Original Article

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Comparative study of sonoguided nerve root block versus conservative treatment of radiculopathy

Abul Kalam Azad[1*], Nadia Rahman[2], Nadim Kamal[3], Mohammad Golam Nobi[4], Immamur Rashid[5]

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*Corresponding Author

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ABSTRACT

Background: *Radiculopathy is a common disabling condition characterized by pain and functional impairment due to nerve root compression. Ultrasound-guided nerve root block has emerged as a minimally invasive treatment option for symptomatic relief. This study aimed to compare the effectiveness of sonoguided nerve root block with conservative treatment in patients with radiculopathy.* ***Methods & Materials:*** *This comparative interventional study was conducted in the Department of Physical Medicine & Rehabilitation of Bangladesh Medical University from January 2025 to December 2025 among 41 patients with cervical radiculopathy. Participants were divided into sonoguided nerve root block group (n=21) and conservative treatment group (n=20). Pain intensity was assessed using Visual Analogue Scale (VAS) and functional disability using Oswestry Disability Index (ODI). Data were analyzed using SPSS version 25.* ***Results:*** *The majority of patients belonged to the 41–50 years age group (36.6%) and males constituted 61.0% of participants. After 12 weeks, the mean VAS score was significantly lower in the sonoguided group compared to the conservative group (2.6 ± 1.1 vs 4.8 ± 1.4; p=0.001). ODI score also improved significantly in the intervention group (18.4 ± 5.6 vs 29.7 ± 6.3; p=0.002). Patient satisfaction was higher in the sonoguided group (85.7%) than the conservative group (50.0%).* ***Conclusion:*** *Sonoguided nerve root block was more effective than conservative treatment in reducing pain and improving functional outcome among patients with radiculopathy.*

Keywords: *Radiculopathy, Ultrasound-guided nerve root block, Conservative treatment, VAS, ODI.*

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1. *Associate Professor, Department of Physical Medicine and Rehabilitation, Bangladesh Medical University (BMU), Dhaka, Bangladesh (ORCID: 0000-0003-4570-6202)*
2. *Associate Professor, Department of Physical Medicine and Rehabilitation, Bangladesh Medical University (BMU), Dhaka, Bangladesh (ORCID: 0009-0007-5305-0895)*
3. *Associate Professor, Department of Physical Medicine and Rehabilitation, Bangladesh Medical University (BMU), Bangladesh (ORCID: 0009-0008-4959-1776)*
4. *Associate Professor, Department of Physical Medicine and Rehabilitation, Bangladesh Medical University (BMU), Bangladesh (ORCID: 0009-0006-8282-6819)*
5. *Associate Professor, Department of Physical Medicine and Rehabilitation, Bangladesh Medical University (BMU), Bangladesh (ORCID: 0009-0008-6452-4619)*

INTRODUCTION

Radiculopathy is a common neurological and musculoskeletal disorder caused by compression or irritation of spinal nerve roots, resulting in pain, numbness, tingling sensation and motor weakness along the distribution of the affected nerve root [1]. Cervical radiculopathy are frequently encountered in clinical practice and significantly affect the quality of life, physical activity and work productivity of patients. Degenerative disc disease, prolapsed intervertebral disc, spinal canal stenosis and spondylotic changes are among the most common causes of radiculopathy [2]. The prevalence of low back pain and neck pain is increasing due to sedentary lifestyle, poor ergonomic practices, heavy manual labor and aging population, making radiculopathy an important public health concern [3].

Conservative management is usually considered the first-line treatment for radiculopathy and includes muscle relaxant analgesics, nonsteroidal anti-inflammatory drugs, physiotherapy, exercise therapy and lifestyle modification [4]. Although many patients improve with conservative treatment, some continue to suffer from persistent pain and functional disability [5]. Prolonged symptoms may lead to reduced mobility, psychological stress, sleep disturbance and decreased work efficiency. Therefore, alternative minimally invasive treatment options have gained increasing attention in recent years [6].

