

CONTEMPORARY REAPPRAISAL · 2026

SPINAL LUMBAR PAIN SYNDROMES

Neural therapy & medical oxygen–ozone

A retrospective clinical series, critically revisited

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Original cohort: 2022–2024 · 106 included patients



EXPLANATION

This presentation revisits a historical clinical series of patients with lumbar radicular pain who received neural therapy combined with medical oxygen–ozone. The purpose is to examine the observations in their original context and interpret them using current principles of clinical research. The cohort covers 2022 to 2024 and includes 106 patients in the analysis. The presentation considers the mechanisms of radicular pain, the documented clinical approach, changes in reported pain and disability, and the limitations that must be acknowledged before drawing conclusions about effectiveness.

CLINICAL CONTEXT

Why lumbar radicular pain matters

Pain, disability, work absence and patient distress

**Not only a back problem**

Radiating leg pain can reflect nerve-root irritation and neurological dysfunction.

A functional problem

Pain, mobility, sleep and daily activities interact. Patient-reported function matters.

A diagnostic challenge

Radiculopathy must be distinguished from nonspecific back pain and serious pathology.

02

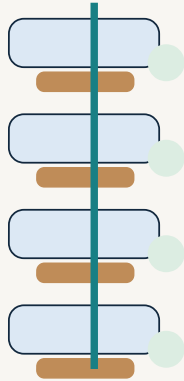
EXPLANATION

Lumbar radicular pain can affect far more than the lower back. Pain may radiate into the leg and be accompanied by altered sensation, weakness or reduced mobility. For many patients, the consequences extend to sleep, work, daily activities and emotional well-being. A meaningful assessment therefore needs to consider both pain intensity and function. This is also why the historical patient series is discussed using two complementary outcomes: a numerical rating of pain and the Oswestry Disability Index, which measures how back-related symptoms affect everyday life.

CLINICAL CONTEXT

Lumbar radiculopathy: mechanisms

Mechanical and inflammatory pathways converge on the nerve root

**Mechanical component**

Disc protrusion or herniation can deform or compress a nerve root.

Inflammatory component

Local chemical mediators can enhance nociceptive signaling.

Pain + neurological symptoms

Dermatomal pain, sensory changes, weakness or reflex changes may follow.

Conceptual pathophysiology – not every MRI disc finding causes symptoms.

03

EXPLANATION

Lumbar radiculopathy arises through several interacting mechanisms. A herniated or protruding disc can physically irritate or compress a nerve root, while inflammatory mediators can heighten pain signaling even when mechanical compression is modest. Local changes in the nerve's environment may also contribute to symptoms. These pathways help explain why imaging findings and the severity of pain do not always match. A disc abnormality on MRI is not, by itself, sufficient to explain a person's symptoms; the clinical history and neurological examination remain fundamental.

CLINICAL CONTEXT

First: assess the patient, not only the image

Focused history, examination and red-flag triage

Symptoms

Leg-pain distribution
Paresthesia and numbness
Weakness and functional limitation

Examination

Neurological assessment
Reflexes and strength
Sensory deficits / straight-leg raise

Urgent evaluation

Progressive motor deficit
Bladder/bowel dysfunction
Saddle anaesthesia or other red flags

Evidence-based assessment and shared decision-making remain prerequisites for any intervention.

04

EXPLANATION

The first step in managing suspected radiculopathy is careful clinical assessment. The history should establish the distribution of leg pain, onset, sensory symptoms, weakness and effects on daily function. Examination may include strength, reflexes, sensory testing and nerve-tension signs. Particular attention is required for progressive neurological deficits, saddle anesthesia, and new bladder or bowel dysfunction, which can require urgent evaluation. These safety considerations apply before discussing any intervention. Decisions should be based on the patient's overall presentation, not on a spinal image alone.

CLINICAL CONTEXT

Current care pathway

Where procedures fit – and where they do not



Guideline distinction

NICE does not recommend spinal injections for nonspecific low back pain. It advises considering epidural local anaesthetic + steroid in selected acute severe sciatica.

This is the comparator context; it is not a recommendation for routine ozone injection.

