

Occipital nerve radiofrequency ablation for occipital neuralgia and headaches: Use in special patient populations

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Abstract

Two patients who presented to the pain clinic complaining of recurrent and incapacitating pain consistent with occipital neuralgia and associated headaches and their treatment with occipital nerve radiofrequency ablation (RFA) are presented. **Patient 1** is a 43-year-old female with a 2-year history of occipital pain and associated headaches which developed after craniotomy. The patient responded positively to left greater and lesser occipital local anesthetic diagnostic/therapeutic injections. The patient did not wish to take neuromodulators and controlled substances due to lack of pain relief and persistent side effects. She was offered the option of RFA versus occipital nerve stimulation with an implantable system. The patient selected and underwent left greater and lesser occipital nerve RFA with positive results. **Patient 2** is a 35 year old in her 10th week of pregnancy with severe cervicalgia, cervical radiculopathy and associated occipital headaches secondary to cervical disc disease and abnormal antalgic neck positioning. She was taking large amounts of oxycodone without any significant relief and considered termination of pregnancy. The patient responded to RFA with complete relief on the left side and complete elimination of headaches and head pain but persistence of right-sided neck pain. She was able to wean off all analgesic medication and deliver at term without issue.

Patient 1

- Patient 1**
- 43-year-old female
 - 2-year history of occipital pain and associated headaches primarily on the left side after craniotomy.
 - Cervical MRI was normal.
 - Patient did not wish to take neuromodulators and controlled substances, which gave incomplete relief and provided undesirable side effects.
 - Offered the option of radiofrequency ablation versus occipital nerve stimulation with an implantable system. Patient chose RFA.

Patient 2

- Patient 2**
- 35 year old female
 - 10th week of gestation
 - Severe cervicalgia, cervical radiculopathy and associated occipital headaches secondary to cervical disc disease.
 - 20mg oxycodone daily with no relief
 - Contemplating termination of pregnancy due to severity of headaches.
 - Oxycodone was increased to 30 mg
 - Placed in a soft neck collar
 - Neurosurgeon consulted.
 - Patient chose radio frequency ablation instead of recommended C4-5, 5-6, 6-7 anterior cervical discectomy and fusion in the second trimester.

Discussion

Occipital neuralgia, including related headaches, is often confused with cervical spine disease, tension and migraine headaches. It is a stand-alone syndrome, which can respond to multimodal medical management, commonly supplemented by periodic office based occipital nerve local anesthetic steroid blocks. However, if the patient does respond to local anesthetic blocks and medication intolerance or special medical conditions exist, consideration should be given to RFA of the lesser and greater occipital nerves ipsilaterally or bilaterally, as clinically indicated.

Radio Frequency Ablation

RFA consists of inserting a radiofrequency electrode under fluoroscopy guidance to the target area. A small amount of electrical stimulation is first used to identify the nerve position. Then, a local anesthetic is injected and RF current is applied to the tissue. RF current is low energy, high frequency alternating current causing charged molecules to oscillate and the resulting friction produces heat, lesioning a small portion of the nerve.

	Special circumstances	Pain medication at time of evaluation for RFA	Diagnostic nerve blocks and response	RFA treatment	Results	Pain medications after treatment
Patient 1 43 y/o female	Prior craniotomy	Patient refused neuromodulators and opioids due to side effects	The patient responded in a positive fashion to left greater and lesser occipital local anesthetic diagnostic/therapeutic injections of 5mls 0.75% bupivacaine containing 40mg suspension of methylprednisolone	-Patient chose RFA and the greater and lesser occipital nerves were lesioned with RFA applying 80°C for 90 seconds -Repeated 10 months later	-10 months of relief after initial RFA -Second RFA- patient stated 90% improvement with no recurrence to date	Able to remain off pain medications and neuromodulators
Patient 2 35 y/o Female	10 weeks pregnant	10mg of oxycodone TID	- 2 greater and lesser occipital nerve blocks with 10mls of 0.75% bupivacaine containing 40mg solution of methylprednisolone - 2.5mls at each nerve -6 hours of relief after each block	Pulsed radiofrequency using 45°C for 240 seconds at the greater occipital nerves and traditional radiofrequency utilizing 80°C for 90 seconds at the lesser occipital nerves	-Complete elimination of headaches and left sided cervicalgia -Right sided cervicalgia remained	Able to wean off all medications by term delivery

Conclusion

Occipital nerve radiofrequency ablation should be considered in special patient populations with refractory occipital neuralgia and occipital nerve associated headaches.