

# Clinical Improvement of Cervical Disc Herniation 24 hours after a Single Oxygen-Ozone Injection

Hazem Kafrouni

Department of anesthesiology, Saint Georges Hospital |University Medical Center SGHUMC, University of Balamand, Beirut, Lebanon.

**Corresponding Author:** Hazem Kafrouni Department of anesthesiology Saint Georges Hospital |University Medical Center SGHUMC, University of Balamand Mailing, Beirut, Lebanon.

**Received Date:** October 21 2021; **Accepted Date:** October 30, 2021; **Published Date:** November 17, 2021

**Citation:** Hazem Kafrouni (2021) Clinical Improvement of Cervical Disc Herniation 24 hours after a Single Oxygen-Ozone Injection *J, Clinical Medical Reviews and Reports*. 3(9); DOI: [10.31579/2690-8794/107](https://doi.org/10.31579/2690-8794/107)

**Copyright:** © 2021, Hazem Kafrouni, This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

## Abstract

Oxygen-ozone therapy is a minimally invasive treatment for disc herniation, compared to surgery, which uses the beneficial biochemical properties of a gas mixture of ozone and oxygen. A satisfactory efficacy is usually obtained within one month after the injection.

We assessed the therapeutic outcome of a single injection of oxygen-ozone in a symptomatic patient with C5-C6 cervical discal herniation with compression of the nerve roots. He experienced immediate pain relief seconds after the injection, and neuro-imaging improvement 24 hours afterwards. To our knowledge this is the fastest improvement ever reported in literature.

**Keywords:** cervical disc, oxygen-ozone therapy

## Introduction

Noninvasive procedures, minimally invasive percutaneous injections, or surgical decompression are the therapeutic options available for the management of cervical disc herniations.

Over recent years, minimally invasive procedures have markedly improved, offering satisfactory clinical results along with a low-cost and well-tolerated technique. One of the most notable methods is the O<sub>2</sub>-O<sub>3</sub> chemonucleolysis, it exhibits the best cost/benefit ratio and has the lowest complication rates (< 0.1%) (1). In fact, ozone possesses various biological effects: oxidant, immuno-modulator, analgesic, anti-inflammatory bactericide, fungicide and virustatic effects [2-4].

Intradiscal ozone administration causes disk shrinkage and concomitant reduced nerve root compression. It also confers an anti-inflammatory and analgesic effect.

This case report assesses the results obtained after treating a patient with intradiscal ozone injection, the puncture technique, the ozone concentration and dose administered along with the clinical and radiological changes seen afterwards, as well as the overall treatment outcome.

## Consent for publication

Abiding by the ethical principles that stresses on respecting the patient's privacy, the patient was contacted and she authorized a family member to

be a substitute decision maker to consent publication. The substitute decision maker reviewed the case report and signed a consent form to publish the report.

## Case description

A 62 year old male patient previously healthy presented to our emergency department with severe cervical pain. The pain was acute in onset, burning and tingling in type, irradiating to the right upper limb, with an intensity of 10 over 10 on the numerical pain scale. There were no associated symptoms, and it was only partially relieved by tilting the head to the left side, forcing the patient to remain in this analgesic position.

Upon arrival to the emergency room, the patient's vital signs were within normal limits and the physical exam was unremarkable except for posterior cervical tenderness upon mild palpation. The neurological exam revealed paresthesias in the right upper limb but no motor weakness.

In an attempt to alleviate the patient's pain, 15mg/kg of paracetamol IV, 100mg of ketoprofene IV, 75mg meperidine IM were administered. The patient's pain was reassessed and found to be 7/10 by the patient. With persisting pain, he was admitted for further evaluation.

After deep sedation, a cervical MRI was performed, revealing "narrowing of both C6 foramina, marked on the right and moderate to marked on the left, and at C6-7, posterior central and left paracentral disc protrusion". The neurosurgery team was consulted, and advised surgical

decompression. A pain specialist opinion was also sought, and opted for oxygen-ozone intradiscal injection.