05

EXPLANATION

Modern management of low back pain and sciatica starts with a clear diagnosis, information for the patient, appropriate activity and individually tailored non-invasive care. Specialist review or an intervention may be appropriate for selected patients. NICE guidance distinguishes nonspecific low back pain from acute severe sciatica and does not recommend routine spinal injections for nonspecific pain. Certain epidural interventions may be considered in carefully selected cases of severe sciatica. The historical ozone-procaine approach discussed here should not be confused with those guideline-defined procedures or presented as established routine care.

STUDY DESIGN

What was the historical clinical question?

An exploratory, uncontrolled outpatient series

Primary question

What changes were observed in pain and disability after the historical combined injection protocol?

Secondary questions

Possible non-response factors; feasibility; recorded adverse events.

RETROSPECTIVE**NON-RANDOMIZED****NO CONTROL GROUP**

Study classification is essential for interpreting later numerical improvements.

06

EXPLANATION

The original clinical question concerned changes in symptoms after a combined injection approach used for acute lumbar radicular pain attributed to disc herniation. The available records were reviewed retrospectively, without random assignment or an untreated comparison group. This type of series can document who was treated and how reported outcomes changed over time. It cannot establish how much of the change was caused by the injection itself. Natural recovery, accompanying treatments and other factors may also contribute, so the findings are best viewed as exploratory observations.

STUDY DESIGN

Cohort selection at a glance

The original clinical population and analytic sample

269

Patients reportedly treated in 2022–2024



106

Patients meeting inclusion criteria

Crucial methodological detail

The source does not provide a complete attrition flow or every exclusion reason. Do not interpret the reduction from 269 to 106 as a clinical response rate.

07

EXPLANATION

According to the historical presentation, 269 patients were treated during the period from 2022 to 2024, while 106 met the stated criteria for inclusion in the analysis. These figures describe different stages of the reported clinical population. The source does not provide a complete flow diagram showing all exclusions or reasons for non-inclusion. That missing information matters because it can affect the representativeness of the sample. The difference between 269 and 106 should not be interpreted as a treatment success or failure rate.

STUDY DESIGN

What was documented?

Retrospective patient record extraction

Demographics

Age, sex, occupation

Treatment

Medication, procedure count, timing

History

Duration, comorbidity, prior spinal disease

Outcome

Pain rating and Oswestry function

Clinical status

Neurological findings and diagnosis

Historical data source: medical records

08

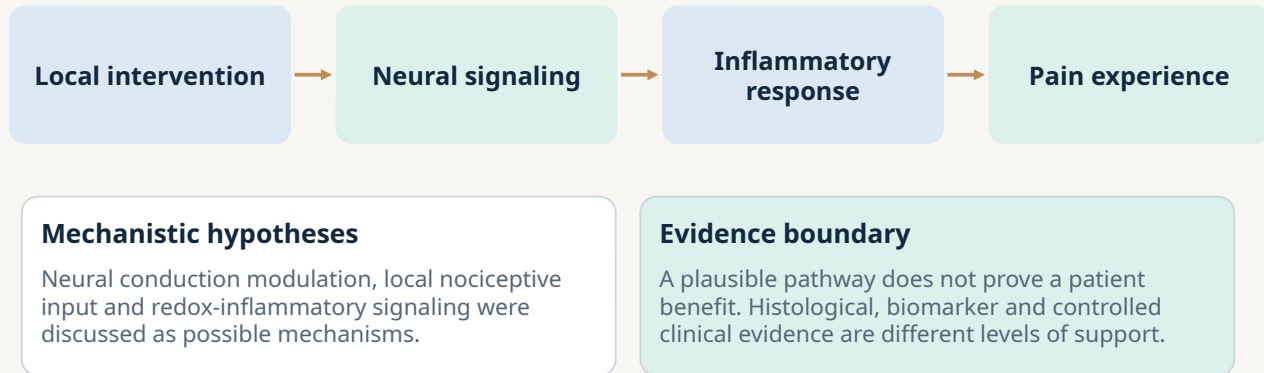
EXPLANATION

The study drew information from existing patient records. The reported variables included age, sex, occupation, previous spinal conditions, symptom duration, associated diseases, neurological findings, diagnosis, medication and treatment exposure. Pain and functional limitation were also recorded. This broad information can help describe a patient population and explore possible factors associated with outcomes. However, a retrospective record review depends on the completeness and consistency of the original documentation. The available presentation does not establish prospective registration, blinded assessment or standardized follow-up for every participant.

