

THE EFFECT OF EPIDURAL STEROIDS ON POSTOPERATIVE PAIN AND HOSPITAL STAY IN PATIENTS HAVING A SINGLE-LEVEL LUMBAR DISCECTOMY

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INTRODUCTION

Low back pain is a common presentation in clinical practice globally, with an annual incidence rate of about 10-15% in healthy adults with a mean visual analogue scale score is 4.¹ It is mainly caused by disc herniation, and about 80% of the world population will suffer from low back pain once in their lifetime.² Lumbar discectomy is one of the most common procedures performed on the spine, but it has many disadvantages regarding pain.³ It is an internationally used procedure with 3744 primary lumbar discectomies performed in the UK in 2016 and 2017.⁴ Most of the patients experience significant benefits. Lumbar disc herniation can cause moderate-to-severe unbearable pain and depression in the patient.⁵ Postoperative pain is a serious condition that leads to continues hospitalization, functional impairment, higher healthcare expenses and delayed mobilization of the patients that will alter the

ABSTRACT

OBJECTIVES

To determine the effect of Epidural steroids on postoperative pain and hospital stay in patients having a single-level lumbar discectomy.

METHODOLOGY

A quasi-experimental study was conducted at the Neurosurgery department, Qazi Hussain Ahmad Medical Complex, Nowshera. Sixty patients with a mean age of 40.3±9.21 years were enrolled. The enrolled patients were divided into two groups: Group A patients were given intraoperative epidural methylprednisolone 80 mg, while Group B patients were given only normal saline. Pre- and post-operative pain was assessed after 6 hours, 12 hours and at the discharge time from the hospital. The duration of hospital stay was also noted.

RESULTS

Out of 60 patients, 55.0% were male, and 45.0% were female, with an overall mean age of 40.3±9.21 years. The VAS score in Group A was 0.82±0.26 compared to 2.30±0.71 in group B ($P < 0.000$). And at first follow-up, the VAS score was 0.13±0.05 and 1.25±0.33 in groups A and B, respectively. The length of hospital stay was 1.39±0.44 and 1.98±2.50 in groups A and B, respectively.

CONCLUSION

Intra-operative epidural steroid is beneficial in reducing post-operative pain and hospital stay.

KEYWORDS: Epidural Steroids, Postoperative Pain, Lumbar Discectomy

patient's perspective on recovery.^{6,7} Post-operative pain management is a unique challenge. Most patients show early recovery from acute intervertebral disc herniation without surgical intervention. But some patients who fail to recover, have persistent symptoms and neurological deficiencies, and fail to recover from pain using analgesics are recommended for surgical intervention.⁸ According to the US Institute of Medicine, about 80% of surgical patients report postoperative pain, with 88% of these surgical patients shows moderate or extreme pain levels.⁹ Poorly managed post-operative pain lead to morbidity, longer hospital stay and higher healthcare cost.¹⁰ This study aims to determine the influence of Epidural steroids on postoperative pain and hospital stay in patients having a single-level lumbar discectomy. That will help the surgeon to use better treatment options in patients with single-level lumbar discectomy to overcome post-operative pain and to reduce the length of hospital stay.

METHODOLOGY

This Quasi-experimental study was conducted at the Neurosurgery department, Qazi Hussain Ahmad Medical Complex, Nowshera. The study duration was three years (Nov 2019-2022). Non-probability Consecutive sampling techniques were used for the recruitment of patients. Patients with unilateral single-level prolapsed lumbar intervertebral disc; Symptoms lasted more than six weeks, and Conservative treatment was ineffective; patients who will plan for unilateral single-level lumbar laminotomy and discectomy and Patients of 18-60 years of age of either gender were included in the study. The patients with a history of spinal surgery, recurrent lumbar disc herniation, multiple-level stenosis, spondylolisthesis, equine cauda syndrome, Active infection or lumbar fracture, immunocompromised patients and severe obesity. After the approval of the hospital's ethical committee, patients diagnosed according to our inclusion criteria were enrolled. A total of 60 patients were enrolled, equally divided into two groups by closed envelop method. Informed consent was obtained from the patients, and the study's purpose was explained to them in their native language. After performing the surgery to remove a herniated disc, the Group A patients were given intraoperative epidural methylprednisolone 80 mg, while Group B patients were given only normal saline. Pre- and post-operative pain was assessed after 6 hours, 12 hours and at the discharge time from the hospital. Patients were followed for two weeks, and the pain was noted. For pain assessment, Visual Analogue Scales (VAS) were used. The duration of hospital stays and time of return to work were also recorded. A predesigned questionnaire was used to collect data. By using the SPSS version 25.0, all the collected data were analyzed. The results were presented in the form of a table and graph.

RESULTS

Of 60 enrolled patients, 55.0% were male, and 45.0% were female, with an overall mean age of 40.3±9.21 years.

