

A Comparison of Pain Control Between Occipital Nerve Block and Occipital Nerve Radiofrequency: A Retrospective Cohort Study

Rahul Pathak MD, Shadi Babazadeh MD, Yeva Sahakyan MD MPH
Allevio Pain Management, Toronto, Ontario, Canada (AllevioClinic.com)

Introduction

The greater occipital nerves and lesser occipital nerves are primarily derived from C2 (variable origins from C1, C3, and C4). An anesthetic blockade is considered to have its clinical effect by reducing pain afferents to the cervical trigeminal nucleus caudalis (1).

The exact mechanism of pulsed radiofrequency ablation is yet to be elucidated. Inan, N et al. conducted a study on 78 migraine patients between 2012 and 2014. The study revealed that repetitive greater occipital nerve blocks with bupivacaine significantly decreased levels of negative symptomatic daily headaches, duration, and visual analog scale (VAS) scores in migraine patients. Patients who did not respond to oral prophylactic agents and patients who had not taken medical prophylaxis had similar responses (2).

Comparable study results are shown by Okmen, K et al. who blocked the greater occipital nerve using 2ml of 0.5% bupivacaine and recognized that it is an effective treatment for migraines (3). A randomized double-blinded comparative study done by Cohen, SP et al. supported the use of occipital nerve pulsed radiofrequency ablation for managing migraine with occipital nerve tenderness (4).

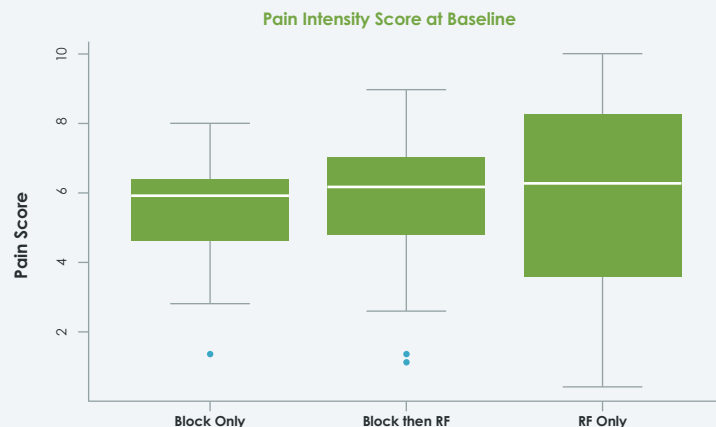
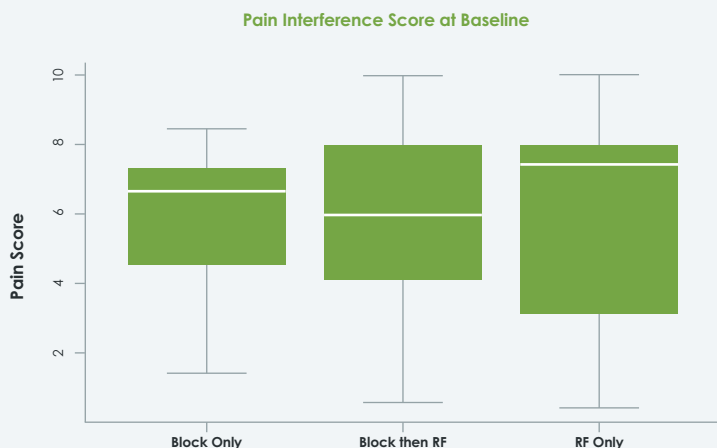
Methodology

A single center and retrospective cohort study was conducted with the inclusion of all consecutive patients who were admitted to Allevio Pain Management Clinic during the period of Jan. 01, 2014 to Dec. 31, 2017.

Patients underwent one of three types of pain management interventions: Occipital nerve block, occipital nerve PRF, or occipital nerve block followed by PRF.

The particular time frame was chosen to incorporate potential seasonal changes in neuralgia frequency. Patients included in the cohort study fit the The International Classification of Headache Disorders (ICHD) section 3b definition of occipital neuralgia.

Patients that received occipital nerve blocks as the sole treatment were offered the option of radiofrequency ablation, but they declined it. Patients that underwent radiofrequency ablation solely had occipital nerve blocks performed at an outside clinic by landmark guidance.