THERAPEUTIC RATIONALE

Neural therapy + oxygen-ozone: conceptual frame

The historical rationale versus demonstrated clinical effect



09

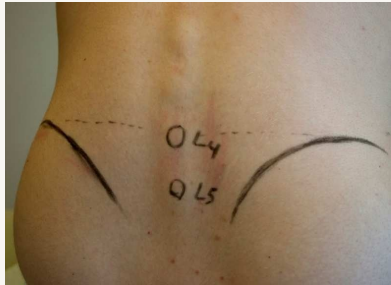
EXPLANATION

The combined intervention was originally discussed through several possible biological pathways. Procaine may influence local neural signaling, while oxygen-ozone was proposed to interact with redox and inflammatory processes. Such explanations can be useful as research hypotheses, but a plausible mechanism is not the same as clinical proof. The figure illustrates a possible sequence from local intervention to changes in signaling and the patient's experience of pain. A controlled study with appropriate outcomes would be needed to determine whether this approach produces benefits beyond natural recovery and other treatments.

THERAPEUTIC RATIONALE

Historical procedural approach: overview

Archived images, not an instructional technique guide



MARKING



PROCEDURAL PHOTO



ARCHIVAL PHOTO

Archival images from the supplied presentation. This slide is documentary, not procedural training.

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EXPLANATION

These photographs document the historical procedural approach shown in the original material. They illustrate aspects of patient positioning, anatomical marking and the clinical setting in which treatment was performed. They are included as archival evidence of how the procedure was described, not as a practical injection guide. The relevant scientific questions are whether the protocol was applied consistently, whether the patient population was appropriately selected, and whether meaningful pain, functional and safety outcomes were documented. Technical procedures require appropriate training, indications and safety safeguards.

STUDY DESIGN

Protocol documentation needs reconciliation

Original slides report inconsistent procaine volumes

Original procedural slide 11

2 mL procaine
5 mL oxygen-ozone, 20 µg/mL

Original methodology slide 23

5 mL of 1% procaine
5 mL oxygen-ozone, 20 µg/mL

Action before public scientific use

Verify procedure logs and the approved protocol. Do not merge these conflicting descriptions into one asserted regimen.

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EXPLANATION

A notable discrepancy appears in the historical protocol descriptions. One slide lists 2 mL of procaine, while another lists 5 mL of 1% procaine; both describe an oxygen-ozone component. These conflicting figures should not be combined into a single assumed regimen. Verification requires the original treatment records, procedure logs or an approved study protocol. Clear documentation of treatment composition is essential for reproducibility and for interpreting both outcomes and safety. The figures are presented here as source-reported information, not as dosing recommendations.

STUDY DESIGN

Treatment exposure

Reported treatment counts and follow-up rhythm

224

Total injections described

106

Analyzed patients

Historical scheduling

The presentation describes reassessment after seven days and possible repeat injections at approximately weekly intervals according to residual symptoms.

Counts and timing are source-reported, not current treatment instructions.

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EXPLANATION

The original presentation reports 224 injections administered among the 106 patients included in the analysis. It also describes reassessment after approximately one week and further treatment when pain or other symptoms persisted. These figures summarize historical treatment exposure rather than defining a recommended schedule. The records shown in the presentation do not fully explain how injections were distributed among individual patients or whether outcome patterns differed with the number of procedures. More complete exposure data would strengthen any future analysis of response and safety.

OUTCOMES

Pain severity: how it was measured

Patient-reported 0–10 numerical rating scale



NO PAIN

WORST IMAGINABLE PAIN

Interpretation

A lower mean score after treatment is a change in reported pain, not by itself an estimate of causal treatment efficacy.