Selective nerve root block is an interventional pain management procedure used both diagnostically and therapeutically in radiculopathy [7]. The procedure involves injection of corticosteroid and local anesthetic around the affected nerve root to reduce inflammation and relieve pain [8]. Traditionally, nerve root block has been performed under fluoroscopic or computed tomography guidance; however, ultrasound-guided or sonoguided techniques are becoming increasingly popular because they avoid radiation exposure, provide real-time visualization, are comparatively cost-effective and can be performed safely in outpatient settings [9]. Sonoguided nerve root block has shown promising outcomes in reducing pain and improving functional status among patients with cervical radiculopathy [10].

Despite growing interest in ultrasound-guided interventions, limited studies have been conducted in Bangladesh comparing the effectiveness of sonoguided nerve root block with conservative treatment in patients with radiculopathy [11].

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Evaluation of treatment outcomes in the local population is important due to differences in socioeconomic status, healthcare accessibility, occupational exposure and patient compliance [12]. Therefore, this study was undertaken to compare the clinical effectiveness of sonoguided nerve root block versus conservative treatment among patients with radiculopathy attending the Department of Physical Medicine & Rehabilitation of Bangladesh Medical University. The findings of this study may help clinicians choose appropriate management strategies for improving pain relief, functional recovery and quality of life in patients with radiculopathy.

METHODS & MATERIALS

This comparative interventional study was conducted in the Department of Physical Medicine & Rehabilitation of Bangladesh Medical University from January 2025 to December 2025, 41 patients with cervical radiculopathy diagnosed by MRI. The study participants were selected by purposive sampling technique and divided into two groups according to treatment modality: sonoguided nerve root block group (n=21) and conservative treatment group (n=20). Adult patients aged 20–70 years with clinically and radiologically confirmed radiculopathy, persistent radicular pain for more than 6 weeks and inadequate response to initial medical therapy were included in the study. Patients with spinal malignancy, infection, previous spinal surgery, severe neurological deficit, pregnancy, bleeding disorders, uncontrolled diabetes mellitus, or allergy to steroid/local anesthetic agents were excluded.

Detailed history, physical examination, Visual Analogue Scale (VAS) for pain assessment and Oswestry Disability Index (ODI) scoring were recorded before treatment and during follow-up. Patients in the intervention group received ultrasound-guided selective nerve root block under aseptic precautions, whereas the conservative treatment group received analgesics, physiotherapy, lifestyle modification and exercise therapy. Follow-up assessment was performed after 12 weeks to evaluate pain relief, functional improvement and treatment outcome.

Collected data were compiled, coded and analyzed using Statistical Package for Social Sciences (SPSS) version 25. Quantitative variables were expressed as mean ± standard deviation and qualitative variables as frequency and percentage. Independent sample t-test was used for comparison of continuous variables between groups, while paired t-test was applied for pre- and post-treatment comparisons within groups. Chi-square test and Fisher's exact test were used for categorical variables. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Table I presents the sociodemographic characteristics of the study participants (n=41) comparing the sonoguided nerve root block group (n=21) and the conservative treatment group (n=20). The distribution of age was fairly comparable between the two groups, with the highest proportion of patients in the 41–50 years age group, accounting for 33.3% in the intervention group and 40.0% in the conservative group, followed by 31–40 years (28.6% vs 25.0%) and >50 years (23.8% vs 25.0%). Males were predominant in the study population, comprising 61.0% of total participants, while females accounted for 39.0%, with a similar male-to-female ratio observed in both groups. Regarding residence, slightly more than half of the patients were from urban areas (56.1%), while 43.9% were from rural settings. Occupational distribution showed that service holders were the most common (31.7%), followed by manual workers (26.8%) and homemakers (26.8%), indicating a diverse working population affected by radiculopathy.

Table I: Sociodemographic Characteristics of the Study Participants (*n*=41).

Variables	Sonoguided Nerve Root Block (n=21)	Conservative Treatment (n=20)	Total (n=41)
Age group (years)			
20–30	3 (14.3%)	2 (10.0%)	5 (12.2%)
31–40	6 (28.6%)	5 (25.0%)	11 (26.8%)
41–50	7 (33.3%)	8 (40.0%)	15 (36.6%)
>50	5 (23.8%)	5 (25.0%)	10 (24.4%)
Gender			
Male	13 (61.9%)	12 (60.0%)	25 (61.0%)
Female	8 (38.1%)	8 (40.0%)	16 (39.0%)
Residence			
Urban	12 (57.1%)	11 (55.0%)	23 (56.1%)
Rural	9 (42.9%)	9 (45.0%)	18 (43.9%)
Occupation			
Service holder	7 (33.3%)	6 (30.0%)	13 (31.7%)
Homemaker	5 (23.8%)	6 (30.0%)	11 (26.8%)
Manual worker	6 (28.6%)	5 (25.0%)	11 (26.8%)
Others	3 (14.3%)	3 (15.0%)	6 (14.6%)

