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[Sang Bong Ko](#)*, [Sang Gyu Kwak](#), [Hee Chan Kim](#)

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Article

The Effect of Comprehensive and Integrative Medical Services on Patients with Degenerative Lumbar Spinal Stenosis: A Randomized Controlled Study

Sang Bong Ko ^{1,*}, Sang Gyu Kwak ² and Hee Chan Kim ³

- ¹ Department of Orthopaedic Surgery, School of Medicine, Daegu Catholic University, Daegu Catholic University Hospital, Daegu 42472, Republic of Korea
- ² Department of Medical Statistics, School of Medicine, Daegu Catholic University, Daegu 42472, Republic of Korea
- ³ Department of Orthopaedic Surgery, Armed Forced Daegu Hospital, Gyeongsan 425-95, Republic of Korea
- * Correspondence: bong@cu.ac.kr; Tel.: +82-53-650-4270, Fax: +82-53-626-4272

Abstract

Background and Objectives: Degenerative lumbar spinal stenosis (DLSS) frequently manifests as lower leg radiating pain (LLRP), requiring selective nerve root block (SNRB). Comprehensive and integrative medical services (CIMS)—a multimodal program consisting of acupuncture, cupping, and manual therapy—have been increasingly incorporated into clinical practice in Korea. However, randomized evidence remains limited. This study evaluated the efficacy and safety of adjunctive CIMS in patients with DLSS presenting neuropathic LLRP requiring SNRB. **Materials and Methods:** In a single-center, parallel-group, assessor-blinded randomized controlled trial (CRIS KCT0006036), adults with DLSS (LANSS > 7; VAS > 5) were randomized 1:1 to experimental or control groups ($n = 77$; experimental 38, control 39). All participants received SNRB plus pharmacotherapy (lignocaine, pregabalin). The experimental group additionally received CIMS, delivered 8 times over 4 weeks. The primary outcome was pain intensity (VAS) at baseline, weeks 4, 8, and 12. Secondary outcomes included SF-36, ODI, and RMDQ at baseline, weeks 4, 8 and 12. Repeated-measures two-factor ANOVA assessed main effects and time $\times$ group interaction. **Results:** Mean VAS (experimental vs. control) was 4.73 ± 1.67 vs. 4.70 ± 1.95 at baseline; 3.74 ± 1.68 vs. 4.66 ± 1.60 at week 4; 3.93 ± 2.03 vs. 4.79 ± 1.55 at week 8; 3.98 ± 1.98 vs. 4.98 ± 1.68 at week 12. The significant time $\times$ group interaction was identified ($p = 0.040$), indicating a greater pain reduction with CIMS. No significant time $\times$ group interactions were observed across SF-36 domains. Adherence to CIMS modalities was high, and no unexpected adverse events occurred. **Conclusions:** In DLSS patients receiving SNRB and pharmacotherapy, adjunctive CIMS resulted in greater pain reduction over 12 weeks compared with standard care alone, without introducing new safety concerns. These findings support the clinical utility of CIMS as an effective adjunctive treatment option for DLSS.

Keywords: spinal stenosis; selective nerve root block; acupuncture; integrative medicine; multimodal therapy; neuropathic pain

1. Introduction

Degenerative lumbar spinal stenosis (DLSS) is a prevalent degenerative spinal disorder characterized by narrowing of the spinal canal and subsequent compression of the spinal roots. This compression commonly leads to neurogenic intermittent claudication (NIC), lower leg radiating pain (LLRP), sensory disturbance, motor weakness, and low back pain (LBP) [1]. Both LLRP and referred buttock pain are typically described as stabbing, dull, burning, electric shock-like, numb, or paresthesia-like sensations, and are reported in the majority of patients. Conservative treatment is generally attempted initially; however, when symptoms worsen, functional impairment progresses,

or neurological deficits emerge, surgical intervention may be considered due to its substantial impact on quality of life [2].

