

# Short Term Results of Single Shot Epidural Steroid Injection in Patients with Lumbar Canal Stenosis

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## ABSTRACT

**Background:** Epidural steroid injections (ESI) are commonly performed procedures for the management of lumbosacral radicular pain in lumbar canal stenosis cases. Epidural steroid injections are associated with reduced invasion, and may delay or prevent the need for more intensive surgery.

**Objectives:** To study the pain relieving effect of epidural steroid in lumbar canal stenosis cases.

**Materials and Methods:** Patients ranging from 18-75 years those suffering from lumbar canal stenosis with pain and radiculopathy symptoms for more than 6 months not relieved by conservative treatment (medications and physiotherapy) were given epidural steroid and pain relief at 1 day, 1 month and 3 month using VAS pain score was measured.

**Results:** Study conducted on 25 patients of both sex and age between 18 yrs and 75 yrs within the period of 9 months and scoring was done using VAS score at the interval of 1 day, 1 month and 3 month at follow up. Data was tabulated and statistically analysed. Statistical analysis is done by comparing group using ANOVA test.

Results were statistically significant for given interval of duration and p value is < 0.05.

**Conclusions:** Our study showed that ESI are effective in decreasing pain in short term as measured by VAS scoring and the effect is more after 1 day of injection then 3 months, but the pain relieving effect is significant till the end of three months (indicated by p values).

**Keywords:** epidural; steroid; injection; lumbar canal stenosis

## INTRODUCTION

Chronic pain is an ever-increasing economic and healthcare concern. Some reports suggest that 90% or more of the total population will be subject to pain capable of affecting normal activity and function at one point or other in their lifetime. <sup>(1)</sup> There are many causes of chronic back pain and one of them is lumbar canal stenosis. Lumbar spinal stenosis is defined as narrowing of the spinal canal, secondary to disc herniation, protrusion, extrusion and disc bulging combined with osteophytes and

arthritic changes of the facet joints, resulting in symptoms and signs caused by entrapment and compression of the intraspinal, vascular and nervous structures. <sup>(2,3)</sup> Symptoms of spinal stenosis may be related to a neurovascular mechanism such as arterial flow in cauda equina, venous congestion, and increased epidural pressure, nerve root excitation by local inflammation, or direct compression in the central canal. <sup>(2-5)</sup> While surgery is the most common intervention performed for lumbar spinal stenosis, <sup>(6-10)</sup> epidural injections are

common nonsurgical interventions. (11-16)

Goal of surgery is to decompress the thecal sac from the spinal canal compromise; whereas, the goal of epidural injections is to suppress pain response and improve function by various mechanisms, including an anti-inflammatory effect.

Epidural steroid injection (ESI) is a combination of a corticosteroid with a local anaesthetic pain relief medicine. Corticosteroids are strong anti-inflammatory medicines. Relieving swelling and inflammation can take pressure off nerves and other soft tissues, which can relieve pain. The local anaesthetic medicine helps give you immediate pain relief. Corticosteroid medicines take longer to have an effect. The goal of the injection is pain relief; at times the injection alone is sufficient to provide relief, but commonly an epidural steroid injection is used in combination with a comprehensive rehabilitation program to provide additional benefit.

ESI is usually not tried unless symptoms caused by lumbar spinal stenosis have not responded to other nonsurgical treatment.

Lumbar spinal stenosis may cause pain that radiates from the lower spine to the hips or down the legs. Epidural steroid injections (ESIs) are used for leg pain rather than back pain from lumbar spinal stenosis. These injections may relieve symptoms and reduce inflammation but do not cure spinal stenosis. Importantly, an injection can provide sufficient pain relief to allow a patient to progress with a rehabilitative stretching and exercise program.

Epidural steroid injections deliver medication directly (or very near) the source of pain generation. Since the vast majority of pain stems from chemical inflammation, an epidural steroid injection can help control local inflammation while also "flushing out" inflammatory proteins and chemicals from the local area that may contribute to and exacerbate pain.

Some research concludes that epidural steroid injection may contribute to avoiding potentially unnecessary invasive procedures. One study compared the responses of patients with disc herniations who had received epidural steroid injections to those of patients with this condition without a history of these treatments. The results showed that 19% of the patients not receiving epidural injection did not wish to proceed with corrective surgery, compared to 56% of the patients who did receive injections.

The effectiveness of epidural injections in the management of lumbar central spinal stenosis has been under debate. Many authors compared the effectiveness of surgical interventions with epidural injections. They reported lack of efficacy of epidural injections in the management of chronic pain and disability of central spinal stenosis. (17-19) Similar results were echoed by others. However, multiple systematic reviews (24-26) and randomized trials demonstrated clinical efficacy and cost effectiveness of epidural injections in managing pain of spinal stenosis. (20,21,27-33)

#### **Aims and objectives:**

To study the pain relieving effect of epidural steroid in lumbar canal stenosis cases.

#### **MATERIALS AND METHODS**

Patients ranging from 18-75 years those suffering from lumbar canal stenosis with pain and radiculopathy symptoms for more than 6 months not relieved by conservative treatment (medications and physiotherapy) were given epidural steroid and pain relief at 1 day, 1 month and 3 month using VAS pain score was measured.

ASA 1 and 2

1. Pregnant women.
2. Uncontrolled medical conditions - Heart disease, diabetic, CKD and AKD.
3. Immuno-compromised.
4. Local or systemic infection.
5. Pott's spine and primary spinal cord pathology.