### Puncture approach

Before the procedure, the patient was informed about both the benefits and possible hazards of the puncture, along with the eventual possibility of radicular symptoms recurrence or even their exacerbation. The patient was heavily sedated in order to be able to lie supine on the CT table, his arms at his sides. We used the anterolateral approach. In order to determine and mark the puncture site, two millimeter axial scans were performed, and relevant measurements were taken, notably the distance separating the puncture site from the disc, the puncture angle and depth. The puncture site was then disinfected, and anesthetized with 1% lidocaine hydrochloride.

Using the anterolateral approach, and after locating the vertebral artery, a 22G 15 cm spinal needle was inserted and advanced under CT guidance between the lateral margin of the thyroid gland and the medial margin of the cervical arterial sheath until reaching the herniated cervical disc. After negative aspiration for blood or CSF, 3 mL of 30 mcg/ml of ozone were repeatedly injected into the nucleus pulposus of the disc until correct gas distribution was attained. Another 5 mL of the same gas mixture were injected around the disc. After needle removal, puncture site sterilization and dressing, a cervical collar was secured in place and the patient was started on p.o. antibiotics for three days.

### Results

Seconds after the procedure, the pain was markedly alleviated and the patient could now hold his head again in a neutral position. He was placed in the supine decubitus position and asked to remain so for the next two hours. He reported a pain intensity of 3 over 10 on the pain numerical scale. He did not require any analgesics overnight. The following day, the cervical MRI was repeated and revealed normal findings, without any evidence of discal herniation or nerve root compression of any sort. The patient was discharged home pain free.

### Conclusion

O2-O3 chemonucleolysis appears to be an effective therapeutic option for cervical disc herniation, ensuring pain relief very shortly after the

procedure, as well as radiological improvement within twenty-four hours.

### Conflicts of Interest

None

### Funding

None

### References

1. Steppan J, Meaders T, Muto M, et al. (2010) A meta-analysis of the effectiveness and safety of ozone treatments for herniated lumbar discs. *J Vasc Interv Radiol.* 21(4):534-48
2. Bocci V (1999) Biological and clinical effects of ozone. Has ozone therapy a future in medicine? *Br J Biomed Sci* 56: 270-9.
3. Madej P, Antoszewski Z, Madej JA (1995) Ozonotherapy. *Mater Med Pol* 27:53-56.
4. Iliakis E, Valadakis V, Vynios DH: Rationalization of the activity of medical ozone on intervertebral intradiscal ozone therapy for lumbar disc herniation.
5. Ozcan S, et al. (2001) Cell Mol Biol (Noisy-le-grand). *ral disc: a histological and biochemical study. Riv Neuroradiol* 14:23-30.
6. Elawamy A, et al. (2018) Implication of Two Different Doses of Intradiscal Ozone-Oxygen Injection upon the Pain Alleviation in Patients with Low Back Pain: A Randomized, Single-Blind Study. *Pain Physician.*
7. Zhang Y, et al. (2013) Treatment of the lumbar disc herniation with intradiscal and intraforaminal injection of oxygen-ozone. *J Back Musculoskelet Rehabil.*
8. Giurazza F, et al. (2017) Intradiscal O2O3: Rationale, Injection Technique, Short- and Long-term Outcomes for the Treatment of Low Back Pain Due to Disc Herniation. *Can Assoc Radiol J.*
9. Magalhaes FN, et al. (2012) Ozone therapy as a treatment for low back pain secondary to herniated disc: a systematic review and meta-analysis of randomized controlled trials. *Pain Physician.*
10. Alexandre A et al. (2005) Intradiscal Injection of Oxygen-Ozone Gas Mixture for the Treatment of Cervical Disc Herniations. *Acta Neurochir Suppl.*



This work is licensed under Creative Commons Attribution 4.0 License

To Submit Your Article Click Here:

[Submit Manuscript](#)

DOI: [10.31579/2690-8794/107](https://doi.org/10.31579/2690-8794/107)

#### Ready to submit your research? Choose Auctores and benefit from:

- fast, convenient online submission
- rigorous peer review by experienced research in your field
- rapid publication on acceptance
- authors retain copyrights
- unique DOI for all articles
- immediate, unrestricted online access

At Auctores, research is always in progress.

Learn more <https://auctoresonline.org/journals/clinical-medical-reviews-and-reports>