

Combined Synergy of Physiotherapy and Epidural Steroid Injection in Case of Prolapsed Lumbar Intervertebral Disc: A Center-Based Study

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Abstract

Physiotherapy builds core stabilization, corrects posture, and strengthens the muscles supporting the spine. This decompresses the affected disc and preventing recurring herniation. Contrary A corticosteroid is injected directly into the epidural space to suppress the immune response and reduce swelling around the compressed nerve root. The current study aimed to find utilizing this combined approach results in better functional outcomes, higher satisfaction scores, and reduced reliance on oral painkillers or opioids compared to utilizing either treatment alone. This was quasi-experimental study conducted among 496 patients attending at Dhaka Pain, Physiotherapy & Rehabilitation Center (DPRC) hospital for treatment. All patients were divided into two separate intervention group and outcome was measured by Chi-square test. Excellent improvement was found ten times higher among patients who were given physiotherapy along with epidural steroid injection than patients were given physiotherapy only and the same scenario was seen in case of very good as well as satisfactory improvement. Not satisfactory improvement was very few who were given physiotherapy along with epidural steroid injection. The effectiveness of intervention was statistically significant. More center based gold standard randomized clinical trial can be conducted in order to get more accurate result.

Key words: physiotherapy; epidural steroid injection; synergy; PLID

Introduction

Prolapsed lumbar intervertebral disc (PLID) is a leading cause of low back pain and radiculopathy, significantly influencing patients' quality of life.¹ PLID affects approximately 20% to 25% of the population in Bangladesh, making it a major musculoskeletal and public health concern. Global studies estimate the general prevalence rate at 2% to 3%, but the regional figure in Bangladesh is notably higher.² Epidural steroid injections create a short-term pain-free window that lets patients engage in a structured physical-rehab program. The key to lasting relief is moving from gentle activity to progressive exercise that stabilizes the core, corrects posture, and restores range of motion. Combining epidural steroid injections and physiotherapy is a highly effective, non-surgical approach to treating a Prolapsed Lumbar Intervertebral Disc (PLID). The injection rapidly reduces nerve inflammation, while physiotherapy builds long-term spinal strength and flexibility, preventing future flare-ups and restoring function. PLID cases vary greatly in severity, it is important to

consult a physical therapist to tailor these interventions to assess and correlate exact symptoms and MRI findings.

Methods

This was quasi-experimental study conducted among 496 patients attending at Dhaka Pain, Physiotherapy & Rehabilitation Center (DPRC) hospital for treatment. All patients were divided into two separate intervention group and outcome was measured by Chi-square test. First of all careful history taking was carried out followed by documents checking and physical examination was done and investigation was done according to patients need. Rapport building and consent taking were ensured. Detail procedure of the study was explained and confidentiality was maintained throughout the study. Statistical Package for Social Sciences version 22.0 was used to data analysis. Improvement was divided into five categories as like excellent, very good, good, satisfactory and not satisfactory considering pain reduction and functional outcome.

Results

Age group (in years)	Physiotherapy and Epidural Steroid Injection group	Physiotherapy group
	Frequency (Percentage)	Frequency (Percentage)
≤20	18(3.6)	12(2.4)
21-40	150(30.2)	142(28.6)
41-60	70(14.1)	76(15.3)
>60	10(2.0)	18(3.6)
Total	248(50.0)	248(50.0)

Table 1: Age distribution of the subjects.

Nearly two-third of the patients in both group represented from 21-40 years followed by 28%-30% from 41-60 years and 4%-7.2% from >60 years and ≤20 years respectively.

Gender	Physiotherapy and Epidural Steroid Injection group	Physiotherapy group
	Frequency (Percentage)	Frequency (Percentage)
Male	167(33.7)	180(36.3)
Female	81(16.3)	68(13.7)
Total	248(50.0)	248(50.0)

Table 2: Gender distribution of the subjects.

Approximately two-third of the patients was male and one-third was female.

Occupation	Physiotherapy and Epidural Steroid Injection group	Physiotherapy group
	Frequency (Percentage)	Frequency (Percentage)
Day labor	35(7.1)	37(7.5)
Housewife	71(14.3)	67(13.5)
Service	53(10.7)	62(12.5)
Student	14(2.8)	13(2.6)
Business	26(5.2)	23(4.6)
Others	49(9.9)	46(9.3)
Total	248(50.0)	248(50.0)

Table 3: Occupation distribution of the subjects.

In case of occupation, housewife, service, day labor, business and others were dominant.