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EXPLANATION

Pain intensity was assessed using a numerical scale from 0 to 10, where 0 indicates no pain and 10 indicates the worst pain imaginable. This is a practical patient-reported measure that makes changes over time easier to describe. Nevertheless, pain ratings are influenced by the natural course of symptoms, expectations, other treatments and the circumstances of measurement. In an uncontrolled before-and-after study, a lower follow-up rating documents an observed improvement in the group, but does not by itself establish a causal treatment effect.

OUTCOMES

Disability: Oswestry Index

Ten daily-function domains – scaled from 0 to 100%

Pain intensity

Personal care

Lifting

Walking

Sitting

Standing

Sleep

Sex life

Social life

Travel

Scale direction

Higher ODI percentages represent greater self-reported disability.

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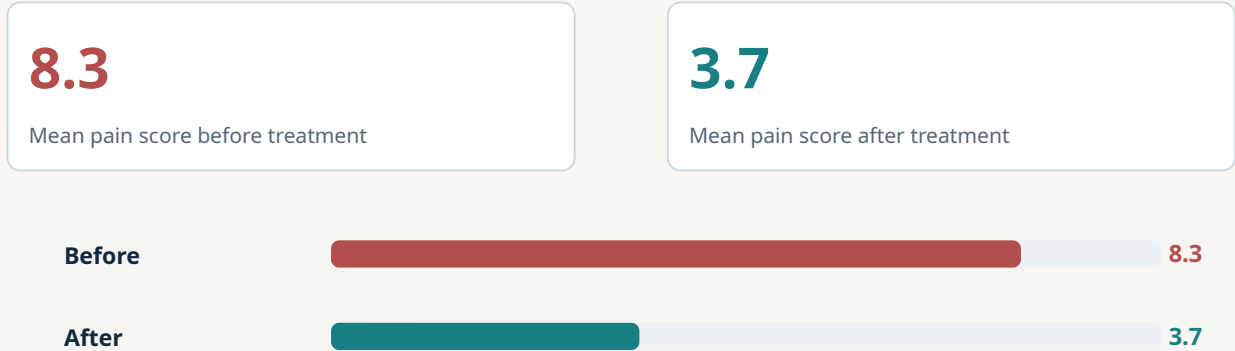
EXPLANATION

The Oswestry Disability Index, commonly abbreviated ODI, evaluates how back-related symptoms limit daily activities. It covers ten areas, including personal care, lifting, walking, sitting, standing, sleep and social participation. Scores are generally reported as percentages, with higher values indicating greater self-reported disability. ODI therefore complements a pain rating by showing whether patients perceive improvement in everyday functioning. The historical series reports ODI values before and after treatment, although the source does not fully describe the timing and completeness of all follow-up assessments.

OUTCOMES

Pain intensity: reported mean change

Mean numerical score before versus after treatment



Descriptive historical result. No untreated comparator or causal effect estimate is available.

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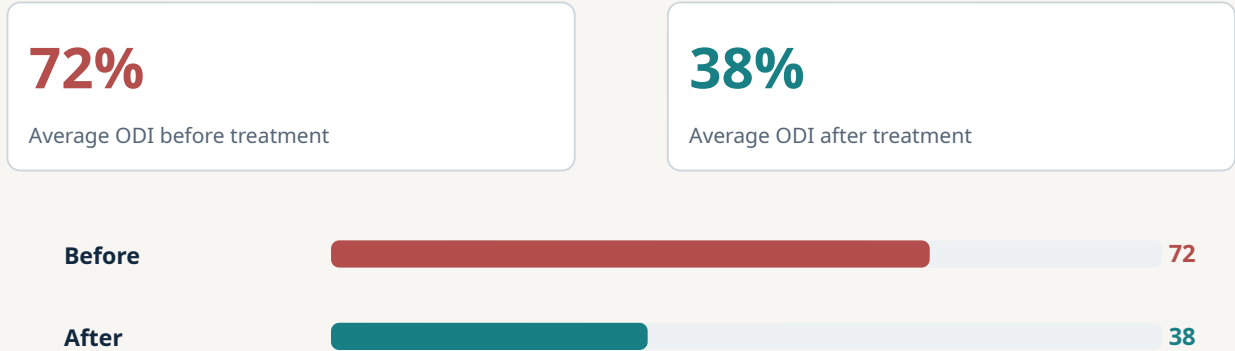
EXPLANATION