Table II presents the clinical characteristics of the study participants with radiculopathy (n=41) in both the sonoguided nerve root block group (n=21) and the conservative treatment group (n=20). The mean duration of symptoms was comparable between the two groups, being 7.8 ± 2.9 months in the intervention group and 8.2 ± 3.1 months in the conservative group, with an overall mean of 8.0 ± 3.0 months. Baseline pain severity assessed by VAS was also similar, showing 7.9 ± 1.0 in the sonoguided group and 7.7 ± 1.1 in the conservative group, while baseline functional disability measured by ODI remained high and comparable (46.5 ± 8.2 vs 45.8 ± 7.9). Regarding affected side, right-sided involvement was slightly more frequent (51.2%), followed by left-sided (36.6%) and bilateral presentation (12.2%).

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Table II: Clinical Characteristics of Radiculopathy among the Study Participants.

Variables	Sonoguided Nerve Root Block (n=21)	Conservative Treatment (n=20)	Total (n=41)
Duration of symptoms (months), Mean ± SD	7.8 ± 2.9	8.2 ± 3.1	8.0 ± 3.0
Baseline VAS pain score, Mean ± SD	7.9 ± 1.0	7.7 ± 1.1	7.8 ± 1.0
ODI score at baseline, Mean ± SD	46.5 ± 8.2	45.8 ± 7.9	46.2 ± 8.0
Affected side			
Right	11 (52.4%)	10 (50.0%)	21 (51.2%)
Left	8 (38.1%)	7 (35.0%)	15 (36.6%)
Bilateral	2 (9.5%)	3 (15.0%)	5 (12.2%)

Table III demonstrates the comparison of treatment outcomes after 12 weeks between the sonoguided nerve root block group (n=21) and the conservative treatment group (n=20). The mean VAS pain score was significantly lower in the intervention group (2.6 ± 1.1) compared to the conservative group (4.8 ± 1.4) with a statistically significant difference (p=0.001), indicating better pain control with sonoguided nerve root block. Similarly, functional disability measured by ODI showed greater improvement in the intervention group (18.4 ± 5.6) than in the conservative group (29.7 ± 6.3) with a significant p-value of 0.002. Clinical improvement in spurling test was observed in 76.2% of patients in the sonoguided group compared to 45.0% in the conservative group (p=0.041). Return to daily activities was also higher among patients receiving nerve root block (81.0%) than those managed conservatively (55.0%) with a p-value of 0.048. In addition, patient satisfaction was significantly better in the intervention group (85.7%) compared to the conservative group (50.0%) with a p-value of 0.018.

Table III: Comparison of Treatment Outcomes after 12 Weeks.

Outcome Variables	Sonoguided Nerve Root Block (n=21)	Conservative Treatment (n=20)	p-value
VAS pain score, Mean ± SD	2.6 ± 1.1	4.8 ± 1.4	0.001
ODI score, Mean ± SD	18.4 ± 5.6	29.7 ± 6.3	0.002
Improvement in spurling test	16 (76.2%)	9 (45.0%)	0.041
Return to daily activities	17 (81.0%)	11 (55.0%)	0.048
Patient satisfaction	18 (85.7%)	10 (50.0%)	0.018

Table IV presents the treatment-related complications and follow-up status among the study participants (n=41) in both the sonoguided nerve root block group (n=21) and the conservative treatment group (n=20). Temporary injection site pain was observed only in the intervention group, affecting 19.0% of patients, while no such complication occurred in the conservative group. Mild dizziness was reported in 9.5% of patients in the sonoguided group and 5.0% in the conservative group. Gastric irritation related to medication use was more frequent in the conservative treatment group (25.0%) compared to the intervention group (4.8%). The majority of patients in both groups experienced no complications, accounting for 71.4% in the sonoguided group and 70.0% in the conservative group. Loss to follow-up was slightly higher in the conservative group (10.0%) compared to the intervention group (4.8%). Overall, study completion was high, with 95.2% of patients in the sonoguided group and 90.0% in the conservative group completing the study.