Conservative treatment options for DLSS include pharmacotherapy, physical therapy, therapeutic exercise, and injection therapies as epidural steroid injections and selective nerve root block (SNRB). In Korea, both western and traditional oriental medical practices coexist. Among oriental modalities, acupuncture has demonstrated significant benefits for LLRP in several studies [3–6]. Manual therapy—including joint mobilization or correction, soft tissue mobilization, neural mobilization, and stabilization exercises—has also been shown to reduce pain and improve physical function in DLSS [7].

Since 2017, the Ministry of Health and Welfare of Korea has promoted a collaborative care model through the “Western-Oriental Medicine Cooperation Pilot Project”, which evolved into a comprehensive integrative medical service (CIMS) model. CIMS combines mechanism-targeted analgesic interventions (e.g., acupuncture), functional restoration strategies (manual therapy and exercise), and microcirculatory enhancement (cupping) [8]. The multimodal approach aligns with the multifactorial pathophysiology of DLSS, potentially yielding synergistic therapeutic effects.

In a previous pilot randomized controlled study published in 2023, a 6-week, 12-session CIMS program significantly improved pain (VAS) compared with conventional care alone, although improvements in quality of life (SF-36) were not statistically significant [9].

Building upon the methodology and preliminary results of that pilot study, we designed the present assessor-blinded randomized controlled study with a larger sample size and a clinically optimized treatment schedule. This study compared a CIMS-augmented treatment group—receiving acupuncture, cupping therapy, and manual therapy 8 times over 4 weeks—with a control group receiving standard care only (limaprost, pregabalin, and SNRB). This study aimed to evaluate the effects of adjunctive CIMS on pain reduction, functional improvement, overall health status, and safety in patients with DLSS.

2. Materials and Methods

2.1. Study Design and Patient Selection

This study was a single-center, parallel group, randomized, assessor-blinded controlled trial (registered at <https://cris.nih.go.kr>; KCT 0006036; date of trial registration: March 29, 2021). The study protocol was approved by the Institutional Review Board of Daegu Catholic University Medical Center (approval number: 2022-07-009; date of approval: September 28, 2022). Written informed consent was obtained from all participants prior to enrollment.

Eligible patients were adults diagnosed with degenerative lumbar spinal stenosis and presenting with radiating pain requiring selective nerve root block (SNRB). Neuropathic characteristics of radiating pain were confirmed using the Leeds Assessment of Neuropathic Symptoms and Signs (LANSS), and individuals with a LANSS score > 7 and a visual analog scale (VAS) score > 5 were included. Inclusion and exclusion criteria are detailed in Table 1.

Table 1. Inclusion and Exclusion Criteria.

Inclusion Criteria	
1	Patients < 80 years of age diagnosed with DLSS by clinical symptoms and magnetic resonance imaging (MRI).
2	Patients presenting with LLRP as the primary symptom (LANSS > 7).
3	Patients reporting pain intensity requiring SNRB (VAS > 5).
5	Subjects who voluntarily consented to written consent.
Exclusion Criteria	
1	Patients younger than 20 or older than 80 years.
2	Pregnant patients.
3	Patients with secondary gain (e.g., industrial accident, automobile insurance).
4	Patients with serious systemic comorbidities.

- 5 Patients with contraindications to the study medications.
- 6 Patients participating in an interventional study during the study peroid.
- 7 Patients with cancer-related pain due to primary or metastatic spinal tumors.
- 8 Patients unable to complete questionnaires dut to communication or cognition.
- 9 Patients with severe needle phobia preventing participation in acupuncture.
- DLSS—degenerative lumbar spinal stenosis; LLRP—lower leg radiating pain; LANSS—Leeds Assessment of Neurological Symptoms and Signs; SNRB—selective nerve root block; VAS—visual analog scale

Based on prior results [9], the primary endpoint was VAS. Sample size calculations ($\alpha = 0.05$, power = 0.80, 10% dropout rate) indicated 40 participants per group (total n = 80). Details are shown in Tables 2 and 3.