The original cohort reports a reduction in mean numerical pain score from 8.3 before treatment to 3.7 afterward. This is a sizeable descriptive change within the group and is an important finding to display clearly. It should, however, be interpreted as an observed association over time rather than proof of efficacy. The study had no untreated or alternative-treatment comparison group, and the source does not fully specify follow-up timing or potential co-interventions. These limitations prevent a reliable estimate of how much improvement was specifically attributable to the combined procedure.

OUTCOMES

Daily function: reported mean change

Mean Oswestry Disability Index before versus after treatment



Lower ODI indicates less functional restriction; interpretation remains observational.

EXPLANATION

Daily functioning was reported to improve as well. The mean Oswestry Disability Index decreased from 72% before treatment to 38% after treatment. Because a lower ODI represents fewer reported restrictions, this direction is consistent with improved day-to-day function. Pain intensity and disability are related but distinct outcomes, so presenting them separately helps the audience understand the findings. As with the pain scores, the figures describe the historical patients at their recorded assessments. Without a control group, standardized follow-up information and patient-level data, a causal interpretation is not justified.

OUTCOMES

Pain-category reporting: caution

Denominators in the archived summary do not align with $n = 106$

Reported baseline categories

37 patients described as experiencing excruciating pain and 71 as severe pain.

Mathematical check

$37 + 71 = 108$; this exceeds the 106-person analyzed cohort.

Scientific response

Retain the source figures as reported, but do not calculate a new response percentage until denominators are verified.

Not a clinical failure: a source-data reconciliation issue.

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EXPLANATION

Some categorical results in the old presentation do not match the stated sample size of 106 patients. For example, the reported baseline categories include 37 patients with excruciating pain and 71 with severe pain, which totals 108. Other percentages also appear to use different denominators. These discrepancies should not be resolved by guesswork. The original patient records are needed to confirm the counts, category definitions and calculation methods. The redesigned analysis therefore emphasizes clearly reported average scores and makes the unresolved data-quality issue visible to the reader.

OUTCOMES

How many patients did not improve?

A non-response subgroup was reported

~13%

Did not improve or improved only slightly (reported)

Possible contributing factors

Complex spinal pathology
Important systemic comorbidity
Psychosocial context

Why this matters

A non-response analysis can help improve selection, consent, outcomes measurement and follow-up.

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EXPLANATION

The historical report indicates that approximately 13% of patients experienced little or no improvement. It discusses several possible explanations, including complex spinal pathology, significant systemic illness and psychosocial factors. These may be relevant to an individual patient's recovery, but this uncontrolled series cannot establish them as validated predictors of treatment response. Understanding non-response is nevertheless valuable. A future study should define meaningful improvement beforehand and record baseline characteristics, coexisting conditions and follow-up data consistently, so that differences between responders and non-responders can be examined more reliably.

SAFETY

Safety: what the series observed

No recorded complications does not equal no procedural risk

Historical report

No complications or allergic reactions were described in the analyzed cohort.

What cannot be concluded

A sample of 106 cannot rule out uncommon harms. Retrospective documentation may miss events.

Modern safety focus

Patient selection · sterile technique · medication allergy assessment · response monitoring · complication pathways