Table IV: Treatment-Related Complications and Follow-up Status.

Variables	Sonoguided Nerve Root Block (n=21)	Conservative Treatment (n=20)	Total (n=41)
Temporary injection site pain	4 (19.0%)	0 (0.0%)	4 (9.8%)
Mild dizziness	2 (9.5%)	1 (5.0%)	3 (7.3%)
Gastric irritation due to medication	1 (4.8%)	5 (25.0%)	6 (14.6%)
No complication	15 (71.4%)	14 (70.0%)	29 (70.7%)
Lost to follow-up	1 (4.8%)	2 (10.0%)	3 (7.3%)
Completed study	20 (95.2%)	18 (90.0%)	38 (92.7%)

DISCUSSION

The present study compared the effectiveness of sonoguided nerve root block with conservative treatment in patients with radiculopathy attending the Department of Physical Medicine & Rehabilitation of Bangladesh Medical University. The findings of this study demonstrated that ultrasound-guided nerve root block provided superior pain relief, better functional recovery and higher patient satisfaction compared to conservative management after 12 weeks of follow-up.

In the current study, the majority of participants belonged to the 41–50 years age group (36.6%) and males constituted 61.0% of the study population. Similar demographic predominance of middle-aged male patients with radiculopathy has been reported by Shah et al. and Zhao et al., where lumbar radiculopathy was common among working-age adults due to occupational strain and degenerative spinal changes [13-16].

Baseline clinical parameters in our study were comparable between the two groups. The mean baseline VAS score was 7.9 ± 1.0 in the sonoguided group and 7.7 ± 1.1 in the conservative treatment group, while the baseline ODI scores were 46.5 ± 8.2 and 45.8 ± 7.9 respectively. This similarity ensured homogeneity between groups before intervention. After 12 weeks, the mean VAS score significantly decreased to 2.6 ± 1.1 in the sonoguided group compared to 4.8 ± 1.4 in the conservative group (p=0.001). This finding is in agreement

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with Ahmed et al., whose meta-analysis demonstrated that ultrasound-guided epidural and nerve root injections significantly improved pain outcomes in radiculopathy patients [17]. Similarly, Lee DG reported marked pain reduction and functional improvement following ultrasound-guided cervical selective nerve root block in patients with cervical spondylotic radiculopathy [18].

Functional disability also improved significantly in our study. The mean ODI score after treatment was 18.4 ± 5.6 in the intervention group compared to 29.7 ± 6.3 in the conservative group (p=0.002). Comparable findings were reported by Goel et al., who observed superior functional recovery in patients receiving ultrasound-guided epidural interventions compared to conventional management [19]. Zhao et al., also found ultrasound-guided transforaminal epidural injections to be clinically effective and non-inferior to fluoroscopy-guided procedures for unilateral lumbar radiculopathy [14].

In the present study, improvement in spurling test was observed in 76.2% of patients in the sonoguided group compared to 45.0% in the conservative group. Additionally, return to daily activities was higher among patients treated with nerve root block (81.0% vs 55.0%) and patient satisfaction was significantly greater (85.7% vs 50.0%). These findings are supported by Chalermkitpanit et al. and Khashan et al., who demonstrated favorable clinical outcomes and improved patient satisfaction following ultrasound-guided cervical nerve root interventions [20,21]. Dernek et al., also reported successful symptom improvement and functional recovery with ultrasound-guided cervical selective nerve block procedures [22].

Regarding safety profile, most patients in both groups experienced no complications. Temporary injection site pain was the most common adverse effect in the intervention group, affecting 19.0% of patients, while gastric irritation due to medication was more common in the conservative treatment group (25.0%). Similar safety observations were described by Kim et al. and Miranda et al., who concluded that ultrasound-guided spinal interventions are generally safe, minimally invasive and associated with fewer serious complications [23,24]. The high study completion rate in our research (92.7%) also indicates good patient compliance and feasibility of both treatment approaches.

