

Commentary: Percutaneous Full-Endoscopic C2 Ganglionectomy for the Treatment of Intractable Occipital Neuralgia: Technical Note

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Occipital neuralgia (ON) may disturb a patient from a mild discomfort to a severe pain that disturbs the quality of life. Pain in ON radiates according to the distribution of the upper cervical nerve roots. This condition may be related to a history of previous trauma. Complaints on ON are subjectively in the form of discomfort with sharp quality and occur paroxysmal.¹ ON is a known disorder, but the incidence rate still needs to be calculated accurately. Relatively low incidence of 3.2 per 100 000 was reported in a study in the Dutch general population, predominantly female, with no significant variation in time and season.²

Initial therapy in patients with ON is conservative. Often symptoms will decrease or disappear after rest and therapy with heat, anti-inflammatory drugs, and muscle relaxants. Pain may also be reduced with oral anticonvulsant drugs such as carbamazepine and gabapentin. Patients with persistent symptoms can be treated with percutaneous injections of anesthetic and steroid drugs. Nerve block not only can be used as a diagnostic, but also can be used as a therapy that can provide pain relief. Scalp anesthesia can also help determine whether the patient can tolerate the ablative procedure.¹ Treatments may range from nonoperative management (rest, physical therapy, and medications) to operative ones.^{3,4}

Intractable ON is difficult to treat because it has a wide variety of symptoms, differences in surgical findings, and postoperative conditions. The choice of surgery for ON is by removing the cervical sensory dorsal root ganglion of C2 or C3. In some patients, cervical ganglionectomy can provide excellent pain relief (95%) in the short term (<3 mo), but 40% of patients can experience sufficient persistent pain in the long term. Pain can recur in the same dermatome within 12 mo in 65% of patients under-

going single-level ganglionectomy. Pain recurs in 45% of patients who underwent adjacent level ganglionectomy, in the first postoperative year.⁵ In this article, the authors⁶ reported a technical note on a percutaneous full-endoscopic C2 ganglionectomy for the treatment of intractable ON.

The patient described had failed multiple treatment modalities from medications to local anesthetic injection to the point where the patient's daily activities were severely affected. This led the authors to offer the patient occipital nerve stimulation (ONS), despite the patient's decision to not accept it due to her religious beliefs and proceed with another more invasive alternative. A recent systematic review by Robinson et al⁷ reported of the usefulness of ONS for the treatment of refractory ON. This method is favored for its reversibility and does not significantly disrupt adjacent tissues and should be considered for patients with intractable ON.

The technique utilized for the patient in the article was a C2 ganglionectomy. Ganglion ablative procedures have been proven to result in satisfactory results.⁷ It is reported to be more ideal for patients with shooting, sharp or nagging pain either traumatic in origin or due to the previous surgeries in C1-C2 region compared to throbbing, aching nontraumatic pain syndromes or pain due to previous C2 rhizolysis or facet denervation.⁸ In regard to the patient's type of pain, this choice of method was appropriate for the condition of the patient's pain the authors described, which was a lancinating left-sided neck pain radiating to the occipital, head, left temporal, and supraorbital regions.

The authors highlighted the use of an endoscopic approach for C2 ganglionectomy. Endoscopic approach for pain treatment in this area has also been reported.⁹ Li et al reported the use of an endoscopic approach for medial branch

neurotomy for chronic cervical zygapophyseal joint pain. Percutaneous full-endoscopic C2 ganglionectomy has the advantages such as an enlarged visual field, excellent illumination and visualization, reduced surgery-related trauma, reduced bleeding, and so on. It is an alternative surgical technique with distinct advantages.⁶ The results showed that the percentage of pain relief (neck/referred) at any time point postoperatively in the operation group was higher compared to that in the conservative group. Even though zygapophyseal joint pain and ON are two different entities with differing pathophysiology, this result may lead to a more promising path toward further studies regarding the efficacy and safety of an endoscopic approach for surgical pain management in this area.

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Disclosures

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REFERENCES

1. Wang MY, Levi ADO. Ganglionectomy of C-2 for the treatment of medically refractory occipital neuralgia. *Neurosurg Focus*. 2002;12(1):2-4.
2. Koopman JSHA, Dieleman JP, Huygen FJ, de Mos M, Martin CGM, Sturkenboom MCJM. Incidence of facial pain in the general population. *Pain*. 2009;147(1):122-127.
3. Vanelderden P, Lataster A, Levy R, Mekhail N, van Kleef M, Van Zundert J. Occipital neuralgia. *Pain Pract*. 2010;10(2):137-144.
4. Dougherty C. Occipital neuralgia. *Curr Pain Headache Rep*. 2014;18(5):411.
5. Acar F, Miller J, Golshani KJ, Israel ZH, McCartney S, Burchiel KJ. Pain relief after cervical ganglionectomy (C2 and C3) for the treatment of medically intractable occipital neuralgia. *Stereotact Funct Neurosurg*. 2008;86(2):106-112.
6. Yu Y, Jiang Y, Xu F, Mao Y, Yuan L, Li C. Percutaneous full-endoscopic C2 ganglionectomy for the treatment of intractable occipital neuralgia: technical note [published online ahead of print: June 30, 2021]. *Oper Neurosurg*. doi: 10.1093/ons/opab228.
7. Robinson IS, Salibian AA, Alfonso AR, Lin LJ, Janis JE, Chiu ES. Surgical management of occipital neuralgia: a systematic review of the literature. *Ann Plast Surg*. 2021;86(3S):S322-S331.
8. Lozano AM, Vanderlinden G, Bachoo R, Rothbart P. Microsurgical C-2 ganglionectomy for chronic intractable occipital pain. *J Neurosurg*. 1998;89(3):359-365.
9. Li Z, Hou S, Zhao H, Song K, Shang W. Percutaneous endoscopic cervical medial branch neurotomy for chronic cervical zygapophyseal joint pain: a pilot study. *Int J Clin Exp Med*. 2016;9(5):7870-7882.