Table 2. Summary of means, standard deviations (SD), and within-/between-group differences.

Group	Value	Baseline	12 weeks	Difference (within group)	Difference (between groups)
Experimental	Mean	4.38	3.21	1.17	Mean
	SD	1.21	1.03	1.03	0.75
	n	15	15		0.76
Control	Mean	5.27	4.85	0.42	SD
	SD	1.48	1.26	1.26	1.15
	n	15	15		1.15

Note. Within-group difference = Baseline – 12 weeks; Between-group difference = Experimental within-group mean – Control within-group mean.

Table 3. Parameters for sample size estimation.

$\alpha/2$	0.025
β	0.200
Expected difference ($\mu_c - \mu_t$)	7.60
Standard deviation (σ)	1.150
Calculated sample size per group (n)	35.942
Drop-out rate	0.100
Adjusted sample size per group (n_{adj})	39.936

Note. Formula for calculating sample size (two independent means, equal variance)

$$n = 2 \cdot (z\alpha/2 + z\beta)^2 \cdot \sigma^2/(\mu_c - \mu_t)^2$$

2.2. Treatment Procedures

All participants received SNRB and pharmacotherapy with limaprost and pregabalin. In addition to standard care, the experimental group received CIMS consisting of acupuncture, cupping therapy, and a manual therapy-based massage. CIMS sessions were administered 8 times over a 4-week period.

2.2.1. CIMS Component and Protocol

1. Acupuncture;

Acupuncture treatment followed clinical practice guidelines in oriental medicine for DLSS and prior studies evaluating acupuncture following SNRB [10]. Proximal acupuncture points included Shenshu (BL23), Qihai-shu (BL24), Dachang-shu (BL25), and Huatuo Jiaji (EX-B2). Given the predominance of LLRP in DLSS, distal points included Huantiao (GB30), Weizhong (BL40), and Lunlun (BL60). Disposable sterile filiform needles (0.25 × 40mm and 0.30x60mm) were used, totaling 17 needles per session. Needle insertion was performed with manual stimulation to achieve deqi sensation, needles were retained for 25 ± 5 min. Electroacupuncture was applied at BL23, BL25, and

EX-B2 with a frequency of 4 Hz stimulation for 25 ± 5 min, with current intensity adjusted according to patient tolerance.

2. Cupping Therapy;

Cupping therapy was delivered using an electric suction device over areas of maximal tenderness, particularly the back-shu points. Negative pressure was maintained for 5 min. Cupping therapy is intended to promote microcirculation, lymphatic flow, immune activity, and relief of muscle tension-related pain. Previous meta-analyses have demonstrated its clinical benefits, particularly when combined with acupuncture, in conditions such as herpes zoster, facial palsy, and cervical spondylosis [11].

2. Manual therapy-based intervention.

The manual therapy program consisted of 30-min sessions conducted 8 times over 4 weeks. The protocol included palpatory assessment to identify myofascial restrictions, mobilization techniques targeting paraspinal muscles and associated ligaments, myofascial release, therapeutic massage, and stretching exercises, all aimed at alleviating stenosis-related pain and improving functional mobility of the paraspinal muscles and adjacent joints.

3. Point selection summary

- Acupuncture points: BL23, BL24, BL25, EX-B2 (L2-L5), GB30, BL40, BL60.
- Cupping points: Tenderness-related back-shu points (the regions of maximal pain).
- Manual therapy: 30 min per session, 8 sessions total
- Treatment frequency: 8 sessions over 4 weeks

2.3. Randomization and Blinding

Participants were randomized 1:1 ratio to either the experimental or control group. A computer-generated randomization sequence was prepared by an independent statistician, and allocation was concealed until enrollment. Participants were assigned sequential randomization codes (R001, R002, R003, ...) upon enrollment. This study employed single blinding, wherein the outcome assessors were blinded to group allocation throughout data collection and evaluation.

