

Comparative Analysis of Transforaminal and Caudal Approach of Epidural Steroid Injection on Chronic Low Back Pain Patients: An Institutional Based Study

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ABSTRACT

Background: Back pain and related symptoms rank among the second most frequent medical complaints. The present study was conducted to compare of Transforaminal and caudal approach of epidural steroid injection on chronic low back pain patients.

Materials and Methods: The present study was conducted to compare of Transforaminal and caudal approach of epidural steroid injection on chronic low back pain patients. All the patients were divided into two groups with 30 patients in each group as follows: Group 1 included patients who were given injections through Transforaminal route, while group 2 included patients who were given injections through caudal route. Pain relief after the epidural steroid injection using Visual analogue scale (VAS). The statistical analysis was done using statistical software SPSS for windows (Version 23.0). P-value <0.05 is considered as statistically significant.

Results: In the present study total participants included in the study were 60 and all the patients were divided into two groups with 30 patients in each group as follows: Group 1 included patients who were given injections through Transforaminal route, while group 2 included patients who were given injections through caudal route. In both the groups maximum patients were of age group 41-50yrs (40%). In group 1 60% were females and in group 2 50% were females. In the present

study, mean VAS at Pre-injection, Immediate Post injection, Post-injection 1 month and Post-injection 3 month for subjects of group 1 was found to be 7.9, 4.8, 3.8 and 3.6. Mean VAS at Pre-injection, Immediate Post-injection, Post-injection 1 month and Post injection 3 month for subjects of group 2 was found to be 7.5, 5.2, 4.3 and 4.4 respectively.

Conclusion: The present study concluded that Transforaminal approach was better than caudal approach.

Keywords: Back Pain, Transforaminal Approach, Caudal Approach, Epidural Steroid Injection.

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INTRODUCTION

Back pain and related symptoms rank among the second most frequent medical complaints. Disability from low back pain is second only to the common cold as a cause of lost work time and is the most common cause of disability in people under 45 years of age.¹ Corticosteroid injections have shown an early and moderate but not sustained improvement compared to placebo in specific outcomes. Corticosteroids have shown good efficacy in reducing pain in a large proportion of patients with lumbar radicular pain.²⁻⁴ The steroid injection was first used in 1953, since then it has been increasingly utilized as it was found to have local anti-inflammatory function due to inhibition of secretion of cytokines, thereby reducing pain. Therefore, corticosteroid

injections were considered as an efficient and safe choice. Complications from corticosteroid injection are rare. However, Surgery particularly is the main treatment modality recommended for treatment leading to decrease in pain score.³⁻⁶

Epidural steroid injections (ESIs) are the most commonly performed procedures for the relief of lumbosacral radicular pain.⁷ They may be performed to deliver steroids or local anesthetics to the site of pathology in the epidural space via a transforaminal, interlaminar, or caudal approach.⁷ The present study was conducted to compare of Transforaminal and caudal approach of epidural steroid injection on chronic low back pain patients.

MATERIALS AND METHODS

The present study was conducted to compare of Transforaminal and caudal approach of epidural steroid injection on chronic low back pain patients. The total of 60 patients with chronic low back pain who underwent treatment with Transforaminal, or caudal epidural steroid injection was enrolled in the present study. Before the commencement of the study ethical approval was taken from the Ethical committee of the institute and written consent was obtained from all the patients after explaining in detail the entire research protocol. All the patients were divided into two groups with 30 patients in each group as follows: Group 1 included patients who were given injections through Transforaminal route, while group 2 included patients who were given injections through caudal route. With all aseptic precautions, in group 1 (Transforaminal), Patients were placed in the prone position and were supported by pillows under the abdomen to reduce lumbar lordosis. The needle tip was advanced slowly and cautiously past the superior articular process lateral surface. Patients of group 2 (Caudal) were placed in prone position for fluoroscopy-guided caudal epidural injection. In lateral view of fluoroscopy, the sacral hiatus could be identified as an abrupt drop off at the end of S4 lamina. Proper needle tip placement was verified by observing spread of contrast medium within the epidural space. Patient

monitored for 15 mins after the procedure and observed for immediate side effects. Pain relief after the epidural steroid injection using Visual analogue scale (VAS). Clinical profile of the subjects was obtained, and details were filled in a proforma. The statistical analysis was done using statistical software SPSS for windows (Version 23.0). P-value <0.05 is considered as statistically significant.

RESULTS

In the present study total participants included in the study were 60 and all the patients were divided into two groups with 30 patients in each group as follows: Group 1 included patients who were given injections through Transforaminal route, while group 2 included patients who were given injections through caudal route. In both the groups maximum patients were of age group 41-50yrs (40%). In group 1 60% were females and in group 2 50% were females. In the present study, mean VAS at Pre-injection, Immediate Post injection, Post-injection 1 month and Post-injection 3 month for subjects of group 1 was found to be 7.9, 4.8, 3.8 and 3.6. Mean VAS at Pre-injection, Immediate Post-injection, Post-injection 1 month and Post injection 3 month for subjects of group 2 was found to be 7.5, 5.2, 4.3 and 4.4 respectively.