LIMITATIONS

This study had several limitations. The sample size was relatively small and the study was conducted in a single tertiary care center, which may limit the generalizability of the findings to the wider population. The follow-up duration was limited to 12 weeks, therefore long-term outcomes and recurrence rates could not be evaluated. In addition, purposive sampling and lack of blinding might have introduced selection and observer bias. Advanced imaging-based follow-up assessment was also not performed in all patients.

CONCLUSION

The present study demonstrated that sonoguided nerve root block was more effective than conservative treatment in reducing pain and improving functional outcomes among patients with radiculopathy. Patients receiving ultrasound-guided nerve root block showed significantly lower VAS and ODI scores, better improvement in clinical findings, higher return to daily activities and greater patient satisfaction with minimal complications. Therefore, sonoguided nerve root block may be considered a safe, minimally invasive and effective treatment option for managing cervical radiculopathy in clinical practice.

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CONFLICTS OF INTEREST

There are no conflicts of interest.

REFERENCES

1. *Wang B, Sun Y, Zhang J, Meng H, Zhang H, Shan L. Ultrasound-guided versus fluoroscopy-guided lumbar selective nerve root block: a retrospective comparative study. Scientific Reports. 2024 Feb 8;14(1):3235.*
2. *Joo HJ, Choi S, Kim BH, Kim MS, Shim GY, Chung SJ, Chon J, Yoo MC, Soh Y. Therapeutic efficacy of ultrasound-guided selective nerve block on chronic cervical radiculopathy. Medicina. 2024 Jun 19;60(6):1002.*
3. *Fouda BH, Abdelwahed WM, Negm EE. Ultrasound versus Fluoroscopy-Guided Selective Lumbar Nerve Root Injections: A Comparative Analysis of Efficacy, Safety and Outcomes.2025.*
4. *Barros AL, Sentinella MA, De Alencar MG, Oliva TZ, Silva MM, Rodrigues WE, Souza PP, Cavalcanti DC, de Freitas Arruda FI, Farias AC, Moura HG. COMPARATIVE ANALYSIS BETWEEN RADIOFREQUENCY ABLATION TECHNIQUES AND ULTRASOUND-GUIDED NERVE BLOCKS IN THE TREATMENT OF POSTHERPETIC NEURALGIA. Revista de Gestão Social e Ambiental. 2025 May 1;19(2):1-7.*
5. *Choi S, Park S, Lim YS, Park TY, Do KS, Byun SH, Yoon SH, Lee JH. A comparative study of a nerve block therapy with and without a deeply inserted acupotomy applied to hyeopcheok points for lumbosacral radiculopathy: Safety, effectiveness, cost-effectiveness (a randomized controlled, two-arm, parallel study, pilot study, assessor-blind). Medicine. 2022 Mar 4;101(9):e28983.*
6. *Wang B, Song H, Wang T, Du P, Zang L, Yang L. Clinical and radiological comparison of percutaneous cervical nucleoplasty combined with ultrasound-guided pulsed radiofrequency of cervical nerve root for cervical radicular pain: a retrospective, matched-cohort study. Frontiers in Pain Research. 2025 Jul 23;6:1618608.*
7. *Cui X, Zhang D, Zhao Y, Song Y, He L, Zhang J. An open-label non-inferiority randomized trail comparing the effectiveness and safety of ultrasound-guided selective cervical nerve root block and fluoroscopy-guided cervical transforaminal epidural block for cervical radiculopathy. Annals of Medicine. 2022 Dec 31;54(1):2669-79.*
8. *Kose HC, Guven Kose S, Celikel F, Tulgar S, Akkaya OT. Ultrasound-guided cervical selective nerve root block versus fluoroscopy-guided interlaminar epidural injection for cervical radicular pain: a randomized, prospective, controlled study. Journal of Personalized Medicine. 2024 Jul 4;14(7):721.*
9. *Yang JC, Chiu ST, Oh JY, Kaliya-Perumal AK. Selective nerve root block in treatment of lumbar radiculopathy: a narrative review. Surgeries. 2022 Sep 14;3(3):259-70.*
10. *Can E, Akkaya ÖT. Evaluation of the efficacy of ultrasound-guided selective cervical nerve root pulsed radiofrequency treatment in patients with chronic cervical radicular pain. Journal of Ultrasound. 2024 Dec;27(4):847-55.*
11. *Choi HK, Lee SH, Lee JH, Choi S, Park S, Lim YS, Kim HJ, Kim YI, Park TY. Effectiveness of acupotomy combined with nerve block therapy for cervical radiculopathy: A systematic review and meta-analysis. Medicine. 2025 Jun 13;104(24):e42771.*
12. *Cho S, Lim YC, Kim EJ, Park Y, Ha IH, Lee YS, Lee YJ. Analysis of conservative treatment trends for lumbar disc herniation with radiculopathy in korea: a population-based cross-sectional study. InHealthcare 2023 Aug 21 (Vol. 11, No. 16, p. 2353). MDPI.*
13. *Shah M, Patel KR, Undhad R, Patel CB, Undhad Sr R. Efficacy of Transforaminal Nerve Root Block in Lumbar Radiculopathy. Cureus. 2025 Aug 10;17(8).*
14. *Zhao W, Guo G, Wang Q, Yang L. Ultrasound-guided transforaminal epidural injection with fluoroscopy confirmation for the treatment of unilateral lumbar radiculopathy: a*