Table 1: Distribution of Patients According to Gender (n=60)

Variable	F(%age)	
Gender	Female	33(55.0%)
	Male	27(45.0%)

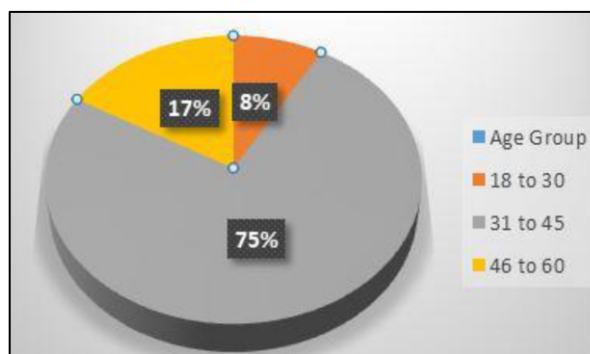


Figure 1: Graphical Representation of different Age Groups

In our study the most common site of herniation was L4-L5 followed by L5-S1, and then L3 - L5, L3 - L4 (Table 2). The visual analogue scale was used to assess the pain Preoperative, postoperatively at different times, at the time of discharge from the hospital and during the first follow-up (Table 3). Except for Preoperative Pain VAS Score, the P-value was significant for all post-operative Pain VAS Scores.

Table 2: Background Information of Patients Undergoing Lumbar Discectomy (n=60)

Variable	Groups		P-Value
	Epidural Steroids	Normal Saline	
Gender	Male	17	0.79
	Female	13	
Discectomy Level	L4-L5	22	0.53
	L5-S1	05	
	L3-L5	01	
	L3-L4	02	
Age	39.0±9.09	41.6±9.29	0.26

Table 3: Distribution of Patients According to Operative Findings (n=60)

	Groups		P-Value
	Epidural Steroids	Epidural Steroids	
	Mean±SD	Mean±SD	
Preoperative Pain VAS Score	9.04±0.78	9.02±0.80	0.89
Postoperative Pain VAS Score at 6 Hours	1.82±0.36	4.31±0.56	0.00
Postoperative Pain VAS Score at 12 Hours	1.47±0.43	3.57±0.57	0.00
Postoperative Pain VAS Score at Discharge from Hospital	0.82±0.26	2.30±0.71	0.00
Postoperative Pain VAS Score at First Follow-Up	0.13±0.05	1.25±0.33	0.00

*<0.05 means significant

Upon comparison for a hospital stay, the mean length in Group A and Group B was 1.39 ± 0.44 and 1.98 ± 2.50 , respectively, with insignificant P-values. The Group, A patients returned to work after a mean duration of 21.43 ± 1.75 days, while the Group B patients returned after 25.93 ± 1.17 days with a significant statistical difference (Table 4).

Table 4: Length of Hospital Stays and Duration Taken to Return to Work (Days) for both Groups (n=60)

	Groups		P-Value
	Epidural Steroids	Epidural Steroids	
	Mean \pm SD	Mean \pm SD	
Length of hospital stay	1.39 ± 0.44	1.98 ± 2.50	0.20
Duration took to return to work	21.43 ± 1.75	25.93 ± 1.17	0.00

DISCUSSION

In the vertebral column, each vertebra is separated by the intervertebral disc that acts as a shock absorber and makes the spine flexible, which helps in easy movement. The twisting and bending of the vertebral column are due to the unique characteristics of the intervertebral disc.¹¹ The disc contains gel-like material, which herniates once the stronger outer layer is damaged. And results in myelopathy or radiculopathy due to the compression of the herniated part of the disc.¹² The nerve root is inflamed, more sensitized and begins to transmit pain signals even with gentle pressure.¹³ Herniation of the intervertebral disc in the lumbar spine is the main cause of low back ache and sciatica. The internationally used procedure known as Lumbar microdiscectomy is used to remove the herniated part of the disc. It positively affects the patients, but some patients experience mild to moderate pain due to the inflammatory process for a few days. The present study was conducted to determine the effect of Epidural steroids on postoperative pain and hospital stay in patients with a single-level lumbar discectomy. In this study, the pain reduces using Epidural steroids, measured at different times postoperatively and after follow-up. Several studies have similar results.^{8,14,15,16} Our study compared the two groups (Epidural Steroids and control groups) when intraoperative epidural steroids were used. Intraoperative epidural steroids reduce post-operative pain and length of hospital stay in patients undergoing single-level lumbar discectomy. The mean hospital stay in the present study was 1.39 ± 0.44 days in the Epidural Steroids group compared to 1.98 ± 2.50 in the control group, while the mean visual VAS score for postoperative pain at 6 Hours, at 12 hours, at discharge from the hospital and at first, follow-up was 1.82 ± 0.36 ,

1.47 ± 0.43 , 0.82 ± 0.26 and 0.13 ± 0.05 versus 43.1 ± 0.56 , 3.57 ± 0.57 , 2.30 ± 0.71 and 1.25 ± 0.33 respectively. This means that Epidural Steroids reduce the postoperative pain and duration of hospital stay. Our results also resembled other research.^{14,17,18} Like our study, other research studies also stated that intra-operative epidural steroids following lumbar discectomy are associated with lower pain VAS scores and hospital stay with no significant postoperative complications. In our study, using epidural steroids following unilateral single-level lumbar discectomy significantly reduces post-operative and duration of hospital stay.

LIMITATIONS

The study did not specify the details of patient characteristics, such as underlying medical conditions, previous treatments, or surgical variations. This heterogeneity within the study population may introduce confounding variables that could affect pain outcomes and limit the ability to draw clear conclusions. This study primarily focused on postoperative pain levels and duration of hospital stay. Other relevant factors, such as analgesic requirements, functional outcomes, and patient satisfaction, were not assessed. Including a broader range of outcome measures would provide a more comprehensive evaluation of the intervention's effectiveness.

CONCLUSIONS

It is concluded that intraoperative use of epidural methylprednisolone following lumbar discectomy positively affects patients and can reduce post-operative pain and length of hospital stay.

CONFLICT OF INTEREST: None

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