

A PROSPECTIVE COMPARATIVE STUDY OF LAMINOTOMY DISCECTOMY VERSUS CONSERVATIVE MANAGEMENT IN LUMBAR DISC PROLAPSE

Dr. Srushikesh M¹, Dr. Lokesh Sampath², Dr. M. Ganesh Diwaha³, Dr. M. Saravanan^{4*}

¹Postgraduate Resident, Department of Orthopaedics, SIMATS, Saveetha Medical College, Thandalam, Chennai - 602105, Tamil Nadu, India | Email: srushikesh111@gmail.com

²Assistant Professor, Department of Orthopaedics, SIMATS, Saveetha Medical College, Thandalam, Chennai - 602105, Tamil Nadu, India | ORCID: <https://orcid.org/0009-0003-4163-3365> | Email: lokeshariess@gmail.com

³MBBS MS Ortho, Senior Resident, Dhanalakshmi Srinivasan Institute of Medical Sciences and Hospital, Thuraiyur - Perambalur Road, Perambalur - 621212, Tamil Nadu, India | Email: ganeshm1248@gmail.com

^{4*}Assistant Professor, Department of Orthopaedics, Dhanalakshmi Srinivasan Medical College & Hospital, Siruvachur - Perambalur, Tamil Nadu, India | Email: saravanan_dr@ymail.com | Contact: +91 9600763858

***Corresponding Author:** Dr. M. Saravanan, M.S. (Ortho), Assistant Professor, Department of Orthopaedics, Dhanalakshmi Srinivasan Medical College & Hospital, Siruvachur - Perambalur, Tamil Nadu, India | Email: saravanan_dr@ymail.com | Contact: +91 9600763858

ABSTRACT

Background: Lumbar disc prolapse is a common cause of low back pain and radiculopathy, significantly affecting the quality of life and functional capacity of patients. Although both conservative and surgical treatment modalities are widely practiced, the optimal management strategy remains a subject of debate.

Aim: To compare the clinical and functional outcomes of laminotomy discectomy and conservative management in patients with lumbar disc prolapse.

Materials and Methods: This prospective comparative study included 50 patients with lumbar disc prolapse, of whom 25 underwent laminotomy discectomy and 25 received conservative treatment. Patients were evaluated using the Japanese Orthopaedic Association (JOA) scoring system at baseline and during follow-up at 3, 6, and 9 months. Demographic characteristics, radiological findings, neurological recovery, surgical complications, and treatment outcomes were assessed and compared between the two groups.

Results: The majority of patients were males (64%) and belonged to the 31–40 years age group. The L4–L5 level was the most commonly affected site (56%), and disc protrusion was the predominant type of prolapse. Surgical management demonstrated significantly superior functional outcomes at all follow-up periods compared with conservative treatment ($p < 0.05$). Complete neurological recovery was observed in 96% of surgically treated patients and 92% of conservatively treated patients. The surgical complication rate was low, with only one case (4%) of dural tear and no cases of wound infection or nerve root injury.

Conclusion: Laminotomy discectomy provides faster symptomatic relief, superior functional recovery, and excellent neurological outcomes with minimal complications when compared with conservative management in appropriately selected patients. Conservative treatment remains an effective option in selected cases; however, surgical intervention offers better overall outcomes, particularly in patients with significant symptoms and neurological deficits.

Keywords: Lumbar Disc Prolapse, Laminotomy Discectomy, Conservative Management, Lumbar Disc Herniation, Japanese Orthopaedic Association (JOA) Score, Neurological Recovery, Functional Outcome, Low Back Pain, Radiculopathy, Spine Surgery.

