatment protocols. Considerable variability exists regarding the technique, injection site(s), drug/agent used (type of anesthetic, addition of corticosteroid to local anesthetic i.e. lidocaine, bupivacaine, or both) with or without corticosteroids, patient selection criteria, dosages, and frequency of administration. This gap in consensus and professional society recommendations to guide practice supports the need for further research in this area to improve the outcome and safety of this treatment modality.
- Standard treatment protocols, and larger, well-designed controlled trials with longer follow-up are required to establish long-term safety, efficacy and effect on net health outcomes of GONB.
- Comparative efficacy studies of GONB and standard treatments such as onabotulinumtoxinA (Botox-A) (the only FDA-approved therapy for prevention of headaches in adults with chronic migraine) are lacking at this time.
- Currently there are no clinical guidelines or consensus released by major U.S.-based headache or neurology organizations addressing GONB in the treatment of migraine and to establish the patient populations who benefit the most from this procedure, and optimal drug combination to use for nerve blockade.

Systematic Review and Meta-Analysis

Yang et al. (2016) conducted a systematic review to evaluate the clinical efficacy and safety of occipital nerve stimulation (ONS) for treating migraine. Five randomized controlled trials, 4 retrospective studies, and one prospective study met the inclusion criteria. Improvement was noted in the migraine disability assessment (MIDAS) score and SF-36 score at follow-up. The mean complication incidence of ONS was 66% for the reviewed studies.

- The authors concluded that results from the retrospective studies and case series indicated that ONS significantly reduced the pain intensity and the number of days with headache in patients with migraine. The evidence of ONS efficacy established by randomized controlled trials was limited.
- The authors recommended that future clinical studies should optimize and standardize the ONS intervention process and identify the relationship among the surgical process, efficacy, and complications resulting from the procedure. [17]

Tang et al. (2017) conducted a systematic review and meta-analysis of 6 randomized controlled trials (RCTs) to assess the efficacy of GONB compared with control intervention of GON placebo (saline) injection in 279 patients diagnosed with migraine: [15]

- GONB consisted of bupivacaine alone in 3 trials, bupivacaine plus methylprednisolone in 1 trial, bupivacaine plus triamcinolone in 1 trial, and lidocaine plus triamcinolone in 1 trial
- 4 trials included only patients with chronic migraine; 2 trials included patients with episodic or chronic migraine
- All trials had < 40 patients per treatment group; 4 trials had < 25 patients per treatment group
- Compared to placebo injection, GONB associated with:
    - Moderate reductions in:
        - Number of days/month with headache (standardized mean difference [SMD] -0.68, 95% CI -1.02 to -0.35) in analysis of 3 trials with 145 patients (all with chronic migraine)
        - Headache pain (SMD -0.51, 95% CI -0.81 to -0.21) in analysis of 4 trials with 180 patients (chronic migraine in 3 trials, episodic or chronic migraine in 1 trial)
    - Small reduction in acute medication use (SMD -0.35, 95% CI -0.67 to -0.02) in analysis of 3 trials with 145 patients (chronic migraine in 1 trial, episodic or chronic migraine in 2 trials)
- No serious adverse events reported; quantitative analysis on any adverse events not reported, but authors describe rate as "very few"
- Compared with control intervention in migraine patients, GONB intervention was found to significantly reduce pain score, number of headache days, and medication consumption but demonstrated no influence on duration of headache per four weeks.
- The authors concluded that compared with control intervention in migraine patients, GONB intervention was found to significantly reduce pain score, number of headache days, and medication consumption but demonstrated no influence on duration of headache per four weeks.
- The short term follow-up did not allow for assessment of intermediate and long term outcomes. [15]

Zhang H, et al. (2018) performed a systematic review of seven RCTs and a meta-analysis investigated the impact of GONB on pain management of migraine. The primary outcome was pain intensity. GONB reported to reduce pain intensity and analgesic use and headache frequency outcomes not reported.

- The authors concluded that compared with control intervention in migraine patients, GONB intervention can significantly reduce pain intensity and analgesic medication consumption, however has no remarkable impact on headache duration and adverse events. [16]

- The analysis was based on only seven RCTs, the same 6 trials (Tang et al. 2017) plus 1 additional small trial, with relatively small sample size (n < 100) and short follow-up time. [15]

Clinical Studies

GONB appears to improve migraine headache measures over the short term, however the follow-up times in the reviewed studies were inadequate (usually 3 months or less) to demonstrate long-term efficacy of GONB for treatment of migraine. Evidence is lacking from RCTs regarding the benefit of GONB in patients who receive recurrent injections over a more extended period of time.