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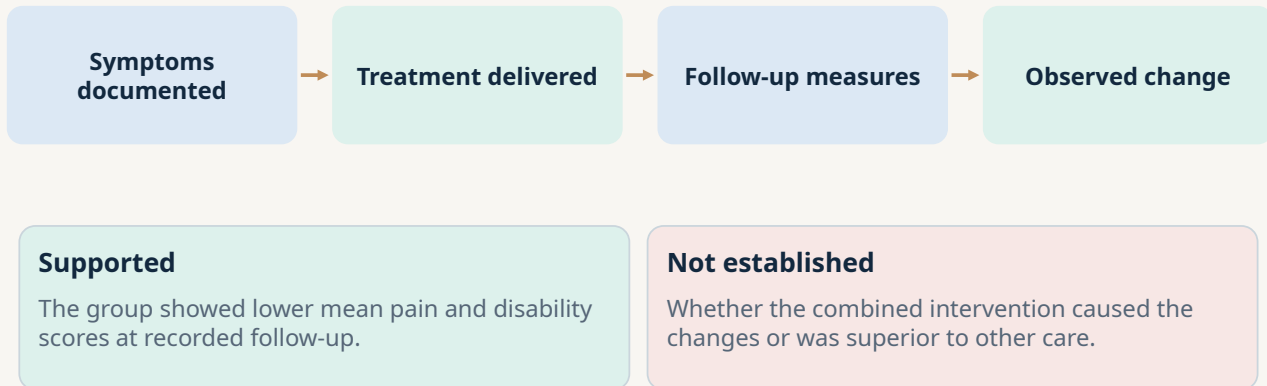
EXPLANATION

No complications or allergic reactions were reported among the 106 patients analyzed in the historical presentation. That observation is worth documenting, but it must not be translated into a claim that the procedure is free of risk. A relatively small retrospective sample may miss rare adverse events, and medical records may not capture all harms in a systematic way. Contemporary safety discussions should include patient selection, medication and allergy assessment, sterile practice, appropriate clinical expertise, monitoring and a clear plan for managing complications. Safety requires more than the absence of events in one series.

INTERPRETATION

What the original cohort can—and cannot—show

A causal inference ladder for observational improvement



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EXPLANATION

An improvement observed after treatment is not automatically an improvement caused by treatment. In this series, patients had symptoms, received a combined intervention and later reported lower average pain and disability scores. That sequence is documented. What remains uncertain is the contribution of natural recovery, additional care, patient selection, expectations and measurement effects. This distinction does not dismiss the clinical observations; it defines what they can support scientifically. To estimate treatment efficacy, future work needs an appropriate comparator and a carefully specified protocol.

EVIDENCE UPDATE

Evidence landscape: route and technique matter

Intradiscal studies are not the same as indirect paravertebral injections

Intradiscal ozone research

Systematic reviews have studied intradiscal ozone for disc-related pain. Some report favorable outcomes, but designs and comparisons vary.

This retrospective cohort

The historical technique was described as indirect sympathetic trunk / paravertebral neural-therapy injection with procaine and ozone.

The critical distinction

Different anatomical routes, co-interventions and study designs prevent treating efficacy estimates as interchangeable.

External evidence: Chang et al., J Back Musculoskelet Rehabil (2024).

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EXPLANATION

Research on oxygen-ozone interventions for lumbar disc disease includes several anatomical routes and treatment protocols. Some systematic reviews have examined intradiscal ozone injection, but that approach is not equivalent to the indirect paravertebral or sympathetic-trunk technique described in this historical series. The target, accompanying medication, eligibility criteria and study comparisons may differ substantially. Results from one technique should therefore not be used as direct proof for another. Evidence must be interpreted according to the exact intervention, patient population, comparator and outcomes studied.

EVIDENCE UPDATE

Guideline reality check

How to communicate the current clinical standard

What NICE recommends

Individual risk assessment, activity and appropriate non-invasive care; selected epidural steroid + local anaesthetic injections for acute severe sciatica.

What this cohort contributes

A historical hypothesis-generating observational series on a different combined procedure.

Public communication standard

Do not label the historical procaine–ozone protocol “established”, “curative”, or “risk-free” solely from this cohort.

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EXPLANATION

Clinical guidelines provide an important reference when discussing an experimental or less-established intervention. NICE guidance for low back pain and sciatica emphasizes assessment, appropriate non-invasive management and selective specialist treatment for particular presentations. It does not establish the historical combined indirect procaine–ozone injection protocol as standard care. This distinction supports accurate patient communication: a procedure may be of research interest without having sufficiently strong evidence for routine use. Benefits, uncertainties and possible harms should be explained in the context of available alternatives.