2.4. Outcome Measures

At screening visit, demographic data including initials, sex, age, height, weight, comorbidities, and LANSS were recorded. The primary outcome was pain intensity assessed by the VAS at baseline, week 4, week 8, and week 12. Physical function and health status were assessed using the 36-item Short-Form Health Survey (SF-36), and spine-related disability was evaluated using the Oswestry Disability Index (ODI) and Roland-Morris Disability Questionnaires (RMDQ) at baseline and at week 4, 8, and 12 in both groups. Compliance in the experimental group was evaluated at week 4. For each modality (acupuncture, cupping, and manual therapy-based intervention), adherence(%) was calculated as (number of sessions attended/8)x100. Participants with less than 70% adherence were classified as dropouts.

2.5. Statistical Analysis

All statistical analyses were performed in accordance with national clinical trial statistical guidance by the Korea Food and Drug Administration (KFDA, 2000). Analyses were conducted using IBM SPSS Win. Ver. 19.0 (IBM Corp., Armonk, NY, USA). A two-sided α level of 0.05 was considered statistically significant.

Descriptive statistics were used to summarize baseline demographic and clinical characteristics. Continuous variables were presented as means $\pm$ standard deviations and categorical variables as frequencies and percentages. Between-group homogeneity at baseline was assessed using independent two-sample t-tests for normally distributed continuous variables, Mann-Whitney U tests for non-normally distributed variables, and chi-square tests for categorical variables.

For efficacy outcomes (VAS, SF-36, ODI, and RMDQ), repeated-measures two-factor ANOVA was

used to analyze changes over time, with factors for time, group, and time x group interactions. When a significant interactions were observed, planned contrasts analyses were performed to identify specific time points showing group differences. Safety analyses included all participants who underwent at least one CIMS session. Adverse events (AEs) were documented and compared between groups using chi-square tests. The proportion of participants experiencing ≥ 1 AE was also evaluated using chi-square tests.

3. Results

3.1. Participant Flow and Baseline Characteristics

A total of 77 participants met inclusion and exclusion criteria and were randomized into either the experimental group ($n = 38$; 11 men, 27 women) or the control group ($n = 39$; 14 men, 25 women). Mean age did not differ significantly between groups (experimental 69.74 ± 6.29 years; control 69.28 ± 7.32 years; $p = 0.771$). All participants exhibited neuropathic radiating pain, with LANSS scores > 7 in both groups. The distribution of comorbid medical conditions differed between groups (experimental $n = 4$; control $n = 0$) (Table 4).

Table 4. Epidemiological Characteristics.

Variable		Experimental Group (<i>n</i> = 38)	Control Group (<i>n</i> = 39)	<i>p</i> -value
Age (years)		69.74±6.29	69.28±7.32	0.771
BMI (kg/m)		25.03±3.86	24.07±2.61	0.205
LANSS		14.45±1.22	13.72±1.73	0.036
Sex	Male	11(28.9)	14(35.9)	0.515
	Female	27(71.1)	25(64.1)	
Medical History	No	4(10.5)	0(0)	0.037
	Yes	34(89.5)	39(100)	
Detailed Medical History	Dermatologic	2	0	
	Ophthalmologic	8	10	
	Otolaryngologic	3	2	
	Gastrointestinal	7	10	
	Endocrine	20	14	
	Neuropsychiatric	7	7	
	Cardiovascular	25	30	
	Respiratory	5	7	
	Hematologic	2	2	
	Urologic	5	8	

Note. Values were presented as the mean ± standard deviation or frequency (%). BMI—body mass index; LANSS—Leeds Assessment of Neuropathic Symptoms and Signs.

3.2. Compliance in the Experimental Group

For the manual therapy-based intervention, 31 of 38 participants achieved 100% adherence; one participant discontinued after 7 sessions due to symptomatic improvement. For acupuncture, 32 of 38 participants achieved 100% adherence. 6 participants discontinued the study in each group.

