

Original article:

Comparative Analysis of Ultrasound-Guided Lumbar Transforaminal and Caudal Epidural Steroid Injections for Patients Suffering from Low Back Pain

Ajitsinh Vadher¹, Kirankumar Parmar², Snehal Punatar³

¹Associate Professor, Department of Radiology, Gujarat Adani Institute of Medical Sciences, Bhuj, Gujarat, India.

²Consultant Radiologist, Parth Imaging Centre, Rajkot, Gujarat, India.

³Associate Professor, Department of Orthopedics, Shri M. P. Shah Government Medical College, Jamnagar, Gujarat, India.

Corresponding Author: Dr. Ajitsinh Vadher, Associate Professor, Department of Radiology, Gujarat Adani Institute of Medical Sciences, Bhuj, Gujarat, India.

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Abstract

Background: The present study was undertaken for assessing and comparing the efficacy of transforaminal and caudal epidural steroid injections outcome for the treatment of low back pain.

Materials & Methods: 50 individuals with a history of radiating low back pain were roughly split into two research groups: Patients who received injections of transforaminal epidural steroids were categorized into Group 1 and patients who received injections of caudal epidural steroids were categorized into Group 2. Every patient in each of the two research groups received care in accordance with that study group's guidelines. The Oswestry Disability Index (ODI) and Visual Analogue Scale (VAS) were used to measure pain reduction following the epidural steroid injection. A Microsoft Excel sheet was used to compile all of the findings, which were then examined using SPSS software.

Results: Those in Group 1 had a considerably lower mean VAS than those in Group 2, on average. When the mean ODI of the patients in the two study groups was compared, it was found that the patients in Group 1 had a substantially lower mean ODI than the patients in Group 2.

Conclusion: The transforaminal method is more effective than the caudal approach in managing patients with low back pain.

Key words: Caudal, Transforaminal, Epidural, Steroid.

INTRODUCTION

Low back pain is a very common condition, about 90% of people suffering from it at some point in their lives. It is a leading cause of lost time at work and disability. For example, in the USA, it is responsible for an annual direct health care expenditure of more than \$20 billion.^{1, 2} Backache is usually self-limited, resolving in 4 to 8 weeks in

more than 50% of patients, yet the recurrence rate is high, about 85%. Because of the complexity of the bony, muscular ligamentous, and neural elements of the lack of specificity and the high rate of early, spontaneous remission. Exceptions to this include history of recent trauma, presence of red flags or chronic unremitting course. Many treatment modalities, including drug therapy,

physical therapy, ultrasound, thermal therapy, local injection and surgeries have been tried, but most studies give variable results.³⁻⁵

Nawani et al in their study included 50 patients of either sex aged between 35-65 years presenting with features of cervical and lumbar radiculopathic pain and were subjected to single lumbar epidural injection of local anaesthetic, tramadol and methylprednisolone, in the lateral position. The table was then tilted in the trendelberg position with a tilt of 25 degrees, and patients were maintained for 10 minutes before being turned supine. All patients were administered 3 such injections with an interval of 2 weeks between subsequent injections, and pain relief was assessed with a visual analogue scale. Immediate complications after the block were assessed. Immediate and post procedural complications observed were nausea and vomiting (20%), painful injection site (4%), hypotension (10%) and high block (4%). Pain relief was assessed after the three injections by three grades: 37 (74%) had complete resolution of symptoms; 18% had partial relief and 8% did not benefit from the procedure.⁶ Hence; the present study was undertaken for comparing the efficacy of transforaminal and caudal epidural steroid injections outcome for the treatment of chronic low back pain.

MATERIALS & METHODS

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steroid injections outcome for the treatment of chronic low back pain.

50 individuals with a history of radiating low back pain were roughly split into two research groups: Patients who received injections of transforaminal epidural steroids were categorized into Group 1 and patients who received injections of caudal epidural steroids were categorized into Group 2. Every patient in each of the two research groups received care in accordance with that study group's guidelines. The Oswestry Disability Index (ODI) and Visual Analogue Scale (VAS) were used to measure pain reduction following the epidural steroid injection. A Microsoft Excel sheet was used to compile all of the findings, which were then examined using SPSS software. Chi- square test and student t test was used for assessment of level of significance.

RESULTS

In the present study, a total of 50 patients with chronic low back pain were analysed. Mean age of the patients of group 1 and group 2 was 52.1 and 53.2 years respectively. There were 18 males and 7 females in group 1 and 15 males and 10 females in group 2.

Those in Group 1 had a considerably lower mean VAS than those in Group 2, on average. When the mean ODI of the patients in the two study groups was compared, it was found that the patients in Group 1 had a substantially lower mean ODI than the patients in Group 2.

