



# INFORMATION FOR HEALTH CARE PROFESSIONALS



## Peripheral Nerve Blocks for Headaches

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## **Background**

Peripheral nerve blocks (PNBs) have been employed in the treatment of a variety of headache disorders for many years. Injections to peripheral trigeminal and cervical nerve branches may provide prompt and definitive relief of acute head pain for days, weeks, or even months. There are few contraindications to PNBs; they are safe, well-tolerated, and drug interactions are of little concern, rendering this therapy very useful for both patients and practitioners.

## **Mechanism of Action**

PNBs involve injections of local anesthetic agents around peripheral nerve branches. PNBs typically provide pain relief that far outlasts their anesthetic effect. The prolonged analgesia after PNB may be due to effects on central pain modulation. This hypothesis is supported by observations that associated symptoms such as photophobia may be reduced after PNBs, and cutaneous allodynia may also be reduced in dermatomes far beyond the distribution of the injected nerve. In addition, a single greater occipital nerve injection (a C2 nerve branch) is extremely effective in aborting an attack period in cluster headache, which is essentially a trigeminal-mediated cephalgia, demonstrating that the effect of a PNB is far more complex than simply anesthetizing a local nerve branch.

## **Indications**

PNBs may treat a variety of headache disorders and have varying indications. The most common indications include:

1. Treating an acute migraine attack or status migrainosus for rescue purposes
2. Rapidly suppressing an attack period in cluster headache
3. Weaning patients with medication overuse off of acute analgesics while prophylactic medications are initiated or escalated
4. Repeating PNBs periodically in the treatment of chronic daily headache (CDH)

## Technique

There was no standardized approach for the performance of PNBs until a consensus statement had been reached in 2012 by the [Peripheral Nerve Blocks and Other Interventional Procedures for Headache and Face Pain](#) section of the American Headache Society, where the procedural details are more described in depth.

*Injection sites.* 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 supraorbital (STN), supraorbital (SON) and auriculotemporal (ATN) nerves.

*Agents.* The local anesthetics lidocaine and bupivacaine are most frequently used, occasionally with the addition of a corticosteroid such as methylprednisolone, dexamethasone, or triamcinolone during GON blocks only. The evidence for the use of corticosteroids in PNBs is strongest for cluster headache.

*Frequency.* The indication for treatment determines the frequency of PNB. Re-treatment with PNB would likely be unnecessary if prompt relief is experienced after treating status migrainosus. However, for transitional care when weaning from analgesic overuse, re-treatment in 2-4 weeks may be necessary. In patients receiving PNBs for treatment of CDH, longer treatment intervals, of one month or more, may be sufficient. For patients who require repeated injections, the recommended frequency of treatments is once every 2-4 weeks, depending on the individual patient's response. If steroids are administered on a repeated basis, injections should be performed less frequently, usually at 3 month or longer intervals, to avoid systemic adverse effects. However, this interval may be shorter for patients with CH.

## Adverse Effects and Safety

Adverse effects (AEs) of PNBs are usually mild, predictable, and not serious. Most patients experience cephalic numbness. There are occasionally paresthesias in the sensory distribution of the injected nerve branches. Localized symptoms such as pain or hematoma may occur. Dizziness or blood pressure alterations may occur uncommonly, but are transient. Allergic reactions to local anesthetics have been described but are rare.

Corticosteroid injection may be associated with both local and systemic AEs, such as alopecia, cutaneous atrophy, hyperpigmentation, and Cushing syndrome, especially with frequent injections at high doses.

## Evidence

The evidence for the use of PNBs in the treatment of headache disorders is best for cluster headache, where there are 2 double-blind, placebo-controlled studies supporting efficacy and safety for occipital nerve blocks. For other headache disorders including migraine and chronic daily headache, multiple retrospective and prospective studies exist, and successful randomized controlled studies have been undertaken for chronic daily headache and cervicogenic headache.

## References

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