3.3. Changes in VAS, RMDQ, ODI

Mean VAS scores in the experimental group decreased from 4.73 ± 1.67 at baseline to 3.74 ± 1.68 at week 4, 3.93 ± 2.03 at week 8, 3.98 ± 1.98 at week 12. In the control group, the corresponding scores were 4.70 ± 1.95 , 4.66 ± 1.60 , 4.79 ± 1.55 , and 4.98 ± 1.68 , respectively. Repeated-measures two-factor ANOVA revealed a significant time x group interaction for VAS ($p = 0.040$), indicating greater

improvement in the experimental group. For disability outcomes, ODI demonstrated a significant time x group interaction ($p = 0.010$), consistent with superior functional improvement in the experimental group. However, no significant time x group interaction was observed for RMDQ ($p = 0.418$) (Table 5).

Table 5. Changes over time in VAS, RMDQ, ODI by group.

Variable	Group	Visit				<i>p</i> -value*		
		Baseline	Week 4	Week 8	Week 12	V	G	V×G
VAS	CIMS	4.73±1.67	3.74±1.68	3.93±2.03	3.98±1.98	0.125	0.067	0.040
	Contol	4.70±1.95	4.66±1.60	4.79±1.55	4.98±1.68			1≠9,10,11 [†]
RMDQ	CIMS	10.2±4.8	8.47±5.12	9.00±5.58	7.87±5.67	0.021	0.712	0.418
	Control	9.77±5.61	9.03±5.62	9.32±4.35	9.13±4.22			
ODI	CIMS	41.48±13.12	36.81±15.07	37.78±14.14	35.19±16.06	0.508	0.359	0.010
	Control	39.00±18.68	41.72±16.83	42.51±15.95	41.51±15.37			1≠9,10,11 [†]

All values were presented by mean±standard deviation; *:p-value were calculated by two factor repeated measure analysis; †:Multiple comparison result by contrast; CIMS: comprehensive integrative medical services; V: Visit; VAS: Visual Analog Scale; RMDQ: Roland-Morris Disability Questionnaires; ODI: Oswestry Disability Index; G: group; Week 4:29±5days; Week 8:57±5days; Week 12: 85±5days

3.4. Changes in SF-36

No statistically significant time x group interactions were observed across any SF-36 domains (all $p > 0.05$), indicating that the 12-week intervention period may be have been insufficient to influence multidimensional quality of life measures (Table 6).

Table 6. Changes over time in SF-36 domains by group.

Variable	Group	Visit				<i>p</i> -value*		
		Baseline	Week 4	Week 8	Week 12	V	G	V×G
PCS	CIM	29.85±21.46	40.56±20.08	37.92±21.87	40.85±21.90	.000	.604	.092
	Control	32.76±17.70	35.99±17.24	35.06±19.07	35.79±18.73			
MCS	CIM	48.15±25.29	50.74±24.89	50.29±24.62	54.55±24.77	.089	.571	.685
	Control	44.34±19.24	48.20±25.54	49.95±22.41	48.99±20.52			
PF	CIM	37.00±24.09	46.50±21.70	46.83±22.72	48.67±24.53	.003	.685	.114
	Control	40.16±26.57	44.68±24.66	43.87±25.49	41.13±24.31			
RPH	CIM	22.50±37.91	40.83±41.77	35.00±40.79	40.83±43.29	.013	.182	.743
	Control	18.55±26.59	26.61±32.87	25.00±35.36	29.03±34.82			
BP	CIM	36.92±24.15	47.75±20.91	45.33±20.86	49.25±22.50	.038	.726	.193
	Control	44.92±23.34	45.24±21.83	48.15±22.25	47.50±22.56			
GH	CIM	23.00±16.74	27.17±20.41	24.50±18.02	24.67±19.74	.322	.789	.473
	Control	27.42±17.22	27.42±16.48	23.23±16.00	25.48±16.75			
REP	CIM	43.33±45.61	42.22±42.82	44.44±45.77	52.22±46.88	.121	.420	.328
	Control	25.81±34.11	41.94±46.32	43.01±44.05	41.94±43.01			
EF	CIM	42.83±18.04	43.33±22.22	41.67±19.75	44.17±18.34	.735	.816	.772
	Control	43.39±16.85	39.52±20.06	42.10±17.74	43.39±17.24			
SF	CIM	54.58±28.90	65.42±29.30	60.00±28.50	65.00±29.07	.173	.518	.339
	Control	56.05±29.91	58.06±31.05	57.66±29.35	56.45±27.17			
EWB	CIM	51.87±23.00	52.00±20.98	55.07±22.20	56.80±19.97	.236	.961	.786
	Control	52.13±19.58	53.29±24.60	57.03±21.32	54.19±18.06			