Table 1: Demographic data

Variables	Group 1 N (%)	Group 2 N (%)
Age group(yrs)		
18-30	4(13.33%)	4(13.33%)
31-40	6(20%)	3(10%)
41-50	12(40%)	12(40%)
51-60	8(26.66%)	11(36.66%)
Gender		
Male	12(40%)	15(50%)
Female	18(60%)	15(50%)
Total	30(100%)	30(100%)

Table 2: Mean VAS Score

Time interval	Group 1	Group 2	p- value
Pre-injection	7.9	7.5	<0.05
Immediate Post-injection	4.8	5.2	
Post-injection 1 month	3.8	4.3	
Post-injection 3 month	3.6	4.4	

DISCUSSION

The indication and efficacy of ESI still remains controversial. This technique is currently used as an intermediate treatment for back pain of various causes and duration. It is not considered curative, but a number of patients have reported long and short-term pain relief.⁸⁻¹⁰

In the present study total participants included in the study were 60 and all the patients were divided into two groups with 30 patients in each group as follows: Group 1 included patients who were given injections through Transforaminal route, while group 2 included patients who were given injections through caudal route.

In both the groups maximum patients were of age group 41-50yrs (40%). In group 1 60% were females and in group 2 50% were females. In the present study, mean VAS at Pre-injection, Immediate Post injection, Post-injection 1 month and Post-injection 3 month for subjects of group 1 was found to be 7.9, 4.8, 3.8 and 3.6. Mean VAS at Pre-injection, Immediate Post-injection, Post-injection 1 month and Post injection 3 month for subjects of group 2 was found to be 7.5, 5.2, 4.3 and 4.4 respectively. Manchikanti L et al in 2012 showed that there was no significant difference between two groups one which received epidural local

anaesthetics and other who received local anaesthetics with steroid.¹¹

Lee et al. reported that approximately 85% of patients showed improvements after an initial caudal ESI and some 55% displayed excellent amelioration after a series of caudal ESI.¹²

Manchikanti et al. stated that significant pain relief ($\geq 50\%$) was demonstrated in 55–65% of the patients with spinal stenosis after the use of caudal injection.¹³

CONCLUSION

The present study concluded that Transforaminal approach was better than caudal approach.

REFERENCES

1. Thomas von Rothenburg Robert Drescher. Odo Koester, Gebhard Schmid. Magnetic resonance imaging of the lumbar spine after epidural and nerve root injection therapy: evaluation of soft tissue changes. *Clinical Imaging*. 2006; 30:331-4.
2. Allegri M, Montella S, Salici F, et al. Mechanisms of low back pain: a guide for diagnosis and therapy. *F1000Res*. 2016;5:F1000.
3. Cuckler JM, Bernini P, Wiesel SW, Booth JR, Rothman RH, Pickens GT. The use of epidural steroids in the treatment of lumbar radicular pain. A prospective, randomized, double-blind study. *The Journal of bone and joint surgery*. 1985;67:63-6.
4. Koes BW, Scholten RJ, Mens JM, Bouter LM. Efficacy of epidural steroid injections for low-back pain and sciatica: a systematic review of randomized clinical trials. *Pain*. 1995;63:279-88.
5. Hopwood MB1, Abram SE. Factors associated with failure of lumbar epidural steroids. *Reg Anesth*. 1993;18:238-43.
6. Manchikanti L, Paganati RR, Pampati V. Comparison of three routes of epidural steroid injections in low back pain. *Pain Digest* 1999; 9:277-85.
7. Manchikanti L, Falco FJ, Singh V, et al. Utilization of interventional techniques in managing chronic pain in the Medicare population: analysis of growth patterns from 2000 to 2011. *Pain Physician* 2012;15:E969–982.
8. Jamison RN, VadeBoncouer T, Ferrante FM. Low back pain patients unresponsive to an epidural steroid injection: identifying predictive factors. *Clin J Pain* 1991;7:311-7.
9. Manchikanti L. Transforaminal lumbar epidural steroid injections. *Pain Physician* 2000;3:374-98.
10. Lew HL, Coelho P, Chou LH. Preganglionic approach to transforaminal epidural steroid injections. *Am J Phys Med Rehabil* 2004;83:378.
11. Manchikanti L, Cash KA, McManus CD, Damron KS, Pampati V, Falco FJ. Lumbar interlaminar epidural injections in central spinal stenosis: preliminary results of a randomized, double-blind, active control trial. *Pain Physician*. 2012; 15(1):51-63.
12. Lee JW, Kim SH, Choi JY, Yeom JS, Kim KJ, Chung SK, et al. Transforaminal epidural steroid injection for lumbosacral radiculopathy: preganglionic versus conventional approach. *Korean J Radiol* 2006;7:139-44.
13. Manchikanti L, Cash KA, McManus CD, Pampati V, Abdi S. Preliminary results of a randomized, equivalence trial of fluoroscopic caudal epidural injections in managing chronic low back pain: part 4--spinal stenosis. *Pain Physician* 2008; 11:833-48.

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