Results

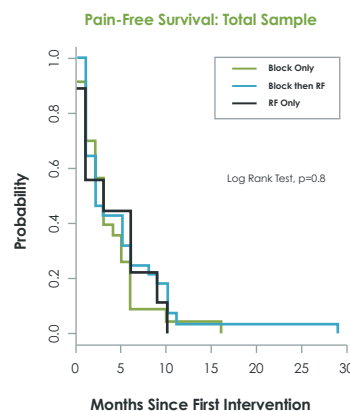
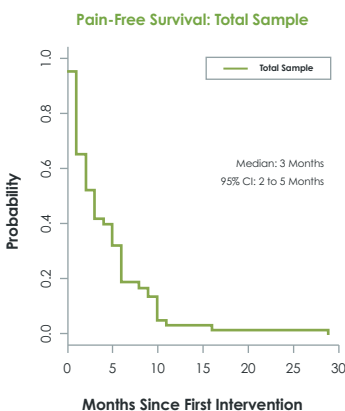
At Allevio Pain Management Clinic, 66 study patients underwent interventional treatment from 2014 to 2017. Of these 66 patients, 25 had occipital nerve blocks, 10 had occipital nerve PRF ablations, and 31 had occipital nerve blocks followed by PRF. The compilation of 66 charts was reviewed, and 60 patients responded to the questionnaires.

The median time between the intervention and the follow-up was 17 months (IQR: 11 - 23.5) for the total sample, and data was similar between groups. The longest recorded follow-up time was 40 months. At the time of the intervention, 73% of the sample were not retired: 83% in the nerve block group, 61 % in nerve block followed by RF group, and 89% in the RF group.

Of the non-retired patient sample, 55% returned to work following the intervention. More patients returned to work after the nerve block followed by RF, compared with the group of patients who solely had nerve block (94.1% vs. 57.9%, non-adjusted $p=0.019$). The median pain-free period was three months.

Across the pain interference domain, the majority of the patients in the group of "Nerve block followed by RF" reported clinically meaningful improvements, however, differences failed to reach statistical significance.

Regression analysis adjusted for the baseline pain score revealed that patients who underwent nerve block followed by the RF procedure had a better likelihood of reporting clinically meaningful improvement compared to the patients whom solely had nerve block (OR: 2.33, 95% CI: 0.68-7.98).



Pain relief duration after the intervention (in months). Median



Changes in Pain Medication After the Intervention

Changes in Pain Medication



Proportion of Patients Who Returned to Work After the Treatment

Return to work



Conclusion

In summary, our study shows a combined greater and lesser pulsed radiofrequency ablation technique provides substantial benefit in return to work and reduction in narcotic consumption.

References

1. Cervicogenic headache in Headache and Migraine Biology and Management 2015, Pages 203-212. Cooper W, Masih A.
2. Effectiveness of Greater Occipital Nerve Blocks in Migraine Prophylaxis. Nurten İNAN1, Levent E. İNAN2, Özlem COŞKUN3, Tuğba TUNÇ4, Mustafa İLHAN5. Arch Neuropsychiatr 2016; 53: 45-48 • DOI: 10.5152/npa.2015.10003
3. Efficacy of the greater occipital nerve block in recurrent migraine type headaches. Okmen K1, Dagistan Y2, Dagistan E3, Kaplan N4, Cancan E5. Neurol Neurochir Pol.2016;50(3):151-4.doi:10.1016/j.pjnns. 2016.01.015. Epub 2016 Feb 6.
4. Randomized, double-blind, comparative- effectiveness study comparing pulsed radiofrequency to steroid injections for occipital neuralgia or migraine with occipital nerve tenderness. Cohen SP1, Peterlin BL, Fulton L, Neely ET, Kurihara C, Gupta A, Mali J, Fu DC, Jacobs MB, Plunkett AR, Verdun AJ, Stojanovic MP, Hanling S, Constantinescu O, White RL, McLean BC, Pasquina PF, Zhao Z. Pain. 2015 Dec;156(12):2585-94. doi: 10.1097/j.pain.0000000000000373.