STUDY QUALITY

Source-data audit before publication

Four issues to validate against case records

01

Cohort denominators

106 analyzed, while some subgroups sum to higher totals

02

Injection composition

2 mL versus 5 mL procaine in different slides

03

Response definitions

Reported 72%, 78%, 84% refer to differing outcomes

04

Follow-up completeness

Time point, missing data and adverse-event ascertainment

No patient-level results were invented or recalculated to close these gaps.

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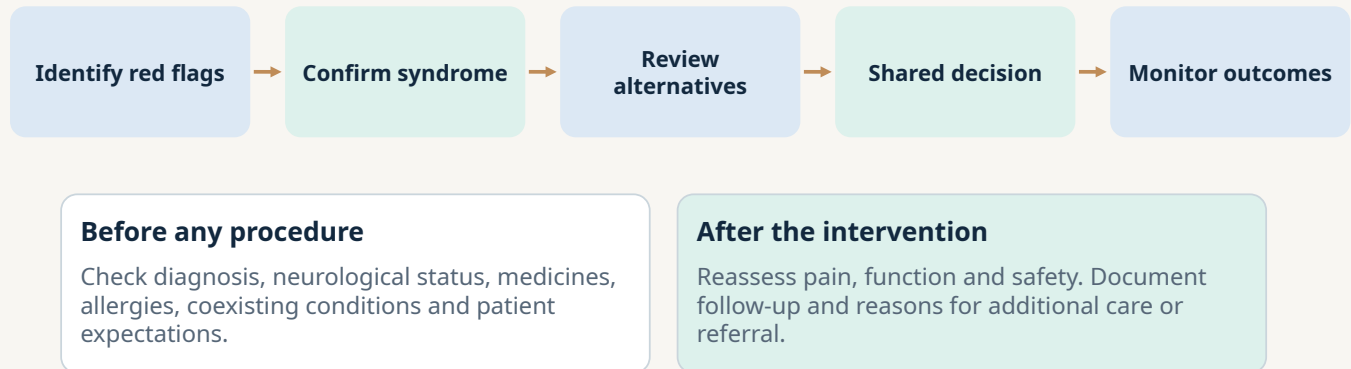
EXPLANATION

Before the historical findings are submitted for formal scientific publication, the underlying source data require reconciliation. Four areas are particularly important: the number of patients in each analysis, inconsistent descriptions of injection composition, the meaning of reported response rates, and the completeness of follow-up and adverse-event reporting. Resolving these issues may require review of individual clinical records and the original study protocol. Transparent data validation is preferable to producing apparently precise charts from contradictory totals. The objective is a more accurate and reproducible account of the original experience.

CLINICAL APPLICATION

A safer patient-centered workflow

An algorithm for discussion—not a prescription for injection



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EXPLANATION

A patient-centered approach begins by checking for red flags and confirming the clinical syndrome. The next steps are to discuss appropriate care options, evaluate patient-specific risks and reach a shared decision. If an intervention is considered, baseline pain, neurological status and functional limitations should be documented. Follow-up should assess both benefit and potential harm, with clear criteria for further treatment or referral. This framework is intended to support responsible clinical reasoning, not to prescribe any particular injection technique. It keeps patient safety and meaningful outcomes at the center of care.

RESEARCH PRIORITIES

A proposed design for the next study

Move from retrospective change to controlled evidence

Design	Prospective controlled comparison with pre-specified endpoints
Population	Clearly defined lumbar radiculopathy and exclusion criteria
Outcomes	NRS pain, ODI function, patient global improvement, safety
Timing	Baseline plus standardized short and long-term follow-up
Reporting	Complete flow diagram, adverse-event definitions, and protocol

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EXPLANATION

A more informative next study would be prospective and include a clearly defined comparison group. Eligibility criteria, the precise intervention, permitted accompanying treatments and outcome time points should all be specified in advance. Pain intensity, disability, patient global improvement and adverse events would provide complementary measures of benefit and harm. Follow-up should be sufficiently complete to evaluate both short-term and longer-term outcomes. Such a design could help determine whether observed improvements are attributable to the intervention and whether any benefits justify the risks and resources required.

CONCLUSIONS

Clinical take-home messages

What should the audience remember?

