## Risks

The greatest risk is an inflammation. The death rate for chemonucleolysis is only 0.002 %. Complications overall are five to ten times less than with conventional surgery, and the failure rate is roughly comparable to the failure rate in conventional disc surgery.

## Biologic effects of ozone

Oxygen-ozone therapy exploits the chemical properties of ozone, an unstable allotropic form of oxygen with the symbol $O_3$ and a molecular weight of 48 kDA. Many biologic effects have been attributed to ozone: increased glycolysis; effects on red blood cells; effects on rheology; bactericidal, fungicide, and virustatic; immunomodulating action; and analgetic and anti-inflammatory effects.

## Normal results

Many patients feel immediate relief from pain, but, in about 30 % of patients, maximal relief takes four to six weeks. The long term (seven to twenty years) success rate averages about 75 %, which is comparable to the success rate for conventional surgery. Depending upon your individual condition and work requirements, it may take only few weeks for you to return to your normal activities.

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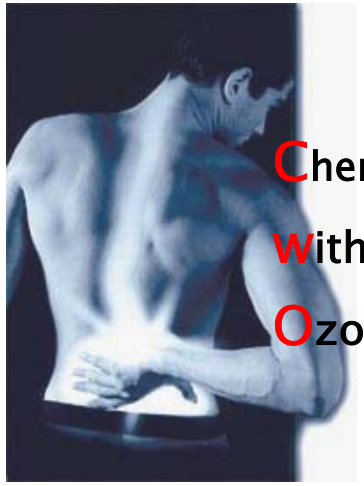

# Chemonucleolysis with Ozone

A new **therapy option**
on
**protruded discs**
or on
**extruded discs**

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## Informations

Chemonucleolysis is the injection of ozone into a bulging spinal disc, with the goal of reducing the disc's size. This procedure is performed in our hospital as an outpatient procedure.

Between each vertebra lies a disc of cushioning material that keeps the spinal bones from rubbing together and absorbs some of the shock to the spine from body movements. In the centre of the disc is soft, gelatinous material called the nucleus pulposus. The nucleus pulposus is surrounded by a tough fibrous coating. Sometimes when the back is injured, this coating can weaken and bulge or tear to allow the nucleus pulposus to ooze out. When it happens, it is called a herniated nucleus pulposus, or, in common language, a herniated disk.

When the disc bulges or herniates, it can put pressure on nerves which originate in the spinal column, and go to other parts of the body. This causes lower back pain, and/or pain to the hips, legs, arms, shoulders, and neck, depending on the location of the herniated disc. Chemonucleolysis uses ozone to reduce the disc material that has been displaced because of injury. Herniated discs are the cause of only a small proportion of cases of lower back pain, and chemonucleolysis is appropriate for only some cases of herniated nucleus pulposus.

Chemonucleolysis is a conservative alternative to disc surgery. There are three types of disc injuries. A protruded disc is one that is intact but bulging. In an extruded disc, the fibrous wrapper has torn and the nucleus pulposus has oozed out, but is still connected to the disc. In a sequestered disc, a fragment of the nucleus pulposus has broken loose from the disc and is free in the spinal canal. Chemonucleolysis is effective on protruded and extruded discs, but not on sequestered disc injuries.

Other indications that a patient is a good candidate for chemonucleolysis instead of surgery include:

- The patient is 18 – 80 years of age
- Leg pain is worse than lower back pain
- Other conservative treatments have failed
- The spot where the herniated disc presses on the nerve has been pinpointed by computed tomography scan (CT scan), or magnetic resonance imaging (MRI)
- The patient wishes to avoid surgery

There are some situations in which chemo-nucleolysis should not be performed:

- When the patient is pregnant
- If the disc is sequestered
- If the patient has had several failed back operations
- If a spinal cord tumor is present
- If the patient has a neurological disease such as multiple sclerosis.
- Patients allergic to ozone

Other conditions may affect the appropriateness of chemonucleolysis, including hypertension, obesity, diabetes, and a family history of stroke.

## Discription

A small gauge needle is placed in the center of herniated nucleus pulposus of the affected disc. Combined intradiscal and intraforaminal injection of ozone-oxygen, cortisone and anaesthetization is introduced into the disc under CT-guidance. The patient needs to remain still.

## Preparation

Patients will need tests such as computed tomography scan (CT scan) or magnetic resonance imaging (MRI) to pinpoint the herniated disc.

## Aftercare

After chemonucleolysis with ozone, you may have moderate back pain lasting to 2 days after the procedure. Avoid long periods of sitting and repetitive bending, stooping, and heavy lifting for at least three months.