

Usefulness of Percutaneous Discolysis with Ozone in Degenerative Pathology Lumbar Discal and Lumbar Discal Hernias

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Abstract

Objective: This is a synthesis of the treatment chosen with Ozone for non-protruded contained herniated disc hernias of the lower lumbar segment and degenerative pathologies of said segment that are cause of Lumbar and Cervical Discogenic Pain.

Methodology: This technique is practiced in the Hemodynamics unit, on the contrary, with an excellent C-arch equipment and the ease of keeping the entire procedure on CD and giving the patient a copy of it.

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I show a result based on the VAS and Oswestry Test before and after several sessions of additional paravertebral ozone therapy to those cases that were the subject of Percutaneous Disconucleolysis.

Conclusions: Flattering results of great satisfaction, making this technique an alternative for the treatment of these conditions of the vertebral column affected by the aforementioned entities.

Keywords: *Ozone Therapy; Percutaneous Disconucleolysis; Tunnel Vision*

Introduction

Ozone was discovered in 1839 and initially it was used as a germicide, due to its great antiseptic power and its broad spectrum of action, mainly in the treatment of wastewater and purification of water.

In 1839 Professor Schönbein observed that by means of the electric discharge in the atmosphere oxygen is transformed into another gas. He called it ozone because of its smell (smell in Greek = ozone).

It is a special variety of oxygen that has three atoms (O_3). The life of ozone, as such, in any biological system is very short, since there are substances in these systems that react rapidly with ozone (unsaturated or free fatty acids). In medicine, a mixture of O_2/O_3 is used, which is called medicinal ozone.

Effect of ozone in metabolism

Acceleration of the use of glucose by the cells. Intervention in the metabolism of proteins thanks to its affinity with the group of sulfhydryl. Direct reaction with unsaturated fatty acids that are transformed into water-soluble compounds. Modulation of oxidative stress by regulation at discharge of natural antioxidant enzymes.C

The administration of ozone-oxygen intervenes directly in the metabolic processes. Ozone is added to the double chains of unsaturated fatty acids of the phospholipid wall of the erythrocytic membrane, which leads to the formation of peroxidase, an important role in metabolism through the redox systems, NADH/NAD and GSH/GSSG. The reaction of peroxidase with glutathione increases the production of 2.3 DPG (diphosphoglyceride) and hydrogen ions, facilitating the release of oxygen from oxyhemoglobin, mainly in ischemic territories.

Ozonoterapia for discal hernia and other vertebral pathologies

Mechanism of action

Ozone has anti-inflammatory, analgesic and regenerative properties. When injected into the disc, it exerts a dehydrating effect, drying out the pulpy nucleus of the disc, which is rich in proteoglycans that are degraded by the antioxidant action of ozone, which decreases in volume and retracts it. This effect takes 4 to 8 weeks. The magnetic resonance shows that it regenerates the disc from the cellular point of view. At a muscular level it combats pain by inhibiting the action of prostaglandins.

Through the release of antioxidant enzymes (superoxide dismutase, catalase, etc.) neutralize the excessive formation of acid radicals involved in the production of inflammation and pain; this effect is mediate installation and progression.

Effects of ozonotherapy in the discal hernia and other vertebral pathologies	
Causes of pain:	Ozone action
<ul style="list-style-type: none"> • Inflammation • Autoimmune reaction • Neurotoxic substances • Compression of nerve roots 	<ul style="list-style-type: none"> • Tissue oxygenation • Inhibition of mediators of pain and inflammation • Improvement of microcirculation • Increase of immunosuppressive cytokines • Hydration of mucopolysaccharides?

Indications in Vertebral Pathology

Paravertebral infiltration, intradiscal injection	Cervical, dorsal and lumbar disc hernia: grade I and II protrusions, not extruded Post-surgical fibrosis. Facet syndromes, muscular syndromes. Vertebral Degenerative Arthropathies Mild or Moderate Lumbar Stenosis	Activation of cellular metabolism, increase of ATP, analgesic effect. activation of antioxidants.
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Complementary elements for its application

- Oswestry test
- Informed consent
- Doctor-patient relationship
- Clinical Endowment and Criteria Update

Percutaneous Discolysis or Disconucleolysis with ozone is one of the most popular options for alternative treatment to surgery. The therapy consists of injecting a mixture of oxygen and ozone (4-5 cc) directly into the damaged intervertebral disc. This technique must also be accompanied by Paravertebral Infiltrations. The number of infiltrations can vary from 6 to 12, administered in a period of one to two months.