All values were presented by mean±standard deviation; *:p-value were calculated by two factor repeated measure analysis; †:Multiple comparison result by contrast; CIMS: comprehensive integrative medical services; V: Visit; VAS: Visual Analog Scale; G: group; Week 4:29±5days; Week 8:57±5days; Week 12: 85±5days; PCS: Physical component score; MCS: Mental component score; PF: Physical functioning; RPH: Role limitations due to physical health; BP :

Body pain; GH: General health; REP: Role limitations due to emotional problems; EF: Energy/fatigue; SF: Social functioning; EWB : Emotional well-being.

4. Discussion

Degenerative lumbar spinal stenosis (DLSS) is a common degenerative spinal disorder that often leads to chronic pain, functional disability, and reduced quality of life. In a previous study, approximately half of patients treated conservatively experienced symptomatic improvement over 4 years, whereas a notable proportion reported persistent or worsening leg or back pain [12]. Consequently, conservative management remains the initial approach when neurological deficits are not severe, with surgical intervention reserved for refractory cases or significant functional impairment.

Conservative treatment encompasses patient education and activity modification, pharmacological therapies (e.g., anti-inflammatory agents, pregabalin, muscle relaxants, limaprost), injection therapies (e.g., epidural corticosteroid injections and selective nerve root blocks), spinal manipulation, bracing, and physical therapy and exercise [13,14]. When conservative management fails, surgical decompression—with or without fusion—may be considered.

Interest in collaborative integrative medical services (CIMS) as an adjunct to standard care has grown in Korea. Since 2017, a national ministry-led pilot program (Phase 3) has supported the implementation of CIMS, integrating acupuncture, cupping, manual therapy, and related modalities with conventional western medical care [9]. Previous real-world evidence have supported the clinical utility of integrative treatment programs [15]. Our previous pilot study also demonstrated that 12 sessions of CIMS improved pain more effectively than conventional care alone [8].

In the present trial, we expanded the sample size and employed a shorter, clinically practical treatment regimen of 8 sessions over 4 weeks. Despite the reduced treatment intensity, we again observed significantly greater improvement in VAS and ODI in the CIMS group compared with standard care alone. These findings strengthen evidence supporting the role of CIMS as a beneficial adjunctive treatment strategy for DLSS.

It is notable that SF-36 outcomes did not differ significantly between groups, consistent with our prior pilot study. Quality of life domains may require longer treatment duration, more intensive multidisciplinary psychosocial interventions, or follow-up periods beyond 12 weeks to demonstrate measurable change. The persistence of this pattern across studies suggests that pain reduction alone may not suffice to alter complex, multidimensional quality of life indicators.

A multicenter Korean study involving 387 inpatients with lumbar spinal stenosis who received integrative oriental medicine for a mean of 3 weeks reported clinically meaningful improvements in pain and function, as well as a high rate of surgery avoidance [16]. These findings are consistent with our results and suggest that CIMS may contribute not only to short-term symptom relief but also to long-term functional recovery.

