



Comparative Effectiveness of Dexamethasone versus Triamcinolone in Lumbar Epidural Steroid Injections: A Retrospective Cohort Study

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Introduction

Background: Lumbar epidural steroid injections (LESI) are commonly used interventions for managing radicular pain due to lumbar disc herniation or spinal stenosis. Among the corticosteroids used, dexamethasone (a non-particulate steroid) and triamcinolone (a particulate steroid) are frequently selected based on provider preference, clinical scenario, or safety considerations. While triamcinolone may provide longer-lasting effects due to its particulate nature, dexamethasone is preferred by some clinicians for its potentially lower risk of embolic complications. However, comparative evidence on the real-world effectiveness and safety profiles of these agents remains limited.

Hypothesis: We hypothesize there is no significant difference in short-term pain relief between dexamethasone and triamcinolone, but triamcinolone may be associated with longer duration of relief and increased adverse event rates.

Objective: To compare clinical outcomes and adverse event profiles between patients receiving dexamethasone versus triamcinolone for lumbar epidural steroid injections in a retrospective cohort.

Methods: A retrospective cohort study was conducted using data from the University of Texas MD Anderson Cancer Center's lumbar epidural steroid injection registry. The study included patients who underwent a lumbar epidural steroid injection between January 1, 2017, and December 31, 2024. The primary outcome was pain relief at 1-month post-injection, measured using the Numeric Rating Scale (NRS) or Visual Analog Scale (VAS). Secondary outcomes included duration of pain relief, need for repeat injection within 3 months, and adverse events (e.g., infection, headache, neurologic symptoms).

References:

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Methods

Population: Adults (≥ 18 years) who underwent lumbar epidural steroid injection (interlaminar, transforaminal, or caudal) between January 1, 2017, and December 31, 2024.

Inclusion Criteria:

- Diagnosis of lumbar radiculopathy, disc herniation, or spinal stenosis
- Received a single-agent LESI with either dexamethasone or triamcinolone
- Minimum of 3 months follow-up data available

Exclusion Criteria:

- Injections using mixed corticosteroids
- Previous lumbar surgery within 6 months
- Incomplete medical records

Primary Outcome:

Pain relief at 1-month post-injection (measured via NRS or VAS)

Secondary Outcome:

- Duration of pain relief
- Need for repeat injection within 3 months
- Adverse events (e.g., infection, headache, neurologic symptoms)

Results

- Data collection is complete for 500 patients who received either dexamethasone or triamcinolone via lumbar epidural steroid injection
- Baseline demographic and procedural characteristics have been extracted. Statistical analysis is currently in progress to evaluate differences in pain relief, functional outcomes, duration of effect, and adverse events between steroid groups.

Age at ESI	Deceased (0=N, 1=Y)	Gender (1= Male, 2=Female)	Race	Ethnicity	1=Bipolar Disorder, 2=Anxiety Disorders, 3=Depression, 4=Post-Traumat ic Stress Disorder (PTSD), 5=Schizophrenia , 6=other)	Diabetes (0=N, 1=Y)	History of Pain Duration (1=<1 year, 2= 1-5 years, 3->5 years)	Pain Diagnosis (1=, 2=, 3=, 4=, 5=, 6=, 7=Other)					
			(1=White/Caucasian, 2=Black/African American, 3=Asian, 4=American Indian/Alaska Native, 5=Native Hawaiian/Other Pacific Islander, 6=Other, 7=Declined to Answer)										
Pain Score before	ESAS - Pain before	ESAS - Fatigue before	ESAS - Nausea before	ESAS - Depression before procedure	ESAS - Anxiety before procedure	ESAS - Drowsines s before procedure	ESAS - SOB before procedure	ESAS - Appetite before procedure	ESAS - Well- Being before procedure	ESAS - Sleep Problems before procedure	ESAS - Financial Distress before procedure	ESAS - Spiritual Pain before procedure	ESAS - TOTAL SCORE before procedure

Conclusions

This study aims to provide comparative data on the effectiveness and safety of dexamethasone versus triamcinolone in lumbar epidural steroid injections. Pending final analysis, these findings may help guide evidence-based steroid selection in the treatment of lumbar radicular pain.