Marital status	Physiotherapy and Epidural Steroid Injection group	Physiotherapy group
	Frequency (Percentage)	Frequency (Percentage)
Single	20(4.0)	16(3.2)
Married	228(46.0)	232(46.8)
Total	248(50.0)	248(50.0)

Table 4: Marital status of the subjects.

Most of the patients were married and few were single.

Intervention	Improvement					Total	Chi-square value	p value
	Excellent	Very good	Good	Satisfactory	Not satisfactory			
	n (%)	n (%)	n (%)	n (%)	n (%)			
Physiotherapy with epidural steroid injection	110(22.2)	88(17.7)	35(7.1)	13(2.6)	2(0.4)	248(50.0)	248.0	0.001
Physiotherapy	10(2.0)	19(3.8)	75(15.1)	94(19.0)	50(10.1)	248(50.0)		
Total	120(24.2)	107(21.6)	110(22.2)	107(21.6)	52(10.5)	496(100.0)		

Table 5: Effect of holistic approach (Physiotherapy and Epidural Steroid Injection) in case of Prolapsed Lumbar Intervertebral Disc.

Excellent improvement was found ten times higher among patients who were given physiotherapy along with epidural steroid injection than patients were given physiotherapy only and the same scenario was seen in case of very good as well as satisfactory improvement. Not satisfactory improvement was very few who were given physiotherapy along with epidural steroid injection. The effectiveness of intervention was statistically significant ($p=0.001<0.05$).

Discussion

It is established that combining epidural steroid injections and physiotherapy creates a powerful clinical synergy. The injection provides a pain-free window by reducing nerve inflammation, which allows patients to actively engage in physical rehabilitation. This combination maximizes functional recovery, restores mobility, and reduces reliance on opioids compared to either treatment alone. The present study was carried out in a specialized physiotherapy based hospital through the year and tremendous improvement was found ten times higher among patients who were given physiotherapy along with epidural steroid injection and the

effectiveness of intervention was statistically significant. Lumbar disc herniation is a common etiology of low back pain, where the nucleus pulposus protrudes through the annulus fibrosus, compressing spinal nerve roots and resulting in radiculopathy, pain, and neurological deficits.³⁻⁴ Non-surgical interventions, including non-steroidal anti-inflammatory drugs, physiotherapy, and muscle relaxants, are often used but can be inadequate for persistent cases.⁵⁻⁷ Epidural steroid injections offer targeted anti-inflammatory action to reduce pain and disability. Methylprednisolone is commonly used due to its efficacy and safety profile.⁸⁻¹⁰ We know that lumbar disc herniation frequently compresses adjacent nerve roots, leading to an inflammatory cascade that sensitizes nerve fibers and results in radiculopathy. Several Indian studies as like Rajkumari et al.¹¹, Pandey et al.¹², and Patel et al.¹³, have confirmed the efficacy of epidural steroid injection in local population whereas the current study found the same outcome among Bangladeshi patients. Medical consensus and clinical trials support this multidisciplinary approach for managing sciatica and radicular pain caused by disc prolapse. Studies indicate that patients who receive both interventions frequently report higher satisfaction scores, greater improvements in daily functioning, and minimized chances of requiring surgical intervention.¹⁴ Evidence suggests that regular back strengthening exercises are important after lumbar epidural steroid injections because they promote healing and lower the chance of recurrence. Recent literature has shown that regular low back and core exercises have helped to improve muscle strength, flexibility, and gross spinal stability. These also complement the pain relief contributed by epidural steroid injection. Regular exercise also helps to reduce the discomfort of muscle spasm and improves functional ability post-epidural steroid injection.¹⁵ Functional improvement after exercises is due to increased flexibility in muscles and ligaments of the lumbar region aiding into improved range of motion of spinal segments. Aerobic exercises increased the blood flow to the lumbar musculature and connective tissues, causing early healing and reduced stiffness and discomfort.¹⁶ Therefore, post-injection regular exercises help to enhance the effectiveness of the pain relief and improve functional recovery. These exercises also help to prevent any further episodes of lumbar discomfort due to improved flexibility and strength of muscles and facet joints.

Conclusion

Intervertebral disc disease is now very common in our country and sufferings from the problem are immense. Patients are moving from one healthcare provider to another for recovery. Everyday number of disc prolapse patients attends in our center. This study concluded that synergistic action of epidural steroid injection and physiotherapeutic approach is proven effective for long-term recovery and preventing recurrence of prolapsed lumbar intervertebral disc. More large scale center based study is needed to get generalize result.

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