randomized controlled non-inferiority study. Clinical Neurology and Neurosurgery. 2023 Aug 1;231:107849.

15. *Tan H, Zhou J, Pu Y, He L, Wang L. Efficacy of selective nerve root block for different types of lumbar disc herniation: study protocol for a single-blind, prospective cohort study. Journal of Pain Research. 2025 Dec 31:1035-43.*
16. *Emami SA, Sanatkar M, Espahbodi E, Pestehei SK. Ultrasound and nerve stimulator guidance lumbar transforaminal epidural block for the treatment of patients with lumbosacral radicular pain. Scientific Reports. 2022 Apr 8;12(1):5954.*
17. *Ahmed M, Ahmad A, Arshad M, Naseer H, Zamarud A. Ultrasound-guided versus conventional fluoroscopy-guided epidural injection for radiculopathy. A meta-analysis of randomized controlled trials. World Neurosurgery. 2023 Dec 1;180:203-12.*
18. *Lee DG. Ultrasound-Guided Selective Cervical Root Block in Spondylotic Radiculopathy: Advantages and Safety. Clinical Pain. 2023 Dec 31;22(2):61-5.*
19. *Goel S, Mitra S, Singh J, Jindal S, Upadhyay P, Jindal R. Comparison of ultrasound and fluoroscopy-guided caudal epidural block in low back pain with radiculopathy: A randomized controlled study. Journal of Anaesthesiology Clinical Pharmacology. 2025 Jan 1;41(1):106-11.*
20. *Chalermkitpanit P, Pannangpetch P, Kositworakitkun Y, Singhatanadgige W, Yingsakmongkol W, Pasuhirunnikorn P, Tanasansomboon T. Ultrasound-guided pulsed radiofrequency of cervical nerve root for cervical radicular pain: a prospective randomized controlled trial. The Spine Journal. 2023 May 1;23(5):651-5.*
21. *Khashan M, de Santiago J, Pardo I, Regev G, Ophir D, Salame K, Lidar Z, Brill S, Hochberg U. Ultrasound-guided cervical retro-laminar block for cervical radicular pain: A comparative analysis. Spine. 2022 Oct 1;47(19):1351-6.*
22. *Dernek B, Ulusoy İ, Aydoğmuş S, Duymuş TM, Kesiktaş FN, Dıraçoğlu D. Ultrasound-guided cervical selective nerve block: a case series. Journal of Back and Musculoskeletal Rehabilitation. 2022 Sep;35(5):1013-9.*
23. *Kim DY, Lee JS, Lee SH, Lee YJ, Kim JY, Heo I, Cho JH, Seo BK, Ha IH. Effectiveness and safety of ultrasound-guided needle-knife therapy for patients with spinal pain disorders: a systematic review and meta-analysis. Frontiers in Medicine. 2025 Dec 5;12:1705669.*
24. *Miranda AM, Marinho FD, Wegner GR, Wegner BF, da Silva TM, do Nascimento TS, Day M. Ultrasound-Guided Versus Conventional Radioscopic–Guided Transforaminal Epidural Steroid Injections for Cervical Radicular Pain: A Systematic Review and Meta-analysis. Anesthesia & Analgesia. 2022 Mar 18:10-213.*