Mechanistically, CIMS may exert complementary effects through multiple pathways [17]. Acupuncture has been shown to modulate nociceptive ion channels and neuroinflammatory responses [18,19]. Manual therapy and exercise may enhance muscle activation and central pain inhibition, leading to improved short-term pain and disability [20–23]. Cupping therapy can improve microcirculation and lymphatic flow, thereby relieving pain related to muscle tension [24,25]. The combination of these modalities may produce synergistic effects that address both the nociceptive and functional components of DLSS. The high adherence rate and absence of significant adverse events in this study further support CIMS as a feasible adjunctive intervention.

A key distinction between the present and pilot studies is the treatment intensity and duration. Whereas the pilot utilized 12 sessions across 6 weeks, this study implemented a condensed, pragmatic 8-session, 4-week protocol. Comparable clinical trends between the two trials suggest that shorter CIMS programs may still provide meaningful benefit and may be more feasible for routine clinical practice.

This study has several limitations. First, the single-center design may limit the external validity of the findings. Second, the 12-week follow-up period was insufficient to evaluate long-term outcomes such as symptom recurrence or delayed functional improvement. Third, single-blind design could introduce observational bias, given the impossibility of blinding participants to manual or acupuncture therapies. Finally, the individual contributions of acupuncture, cupping, and manual therapy were not evaluated independently. Future studies should explore the relative contributions of each modality and incorporate longer-term follow-up.

5. Conclusions

In patients with DLSS, adding CIMS to standard care—including SNRB and pharmacotherapy—resulted in greater reduction in pain and improvement in function outcomes over 12 weeks compared with standard care alone, extending the evidence from our earlier pilot study. No safety concerns were identified. These findings support the potential role of CIMS as an adjunctive intervention in the management of DLSS.

6. Patents

This section is not mandatory but may be added if there are patents resulting from the work reported in this manuscript.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/doi/s1>, Figure S1: title; Table S1: title; Video S1: title.

Author Contributions: Conceptualization, S.B.K. and S.G.K.; methodology, S.G.K.; software, S.G.K, H.C.K.; validation, H.C.K.; formal analysis, S.G.K.; investigation, S.B.K.; resources, S.B.K.; data curation, G.S.K.; writing—original draft preparation, S.B.K.; writing—review and editing, H.C.K.; visualization, H.C.K.; supervision, S.B.K.; project administration, S.B.K.; funding acquisition, S.B.K. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement: This study and its protocols were conducted according to the guideline of the Declaration of Helsinki, and approved by the Institutional Review Board (approval number : 2022-07-009; date of approval: September 28, 2022).

Informed Consent Statement: Written informed consent was obtained from all participants.

Data Availability Statement: The data sets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Acknowledgments: Not applicable.

Conflicts of Interest: The authors declare no conflicts of interest.

Abbreviations

The following abbreviations are used in this manuscript:

AE	Adverse Event
CIMS	Comprehensive and Integrative Medical Services
DLSS	Degenerative Lumbar Spinal Stenosis
LANSS	Leeds Assessment of Neuropathic Symptoms and Signs
LBP	Low Back Pain
LLRP	Lower Leg Radiating Pain
MCS	Mental Component Score
MRI	Magnetic Resonance Imaging
NIC	Neurogenic Intermittent Claudication
ODI	Oswestry Disability Index
PCS	Physical Component Score
RMDQ	Roland-Morris Disability Questionnaire
SNRB	Selective Nerve Root Block
SF-36	36-Item Short-Form Health Survey
VAS	Visual Analog Scale

Appendix A

Appendix A.1

The appendix is an optional section that can contain details and data supplemental to the main text—for example, explanations of experimental details that would disrupt the flow of the main text but nonetheless remain crucial to understanding and reproducing the research shown; figures of replicates for experiments of which representative data is shown in the main text can be added here if brief, or as Supplementary data. Mathematical proofs of results not central to the paper can be added as an appendix.

Table A1. This is a table caption.

Title 1	Title 2	Title 3
entry 1	data	data
entry 2	data	data

Appendix B

All appendix sections must be cited in the main text. In the appendices, Figures, Tables, etc. should be labeled starting with “A”—e.g., Figure A1, Figure A2, etc.

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