Table 1: Demographic data

Parameter		Group 1 (n)	Group 2 (n)
Age group (years)	Less than 30	5	6
	30 to 50	12	13
	More than 50	8	6
Gender	Males	18	15
	Females	7	10

Table 2: Mean VAS Score

Time interval	Group 1	Group 2	p-value
Pre-injection	6.6	6.9	0.75
Post- last injection	4.2	5.8	0.00 (S)
Post- last injection 15 days	3.9	5.3	0.00 (S)
Post- last injection 1 month	3.5	4.5	0.01 (S)

Table 3: ODI Score

Time interval	Group 1	Group 2	p-value
Pre-injection	56.2	58.1	0.85
Post- last injection	28.3	35.2	0.00 (S)
Post- last injection 15 days	20.1	29.2	0.00 (S)
Post- last injection 1 month	23.6	28.4	0.00 (S)

DISCUSSION

Corticosteroid injections showed early and moderate but unsustained improvements versus placebo in certain outcomes. Corticosteroids demonstrated effectiveness in reducing pain in a substantial proportion of patients with lumbar radicular pain.⁷⁻⁹ Hence; the present study was undertaken for assessing and comparing the efficacy of Transforaminal and Caudal Epidural Steroid Injections Outcome for the treatment of chronic low back pain.

Smith et al conducted a study in which 19 patients were retrospectively identified who received their first fluoroscopically guided epidural steroid injection for radicular and neurogenic claudication symptoms caused by lumbar spinal stenosis over a 12-month interval. All patients had corresponding MRI findings and had failed previous non-invasive therapies. Outcomes included the visual analog scale (VAS, 0-10 scale) immediately before the injection, immediately after the injection, and upon follow up at 4-6 weeks. Surgery rates and number of repeat injections over a 3-year period were also analyzed. The patient groups were matched for age

and level of stenosis on MRI. There was no statistically significant difference between the two groups in pre injection to follow up VAS scores (P=0.919). The difference between number of repeat injections between the interlaminar and transforaminal groups was not statistically significant (0.91-mean 2.47 and 2.58, respectively). Both the interlaminar and transforaminal groups experienced statistically significant improvement in VAS scores from before the injection to after the injection, and on follow up. Low numbers underwent surgery (11% in the interlaminar group vs 15% in the transforaminal group, not significant, P=0.63). They concluded that there was no statistically significant difference in pain reduction between the interlaminar and transforaminal steroid injections.¹⁰ Atm et al analyzed the records of 37 patients (range: 24-80 years) who presented to clinic with low back pain and were treated by TFESI. Outcomes were assessed by Visual Analog Scale (VAS) measured at the 3rd week and 6th month. Median age of the patients was 50 years, and mean duration of symptoms was 48 months. Diagnosis was lumbar disc herniation (LDH) in

51%, failed back surgery syndrome (FBSS) in 38%, and spinal stenosis (SS) in 11% of the patients. Baseline VAS scores were similar between the three groups. The 3rd week and 6th month VAS scores of LDH and FBSS cases were significantly decreased compared to baseline scores ($p < 0.001$, $p = 0.001$), and no significant change was observed between the VAS scores at the 3rd week and 6th month ($p > 0.05$). If success is defined as 50% or more decrease in VAS scores, the success rate of TFESI was 84% at the 3rd week and 78% at the 6th month. TFESI significantly reduced the intensity of low back pain in most of the patients with LDH, FBSS or SS; thus, it may be considered as an effective method in the treatment of low back pain.¹¹

Rados et al conducted a randomized, prospective study to compare the efficacy of two different routes in administering epidural steroid injections interlaminar (IL) vs transforaminal (TF) in patients with unilateral radicular pain. Patients. They randomly enrolled and followed 64 patients with chronic radiculopathy. Significant improvements were maintained throughout 6 months (24 weeks) of follow-up ($P < 0.001$, respectively). The average

visual analog scale (VAS) pain scores at 24 weeks improved to 4.0 2.2 cm in the IL group and 3.8 2.1 cm in the TF group ($P = 0.717$). Baseline functional capacity was comparable for the IL and the TF group (52% vs 53%) when assessed using Oswestry ($P = 0.647$). At 6 months, both groups improved, 39% for the IL group and 38% for the TF group, suggesting change from severe to moderate disability scoring range. There were 24 out of the 32 (75%) patients in the IL group at 24 weeks who improved more than 2 cm on the VAS scale and 17 patients (53%) had >50% of the pain relief. In the TF group, there were 27 out of the 32 (84%) patients with >2 cm improvement on VAS pain scale, and 20 of 32 (63%) with >50% improvement at 24 weeks. Functional capacity changes were similar, 16 out of the 32 patients (50%) improved 10 points or more on the Oswestry scale in the IL group and 21 out of the 32 in the TF group (66%).¹²

CONCLUSION

The transforaminal method is more effective than the caudal approach in managing patients with low back pain.

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