GONB with Local Anesthetic vs Placebo Saline

Özer et al. (2018) evaluated the efficacy of GONB and supraorbital nerve block (SONB) with local anesthetics for the preventive treatment of migraine without aura in a single-blind, randomized, placebo-controlled study

- 87 adult patients diagnosed with migraine without aura were included in the study and patients were divided randomly. One group was injected with 1% lidocaine (n=44), the other group was injected with 0.9% saline (n=43). 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.
- 71 patients completed the study; lidocaine (n=43) and placebo 0.9% saline (n=28). Patients kept HA diary for 1 month prior to and 2 months following injection and assessed at clinic visits for 2 months after injection.

Özer et al. concluded that GONB and SONB with lidocaine reduced pain severity but not HA frequency in pts with chronic migraine compared with placebo, although patients with episodic migraine improved. HA frequency and pain severity statistically significant improved in the GONB/SONB groups compared with placebo. No major adverse effects occurred. The limitations of this study includes the lack of a double blind trial and high attrition rate (16 patients withdrew from study before completion; 15 (34.9%) patients in placebo group due to continued pain and loss to follow-up and 1 patient was lost to follow-up in GONB group) which lead to an imbalance in group sizes and loss of statistical power. The study was also limited due to short follow-up period of only 2 months. [14]

Gul et al. (2017) evaluated the efficacy of GON blockade in patients with chronic migraine in randomized control study. [12]

- The study included 44 CM patients who were randomly divided onto two groups; group A (bupivacaine) and group B (placebo).
- GONB was administered four times (once per week) with bupivacaine or saline. After 4 weeks of treatment, patients were followed up for 3 months, and findings were recorded once every month for comparing each month's values with the pretreatment values.
- The primary endpoint was the difference in the frequency of headache (headache days/month). The Visual Analogue Scale (VAS) pain scores were also recorded. No severe adverse effects were reported. Group A showed a significant decrease in the frequency of headache and VAS scores at the first, second, and third months of follow-up. 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.

Gul et al. concluded that their results suggest that GONB with bupivacaine was superior to placebo, has long-lasting effect than placebo, and was found to be effective for the treatment of chronic migraine. More studies are required to better define the safety and cost-effectiveness of GONB in chronic migraine. [12]

Inan et al. (2015) reported this study as the first randomized, multicenter, double-blind, and placebo-controlled in this field. This study evaluated the safety and efficacy of unilateral GONB in a multicenter, double-blind, randomized placebo-controlled crossover trial of 84 patients with chronic migraine at 1, 2, and 3 month follow-up. [13]

- 84 patients were randomized to bupivacaine (n=42) or placebo group saline (n=42):
  - The intervention group received GONB with injections of 0.5% bupivacaine (n = 42), while the placebo group received 2.5 mL saline (n = 42) once a week for 4 weeks
  - 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. After 3 months of treatment, the hours had declined further to a mean of 10.0 ± 6.2 in group A, and 10.8 ± 5.9 in group B but again, the difference was not significant between the two groups. The mean VAS score improved in both the intervention and placebo groups with similar improvements in the two groups.

The authors stated the evidence suggests that GONB with bupivacaine relieves migraine headache symptoms and reduces the frequency of the attacks compared with a placebo (confirmed when the placebo patients crossed over to active treatment and experienced significant symptom relief). Although treatment with bupivacaine reduced the number of headache days per month, it did not reduce the duration of headaches compared with placebo. The study was also limited by its small sample size, with only 72 of the 84 subjects actually completing the study (n=33 placebo; n=39 bupivacaine). Other limitations included a short duration of the double-blind phase; which was limited to only 1 month of actual blinding and a short follow-up of 3 months. [13]

Cuadrado et al. (2017) conducted a double-blind, randomized, and placebo-controlled clinical trial involving 36 patients, with the objective of assessing the short-term clinical efficacy of GON blocks in chronic migraine. The authors noted that although GON blocks are widely used for the treatment of headaches, the quality evidence regarding their efficacy is scarce. ClinicalTrials.gov (NCT02188394).

- Female patients aged 18-65 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.
- Pressure pain thresholds (PPTs) were 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).
- The study demonstrated an absolute reduction in the number of headache calendar days with the use of GON block with bupivacaine. The authors noted that the GON anesthetic blocks appear to be effective in the short-term in chronic migraine, as measured by a reduction in the number of days with moderate-to-severe headache or any headache during the week following injection. GONB is

followed by an increase in PPTs in the trigeminal area, suggesting an effect on central sensitization at the trigeminal nucleus caudalis.

Cuadrado et al. concluded that anesthetic GON block may be useful as a bridging therapy in the short-term treatment of chronic migraines; however RCTs are still required to confirm these results since the study was limited by its heterogeneous patient population and small sample size. [10]

Adding Corticosteroid or Saline (placebo) to Local Anesthetic: [11]

Dilli et al. (2015) evaluated the efficacy of ONB with local anesthetic and corticosteroid for the preventive treatment of migraine in a randomized, placebo-controlled study in adults with chronic migraine.