6. Severe hypertension.
7. Coagulopathies.

**Procedure:**

For epidural injection we prepared a solution containing triamcinolone acetate 40 mg( 1ml) as anti-inflammatory agent, xylocaine 2% (1 ml) as fast acting local anaesthetic and saline 10 ml as flushing agent.

Epidural steroid injections were given in operation theatre. Patient taken on X-ray table and lateral position and thighs and neck is flexed to make the back curve. Then skin in low back area is cleaned and then after identifying the proper space skin is anaesthetized using local anaesthetic.

Needle is inserted and directed towards epidural space under fluoroscopic guidance. Once the needle is in proper space, confirmation is done by pushing air or normal saline and by doing negative suction test. The epidural steroid solution is then injected. Following the injection, the patient is monitored for 15 to 20 minutes before shifting.

**Post operative:**

Patient given rest on the day of procedure and they can resume their activities the following day. Pain relief at day 1, 1 month and 3 month using VAS pain score was noted.

**RESULTS**

Study conducted on 25 patients of both sex and age between 18 yrs and 75 yrs within the period of 9 months and scoring was

done using VAS score at the interval of 1 day, 1 month and 3 month at follow up. Data was tabulated and statistically analysed. Statistical analysis is done by comparing group using ANOVA test.

Results were statistically significant for given interval of duration and p value is <0.05.

**Table 1: Showing age distribution**

	Age
Mean	50.4
S.D.	11.99

**Table 2: Showing sex distribution**

Sex	Males		Females	
	Frequency	%	Frequency	%
	10	40.00	15	60.00

**Table 3: showing VAS**

Sr. no.	Age	Sex	VAS			
			PRE-OP	1 day	1 month	3 month
1	68	F	10	7	2.5	0
2	42	F	10	1	8.5	5
3	45	F	10	1	5	5
4	75	M	10	3	3	5
5	71	M	10	3	5	3
6	55	M	10	0	5	5
7	50	M	10	3	5	4
8	61	F	10	5	1	1
9	40	M	10	0	7.5	6
10	38	M	10	2	10	10
11	35	F	10	2.5	0	0
12	41	F	10	2.5	7.5	7.5
13	65	F	10	2.5	7	2.5
14	45	F	10	2.5	7.5	7.5
15	50	M	10	2.5	5	5
16	40	F	10	2	8.5	7.5
17	50	F	10	2.5	7.5	7.5
18	65	M	10	7.5	0	0
19	30	F	10	1	7.5	5
20	46	F	10	2.5	3	3
21	57	M	10	2.5	5	3
22	50	M	10	1	6	5
23	60	F	10	5	3	2.5
24	46	F	10	0	9	7.5
25	35	F	10	3	5	2.5

**Table 4: showing ANOVA and "p" value**

Variable	Groups	N	Mean	df	F value	F table value	P value	significance
VAS	Pre-injection	25	10	3.96	53.31	2.70	0.00	significant
	1 day	25	2.58					
	1 month	25	4.64					
	3 month	25	5.6					

**CONCLUSION**

Chronic pain is an ever-increasing economic and healthcare concern. Doctor may initially prescribe conventional first-line therapy in the form of medications to assess the severity of the condition. Patients

who find these treatments ineffective may then opt for an epidural steroid injection.

Epidural steroid injections are associated with reduced invasion, and may delay or prevent the need for more intensive surgery. <sup>(1)</sup> Patients receiving this treatment may find that their pain is effectively

reduced or even gone following the procedure. Epidural injections do not require long recovery times, and can be a part of a normal day's schedule. These procedures are extensively documented and supported in scientific literature.

Many patients may experience effective pain relief after their first injection. In other cases, repeated injections in quick succession may be necessary. The specialist treating these patients can design a long-term plan based on this. The success of this treatment likely will be affected by many factors, including psychosocial and psychiatric factors, but it can be tried as a method for pain relief before proceeding to more invasive form of treatment as surgery. Our study showed that ESI are effective in decreasing pain in short term as measured by VAS scoring and the effect is more after 1 day of injection and slowly effect decreases by 3rd months as shown by mean VAS scores at 1 day, 1 month and 3 months, but the pain relieving effect is significant till the end of three months (indicated by p values).

## DISCUSSION

Three well-performed systematic reviews reported <sup>(24-26)</sup> efficacy for epidural injections in the management of spinal stenosis with local anesthetic with or without steroid. These systematic reviews used appropriate methodological quality assessment criteria and evidence synthesis. In contrast, three other systematic reviews <sup>(17,22,23)</sup> showed lack of efficacy for epidural injections in the management of disability caused by spinal stenosis of the lumbosacral spine. All three systematic reviews <sup>(17,22,23)</sup> have been criticized for poor methodological quality assessment and reaching inappropriate conclusions.

While surgery is essential in severe symptomatic stenosis, for all other conditions conservative management with epidural injections in conjunction with physical therapy modalities and exercise programs is a cost-effective modality to manage mild to moderate symptomatic

spinal stenosis as well as those patients who have contraindications or unwilling to undergo surgery.

The drawbacks of our study are that we have used an objective pain scoring system and the sample size is small and effect was measured for short term only. Further studies are needed to see the long term benefits of epidural steroids.

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How to cite this article: Singh L, Kakad RR, Lalwani D et.al. Short term results of single shot epidural steroid injection in patients with lumbar canal stenosis. *International Journal of Research and Review.* 2019; 6(2):180-185.

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