How to cite this article: Srushikesh M, Sampath L, Diwaha MG, Saravanan M. A prospective comparative study of laminotomy discectomy versus conservative management in lumbar disc prolapse. Int J Drug Deliv Technol. 2026;16(73s): 1421-1428. DOI: 10.25258/ijddt.16.73s.151

INTRODUCTION

Lumbar degenerative conditions, such as lumbar disc herniation, lumbar spinal narrowing, and degenerative spondylolisthesis, are among the predominant sources of lower back pain and impairment globally. Approximately 80% of people encounter low back pain at some stage in their lives, rendering it a critical public health issue and a considerable socioeconomic challenge. Lumbar disc disorders constitute over 90% of

physiological origins of low back pain and radiculopathy, frequently impacting the working-age demographic and significantly diminishing quality of life. Degenerative lumbar spondylolisthesis often occurs alongside multilevel spinal stenosis, complicating both clinical manifestations and therapeutic approaches.[1,2]

The surgical treatment of lumbar degenerative disorders primarily focuses on neural

A PROSPECTIVE COMPARATIVE STUDY OF LAMINOTOMY DISCECTOMY VERSUS CONSERVATIVE MANAGEMENT IN LUMBAR DISC PROLAPSE

decompression, with or without the incorporation of spinal fusion. Traditional laminectomy has consistently been viewed as a proficient surgical method for sufficient decompression of neural elements. Nonetheless, significant excision of posterior osseous and ligamentous components may jeopardize spinal stability and increase the likelihood of postoperative sequelae, such as iatrogenic instability, muscle atrophy, and advancement of degenerative alterations. These issues are especially pertinent in individuals with prior instability, like degenerative spondylolisthesis, when decompression alone could worsen spinal instability and require further stabilization interventions. [3-5]

Progress in minimally invasive spinal surgery has resulted in the creation of tissue-sparing methods designed to ensure sufficient neural decompression while conserving spinal integrity. Microscopic laminotomy and unilateral laminotomy for bilateral decompression have surfaced as viable substitutes for traditional laminectomy. These techniques maintain critical anatomical components, such as the facet joints, opposite lamina, and ligamentous apparatus, therefore diminishing surgical morbidity and possibly lessening postoperative instability. Numerous investigations have indicated advantageous clinical results and reduced complication rates associated with laminotomy methods in contrast to traditional laminectomy. [6,7]

Unilateral laminotomy has the further benefit of maintaining contralateral supportive structures during the primary surgical intervention, perhaps enhancing the biomechanical stability of the spinal segment. Despite short-term research showing promising clinical outcomes, conclusive proof of its advantages compared to bilateral laminotomy or conventional laminectomy in preserving postoperative spinal stability, especially in individuals with lumbar spondylolisthesis, is still scarce. [8]

The administration of lumbar disc herniation remains a topic of significant contention. Both conservative and surgical treatment approaches have shown effectiveness in suitably chosen patients. Conservative management continues to be the primary treatment approach in numerous instances and encompasses analgesics, physiotherapy, lifestyle alterations, and rehabilitation. Patients exhibiting enduring neurological symptoms, considerable functional limitations, or unsuccessful conservative treatments may derive considerable advantages from surgical procedures. Advancements in microsurgical discectomy methods and enhanced surgical tools have rendered lumbar discectomy a secure and remarkably effective operation, yielding outstanding clinical results and minimal

mortality. [9]

As minimally invasive spinal surgery continues to progress, there is growing curiosity over the long-term results of laminotomy discectomy in contrast to conservative treatment. [10] Assessing functional recovery, alleviation of pain, spinal stability, and incidence of complications is crucial for determining the most effective treatment approaches for individuals with lumbar degenerative conditions.

MATERIALS AND METHODS

The present study was a prospective comparative study conducted in the Department of Orthopaedics in our study institution between January 2025 and February 2026. A total of 100 patients presenting with low back pain were evaluated during the study period, of whom 50 patients diagnosed with lumbar intervertebral disc prolapse fulfilling the eligibility criteria were included in the study. The patients belonged to the age group of 20–70 years and had clinical symptoms, physical signs, and radiological evidence suggestive of lumbar disc prolapse. The primary objective was to compare the clinical outcomes of conservative management and laminotomy discectomy in patients with lumbar disc prolapse.

Study Design

- Prospective comparative study.

Study Setting

- Department of Orthopaedics, tertiary care teaching hospital.

Study Duration

January 2025 and February 2026

Sample Size

- 50 patients diagnosed with lumbar intervertebral disc prolapse were included in the study.
- 25 patients underwent conservative management, and 25 patients underwent laminotomy discectomy.