- 70 patients between 18 and 75 years old with ICHD-defined episodic (> 1 attack per week) or chronic migraine were randomized to receive either:
  - 35 patients received active: 2.5 ml 0.5% bupivacaine plus 0.5 ml (20 mg) methylprednisolone over the ipsilateral (unilateral headache) or bilateral (bilateral headache) occipital nerve (ON), or
  - 35 patients received placebo treatment: 2.75 ml normal saline plus 0.25 ml 1% lidocaine without epinephrine (placebo arm)
- Due to the missing data of 7 patients (2 patients missing f/u data in the active steroid group and 5 in placebo group) 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.
- 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.
- An evaluation 4 weeks after the procedure did not find any significant changes in the frequency of moderate to severe headache days in either group with respect to its baseline data.

The authors concluded that GONB with local anesthetic (bupivacaine) and corticosteroid (methylprednisolone) does not result in improved HA outcomes compared with control (lidocaine and saline) in patients with episodic migraine or chronic migraine. The GONB evaluated does not reduce the frequency of moderate to severe migraine days in individuals with episodic or chronic migraine compared to placebo. The study did not evaluate the onset or duration of benefit of the GONB; it also did not evaluate the acute response to the injection. Also, not every trial subject was experiencing headache pain at the time of injection. The authors acknowledged the need for a placebo-controlled trial to evaluate GONB for acute relief of migraine pain. The study had a small sample size and the procedure was performed once, compared to the multiple times in other studies. This study's placebo treatment included a small amount of anesthetic. [11]

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CPT	Description
64405	Injection, anesthetic agent; greater occipital nerve [when specified as a therapeutic nerve block]
64450	Injection(s), anesthetic agent(s) and/or steroid; other peripheral nerve or branch [when specified as a therapeutic nerve block of lesser occipital nerve]

HCPCS	Description
	N/A

ICD-10	Description
G43.001-G43.919	Range of codes for Migraine
G44.001-G44.89	Other headache syndromes
M54.81	Occipital neuralgia
R51	Headache

REFERENCES

Government Agency

1. Centers for Medicare & Medicaid Services (CMS). National Coverage Determination (NCD) for Neuromuscular Electrical Stimulation (NMES) (160.12). Effective date: 10/1/2006. Available at: http://www.cms.gov/medicare-coverage-database/search/advanced-search.aspx.

Professional Society Guidelines

2. American Migraine Foundation. Understanding Migraine Cervicogenic Headache. October 24, 2016.
3. Headache Classification Committee of the International Headache Society. The International Classification of Headache Disorders, 3rd edition (beta version). Cephalalgia 2013;33:629–808. Available at: ICHD-3 Accessed on December 2019.
4. Global Burden of Disease Study. Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013. Lancet 386: 743–800, 2015.
5. Robbins MS, Blumenfeld A. Information for health care professionals: Peripheral nerve blocks for headaches. Mt. Royal, NJ: American Headache Society. Accessed at: https://americanheadachesociety.org/wp-content/uploads/2018/05/Andrew_Blumenfeld_and_Matthew_Robbins_-_Peripheral_Nerve_Blocks.pdf
6. Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. Assessment: botulinum neurotoxin in the treatment of autonomic disorders and pain (an evidence-based review): report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. Neurology 2008;70:1707–14.

7. Silberstein SD, Holland S, Freitag F, Dodick DW, Argoff C, Ashman E; Quality Standards Subcommittee of the American Academy of Neurology and the American Headache Society. Evidence-based guideline update: pharmacologic treatment for episodic migraine prevention in adults: report of the Quality Standards Subcommittee of the American Academy of Neurology and the American Headache Society. Neurology 2012;78:1337–45.
8. American Headache Society (2019). AHS Consensus Statement. The American Headache Society Position Statement on Integrating New Migraine Treatments into Clinical Practice. Headache: The Journal of Head and Face Pain, 59: 1-18. doi:10.1111/head.13456
1. American Academy of Neurological Surgeons (AANS). Occipital Neuralgia. November 2006. Updated 2013. Available at: https://www.aans.org/en/Patients/Neurosurgical-Conditions-and-Treatments/Occipital-Neuralgia. Accessed on May 2020.