Inclusion criteria for treatment with ozone therapy

- A- Failure of conservative treatment: lumbalgia with lumbociatalgia that does not improve with conservative treatment between 5 to 8 weeks.
- B- Neurological criteria: positive signs of root compression, with or without sensory disorders.
- C- Neuroradiological Criteria: Column Magnetic Resonance with evidence of Disc Herniation, which coincides with the patient’s clinic

Procedure technique

Percutaneous discolysis with ozone: it is the infiltration of ozone gas directly into the herniated intervertebral disc, through needle puncture guided by image intensifier. Procedure, this, which is done in the operating room, with the patient sedated and monitored by an anesthesiologist. Duration of the same: 30 - 40 minutes. Afterwards, he will remain interned for a period of 4 to 12 hours, according to the evolution. The return of the patient to their usual tasks will be 48 hours after the procedure.

The treatment consists basically in the percutaneous injection of small amounts of ozone (4 to 6 cc) intradiscal to a concentration of 30 or 40 Gamma and about 15 to 20 cc paravertebral in the foramen at the level of the root, complemented by a small dose of methylprednisolone 40 mgrs. and 0.125% bupivacaine (1 cc of each product). The use of the steroid and the local anesthetic lies in its coadjuvant mechanism in the relief of sciatic pain, increasing the percentage of good results.



Figure 1

Conventional Technique in the Vertebral Surgery Unit Centro Medico Loira. The Paradise Caracas Venezuela.

The procedure is known worldwide trajectory because it is not far from the conventional.

The patient is placed in ventral decubitus with previous administration of 2 gms. of prophylactic Ciprofloxacin IV and evaluated by the anesthesiologist regarding its general conditions and medical history. We proceed to the corresponding asepsis of the lower back in this case.

A posterior antero projection of the level of your lumbar spine is performed in order to determine peripherally the space to be treated and it is superficially marked, the lumbar midline is defined and at 8 or 10 cts. This is initiated after administration of 2% Lidocaine in the subcutaneous plane and medium in depth of the tissues, the inclusion of a Chiba needle of 15 cts. and of 30 gaje until arriving at the neighborhoods of the selected disc.

To do this, the image intensifier is placed at 35 to 45 degrees in order to obtain a view of the tunnel over the needle that will invade the intervertebral space.

It is important to determine that the needle passes in front of the upper facet and the upper vertebral plateau in order to avoid falling into the space of the neural spinal canal.

Once again the image intensifier is mobilized in order to obtain an AP view in order to determine the progression of the needle inside the disc and then a lateral projection that will detect the Ozone when injected into the affected Intervertebral Disc.

The needle will be removed after the Ozone administration until reaching the Foramen area where we will apply 1 cc of methylprednisolone for each level that has been Ozonized.

Then, the image intensifier is taken again in AP projection and the Facets and their space are located and the inter facetary and vertebral Ozone will be administered from L4 to S1 bilaterally.

All this procedure is performed with anesthetic sedation and monitoring until the patient's full recovery of consciousness, which will be discharged at 4 or 12 hrs. according to post intervention criteria.

Paravertebral or Foraminal Infiltrations

The Ozone injected into the paravertebral column stimulates the production of anti-oxidant enzymes neutralizing the toxic products released by the rupture of the nucleus pulposus responsible for the inflammation of the nerve. Likewise, the analgesic action of the Ozone decreases the muscle contraction of defense, which reflexively is activated to protect the area of the herniated disc. This procedure will be performed 6 to 10 times weekly.

Results

Excellent 44% - Good 38% - Malo 10% - Surgery 8%.

In cases of Failed Surgeries, Degenerative Scoliosis with Lumbar Pain, Idiopathic Lumbalgias with Associated Fibromyalgia, Severe Cervicobrachialgias without neurological deficit, the treatment is focused on administration of Paravertebral Ozone in bi weekly sessions until completing 6 to 8 sessions, then they are spaced to a every week for 3 weeks and then one every 15 days and finally one every month for 3 months if necessary.

In these cases the improvement is determined by the Oswestry Test who will determine the future of the Patient.

The Ozone Therapy for Vertebral Pathologies is not the Panacea but in my experience as a Vertebral Column Surgeon in this field, which started under the shadow of skepticism, has shown me a tool that has avoided many vertebral column surgeries and has happy fact to countless number of patients [1-6].



Figure 1

Conclusion

- 228 cases rated between good and excellent therapy from 03 to the end.
- 228 cases responded YES to the recovery of quality of life.
- 228 cases reintegrated their usual routine activities.
- 228 cases responded YES to repeat the lid. 03 Therapy??

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