Ultrasound Guided PRF for Occipital Neuralgia

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• Occipital neuralgia (ON) is described as paroxysmal pain in the distribution of the greater or lesser occipital nerves or of the third occipital nerve.

  13.8 Occipital neuralgia [G52.80] IHS.

• The most common cause of occipital neuralgia is irritation of the greater occipital nerve (GON) or lesser occipital nerve (LON). This can be due to a variety of vascular, neurogenic or musculo-skeletal pathologies.
Background

• The GON is more frequently involved (90%) than the LON (10%).

• In 8.7% of patients, both the GON and LON are responsible for ON.
  

• The ON could be due to cervical trauma to the GON or LON, such as in whiplash injuries. Other potential etiologies include compression of the occipital nerves by degenerative cervical spine changes, cervical disc disease, and tumors affecting the C2 and C3 nerve roots.

Background

Current options for management include:

- Physio/manual therapy, transcutaneous electrical nerve stimulation (TENS).
- Pharmalogical treatments that may include NSAIDs, tricyclic antidepressents and antiepileptics.
- Interventional treatments include infiltration with local anesthetics and corticosteroids or botulinum toxin A, subcutaneous neurostimulation, and PRF.

# Evidence for Management of ON

<table>
<thead>
<tr>
<th>Technique</th>
<th>Evaluation</th>
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<tr>
<td>Subcutaneous stimulation of the nervi occipitales</td>
<td>2 C+</td>
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<td>Botulinum toxin A injection</td>
<td>2 C+</td>
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<td>Single infiltration of the nervi occipitales with local anesthetic and corticosteroids</td>
<td>2 C+</td>
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<tr>
<td>Pulsed radiofrequency treatment of the nervi occipitales</td>
<td>2 C+</td>
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<tr>
<td>Pulsed radiofrequency treatment of the cervical ganglion spinale (dorsal root ganglion)</td>
<td>0</td>
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• The effectiveness and safety of using PRF for neuropathic pain has also been evaluated in a number of studies [3, 16, 17, 21-35]. However, specific to occipital neuralgia and PRF, there has been only one small pilot RCT published to date [24] and a few cohort studies and case reports [21-23, 25, 26].

<table>
<thead>
<tr>
<th>Study type</th>
<th>Authors</th>
<th>Patients and treatments</th>
<th>Objectives</th>
<th>Results</th>
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<tr>
<td>RCT</td>
<td>Gabrhelik T. et al. (2011)</td>
<td>30 patients with refractory cervicogenic headache; randomly allocated to 2 groups</td>
<td>To compare PRF vs. local anesthetic + steroid at GON</td>
<td>PRF group: After 9 mos, pain reduction maintained compared to baseline vs. LA + steroid group</td>
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<td>Retrospective cohort</td>
<td>Huang et al. (2012)</td>
<td>102 patients with primary Dx of ON; tx with PRF of GON +/- LON</td>
<td>To measure &gt;50% pain relief lasting at least 3 mo and procedural satisfaction</td>
<td>3 mo post-Tx: Both grps showed decrease in VAS &amp; consumption of analgesics</td>
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<td>Prospective cohort</td>
<td>Choi HJ. et al. (2012)</td>
<td>10 patients with ON as per IHD criteria, fluoroscopy-guided treatment</td>
<td>To perform PRF and assess pain/other symptoms monthly, complications &amp; recurrence</td>
<td>Over half of patients had &gt;50% pain relief lasting at least 3 mo</td>
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<tr>
<td>Prospective cohort</td>
<td>Vanelderen P et al. (2010)</td>
<td>19 patients with clinical findings suggestive of ON &amp; positive test block of ONs; tx with PRF of GON +/- LON</td>
<td>To measure pain, quality of life &amp; medication intake at 1,2 &amp; 6 mo post-Tx</td>
<td>Mean follow-up period: 7.5 mo. Mean VAS &amp; mean TPI declined by 6.1 units &amp; 192.1 units, respectively. No complications.</td>
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<td>Case report</td>
<td>Lee et al. (2011)</td>
<td>67-yr old man with pain in posterior neck for 3 yr; pain relieving point in posterior neck</td>
<td>PRF to pain-relieving point</td>
<td>Pain relief &gt;5 mo</td>
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<td>Case report</td>
<td>Navani A. et al. (2006)</td>
<td>62-yr old man with 43-yr hx of refractory left suboccipital pain</td>
<td>Pulsed RFL of left GON</td>
<td>4-mo of 70% pain relief, repeat Tx and additional 5-mo of 70% pain relief</td>
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Study Design

• prospective observational study.

Diagram:
- Patient recruitment
- Consented patients
- Diagnostic block
- PRF procedure
- Assess outcomes (1, 3 & 6 mo)
- Patients may request rescue intervention, which will be documented
Data Collection:

The baseline for each patient will be recorded and will include the following:

- VAS (pain scale) pre and post the intervention
- Medication use
- Patient satisfaction
- Complications and side effects
Study objectives

• The study aims to clarify the value of PRF administered via ultrasound-guided technique for:

1. Reducing pain for short & long term.
2. Improving quality of life.
3. Pain medication usage.
4. Short and long term side effects of PRF.
5. Safety of using U/S technique for ON.
Exclusion criteria:

1. Coagulopathies, and bleeding disorder.
2. Infection at the site of injection.
4. Anatomical deformity or derangements of the occipital nerve.
5. Allergy to LA.
6. Age younger than 18yrs and older than 85 yrs.
Sample size, recruitment rate & Duration of treatment and follow-up:

- Duration of recruitment planned to be 5 months at an average rate of 10 patients a month.
- A total of 50 patients will be the expected number.
- 30 min. of treatment in OR
- Follow ups:
  - 30 min, 1, 2, 3, 4, 5, 6 hours after the intervention.
  - 24 hour and 1 week phone call follow-up.
  - 1, 3, 6 months (VAS, meds, side effects).
What would we gain from this study?

1. Provides more robust evidence for evaluation of the efficacy & safety of PRF for occipital neuralgia.
2. Evaluate the long term efficacy of PRF on pain as well as the patient satisfaction.
3. Show the efficacy, safety and the accuracy of using U/S for ON.
4. Find out the real number of patients suffering from ON.
5. Create policies and guidelines for using U/S and PRF for ON in our PMC..
6. Education for pain fellows and Anesthesia residents.
Thank You