01

The original cohort reports improvements

NRS 8.3 → 3.7 and ODI 72% → 38% among studied patients.

02

Study design limits causal conclusions

Retrospective, uncontrolled data cannot establish efficacy or superiority.

03

Technique and evidence are not interchangeable

Intradiscal ozone literature does not validate this indirect protocol.

04

Verification and safety come first

Reconcile source denominators and dosing; use individualized care.

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EXPLANATION

The historical clinical series reported lower mean pain and disability scores after the combined treatment. The numerical changes are clinically interesting, but the uncontrolled retrospective design limits what can be concluded about effectiveness. Evidence from intradiscal ozone studies cannot automatically be transferred to the different indirect technique used here. The original patient counts and protocol descriptions also require verification. The appropriate conclusion is therefore measured: these observations can inform further research, while clinical decisions should continue to prioritize established assessment standards, transparent communication and patient safety.

REFERENCES

Source notes and selected references

Original clinical material + external guideline and review

Historical source

Shelev K. Spinal lumbar pain syndromes: neural therapy and ozone therapy. Original PowerPoint supplied by presenter, 38 slides; cohort stated as 2022–2024.

Clinical guideline

NICE. Low back pain and sciatica in over 16s: assessment and management (NG59), updated 2026.
<https://www.nice.org.uk/guidance/ng59>

Systematic review

Chang MC et al. Effectiveness of intradiscal ozone injections for treating pain following herniated lumbar disc: systematic review and meta-analysis. J Back Musculoskelet Rehabil. 2024. PMID 38905033.

Study figures are reproduced as reported; unresolved inconsistencies are highlighted rather than corrected by assumption.

EXPLANATION

The presentation draws on three types of material. The historical PowerPoint supplied by the presenter is the source for the cohort, protocol descriptions and reported outcomes. NICE guideline NG59 provides the clinical care context for low back pain and sciatica. A 2024 review by Chang and colleagues addresses intradiscal ozone injections, an anatomically different procedure. Keeping these sources distinct helps prevent comparisons that the evidence cannot support. The reference slide identifies the principal documents and makes the origins of the information transparent to readers.

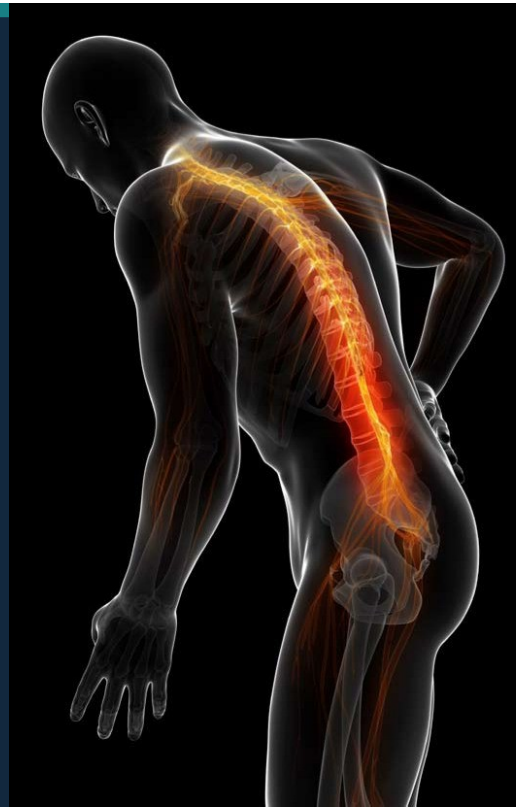
THANK YOU

For your attention and for your questions

Dr. med. Krassimir Shelev

Clinical discussion • medical oxygen-ozone and neural therapy

Evidence, safety and transparent reporting remain essential.



EXPLANATION

This presentation has revisited a historical clinical series with attention to reported outcomes, methodological limitations and current standards of evidence. The observations may generate useful questions about the role of neural therapy and medical oxygen-ozone in selected patients, but stronger comparative studies are needed before firm claims can be made. Reliable documentation, careful patient selection, meaningful outcome measurement and safety monitoring remain essential. Thank you for taking the time to review the material and consider its clinical and research implications.