Peer Reviewed Publications

2. Allen SM, Mookadam F, et al. Greater occipital nerve block for acute treatment of migraine headache: a large retrospective cohort study. J Am Board Fam Med. 2018; 31(2):211-218. doi: 10.3122/jabfm.2018.02.170188.
3. Cuadrado ML, Aledo-Serrano Á, Navarro P, et al. Short-term effects of greater occipital nerve blocks in chronic migraine: A double-blind, randomized, placebo-controlled clinical trial. Cephalalgia. 2017;37(9):864-872.
4. Dilli E, Halker R, Vargas B, et al. Occipital nerve block for the short-term preventive treatment of migraine: A randomized, double-blinded, placebo-controlled study. Cephalalgia. 2015; 35(11):959-968.
5. Gul HL, Ozon AO, Karadas O, et al. The efficacy of greater occipital nerve blockade in chronic migraine: A placebo- controlled study. Acta Neurol Scand. 2017;136(2):138-144.
6. Inan L, Inan N, Karadas O¨, et al. Greater occipital nerve blockade for the treatment of chronic migraine: a randomized, multicenter, double-blind, and placebo controlled study. Acta Neurol Scand 2015;132:270–7. Schwedt TJ. Chronic migraine. BMJ. 2014 Mar 24;348:g1416
7. Özer D, Boluk C, Turk Boru U, Altun D, Tasdemir M, Koseoglu Toksoy C. Greater occipital and supraorbital nerve blockade for the preventive treatment of migraine: a single-blind, randomized, placebo-controlled study. Curr Med Res Opin. 2019;35(5):909-915.
8. Tang Y, Kang J, Zhang Y, et al. Influence of greater occipital nerve block on pain severity in migraine patients: A systematic review and meta-analysis. Am J Emerg Med. 2017 Nov;35(11):1750-1754.
9. Zhang H, Yang X, Lin Y, et al. The efficacy of greater occipital nerve block for the treatment of migraine: A systematic review and meta-analysis. Clinical Neurology and Neurosurgery 165 (2018) 129–133.
10. Yang Y, Song M, Fan Y, et al. Occipital nerve stimulation for migraine: A systematic review. Pain Pract. 2016. Apr;16(4):509-17.
11. Gantenbein AR1, Lutz NJ, Riederer F, Sándor PS. Efficacy and safety of 121 injections of the greater occipital nerve in episodic and chronic cluster headache. Cephalalgia. 2012; 32(8):630-634.
12. Peres MF, Stiles MA, Siow HC, et al. Greater occipital nerve blockade for cluster headache. Cephalalgia. 2002; 22(7):520-522.
13. Cohen SP, Peterlin BL, Fulton L, et al. Randomized, double-blind, comparative-effectiveness study comparing pulsed radiofrequency to steroid injections for occipital neuralgia or migraine with occipital nerve tenderness. *Pain.* 2015;156(12):2585-2594.

Other Resources

14. Hayes a Division of TractManager. Winifred Hayes, Inc. Lansdale, PA.:
    - Health Technology Assessment. Greater Occipital Nerve Blocks for Treatment of Migraine. Sep 5, 2019.
    - Health Technology Assessment. Local Injection Therapy for Cervicogenic Headache and Occipital Neuralgia. September 28, 2017. Updated October 17, 2018.
15. UpToDate: [website]. Waltham, MA: Walters Kluwer Health; 2019.
    - Garza, I. Chronic migraine. Accessed December 2019.
    - Garza, I. Occipital neuralgia. Accessed December 2019.
16. IRO Peer Review: Advanced Medical Review: Policy reviewed by practicing MD board certified in Neurology. 12/29/19. Additional reference cited by reviewer:
    - Shauly O, Gould DJ, Sahai-Srivastava S, Patel KM. Greater Occipital Nerve Block for the Treatment of Chronic Migraine Headaches: A Systematic Review and Meta-Analysis. Plast Reconstr Surg. 2019;144:943-952.
17. National Institute for Excellence (NICE).). Interventional procedure guidance 452. Occipital nerve stimulation for intractable chronic migraine. London (UK): National Institute for Health and Clinical Excellence (NICE); 2013 April. Accessed May 2020. Available at: http://www.nice.org.uk/
18. IRO Peer Review: Advanced Medical Review: Policy reviewed by practicing MD board certified in Neurology. 5/8/2020. Additional reference cited by reviewer:
    - Blumenfeld A, Ashkenazi A, Evans RW. Occipital and trigeminal nerve blocks for migraine. Headache. 2015;55:682-689.
    - Fernandes L, Khan N, Dobson J, Randall M, Idrovo L. Multiple Cranial Nerve Blocks as an Alternative Preventative Therapy for Chronic Migraine. Headache. 2020;60:981-987.

Review/Revision History

4/23/20: New Policy

6/17/20: Revision. Revised policy from ‘Greater Occipital Nerve Block for Treatment of Migraine Headache’ to ‘Occipital Nerve Block Therapy for Treatment of Headache and Occipital Neuralgia’ to include occipital neuralgia treatment of various headache syndromes and occipital neuralgia.