Inclusion Criteria

Patients satisfying all the following criteria were included in the study:

- Age between 20 and 70 years.
- Clinically diagnosed lumbar intervertebral disc prolapse.
- Positive clinical symptoms and signs of lumbar disc prolapse.
- Radiological confirmation of disc prolapse by Magnetic Resonance Imaging (MRI).

Exclusion Criteria

The following patients were excluded from the study:

- Structural scoliosis.
- Spondylolisthesis.
- Congenital spinal anomalies.
- Developmental dysplasia.
- Spinal infections.
- Cauda equina syndrome.

A PROSPECTIVE COMPARATIVE STUDY OF LAMINOTOMY DISCECTOMY VERSUS CONSERVATIVE MANAGEMENT IN LUMBAR DISC PROLAPSE

- Failed back syndrome.
- Multiple-level lumbar disc herniations.
- Tumours of the lumbar spine.

Data Collection

All eligible patients underwent detailed clinical history taking and comprehensive physical examination. Radiological evaluation was performed using Magnetic Resonance Imaging (MRI) to confirm the diagnosis and determine the level and type of lumbar disc prolapse. Patients were subsequently allocated to either conservative management or surgical management based on their clinical presentation, severity of symptoms, age, affordability, and willingness to undergo surgery. Written informed consent was obtained from all patients prior to treatment.

Conservative Management Protocol

Patients managed conservatively were advised complete bed rest along with pelvic traction using weights ranging from 8 to 10 kg for a minimum duration of two weeks. Gradual mobilization was initiated thereafter based on symptomatic improvement and absence of paraspinal muscle spasm.

Medical management included:

- Non-steroidal anti-inflammatory drugs (NSAIDs) with muscle relaxants for one week.
- Tramadol was prescribed in patients allergic to NSAIDs.
- Lumbosacral corsets and braces were provided after the initial period of bed rest and traction.
- Physiotherapy and rehabilitation included

Surgical Management Protocol

Patients undergoing surgical treatment were operated under general anaesthesia in the prone position using a spinal frame. A standard laminotomy and discectomy procedure was performed. Following skin preparation and haemostasis, a midline incision was made over the affected level. Subperiosteal muscle dissection was carried out, followed by laminotomy using Kerrison rongeurs. The dura and nerve roots were carefully retracted, and the herniated disc fragment was identified and excised through an annular incision. Loose disc fragments were removed using disc forceps and curettes, followed by irrigation of the disc space with normal saline. The wound was closed in layers after achieving complete haemostasis, and a suction drain was placed when required.

Postoperative Management

Postoperatively, patients were encouraged to turn in bed without twisting the spine. Intravenous antibiotics were administered for three days followed by oral antibiotics for an additional three days. Analgesics and anti-inflammatory medications were prescribed as required.

Outcome Assessment

All patients were followed up for a minimum duration of six months and were evaluated at:

- Third month,
- Sixth month.
- Ninth month

Clinical outcomes were assessed using the Japanese Orthopaedic Association (JOA) Low Backache Scoring System, which evaluates:

- Low back pain,
- Leg pain and tingling sensation,
- Walking ability,
- Straight Leg Raising Test (SLRT),
- Sensory disturbances,
- Motor deficits.

The rate of improvement was calculated using the JOA scoring formula, and outcomes were categorized as:

- Excellent (>90% improvement),
- Good (75–89% improvement),
- Fair (50–74% improvement),
- Poor (<50% improvement).

Statistical Analysis

The functional outcomes of conservative management and laminotomy discectomy were compared based on the JOA scores obtained before and after treatment. Clinical variables including age, duration of symptoms, neurological deficits, and occupational status were correlated with treatment outcomes at six months of follow-up.

Results

Demographic and Clinical Characteristics

The majority of patients belonged to the 31–40 years age group (44%), with younger patients predominantly undergoing surgical management, while the conservative group comprised mainly patients aged 51–60 years. Males constituted 64% of the study population, demonstrating a male predominance, particularly in the surgical group (76%). All patients were engaged in heavy occupational activities, indicating the significant role of physical strain in lumbar disc prolapse. The onset of symptoms was predominantly insidious (64%) in both treatment groups, whereas 36% of patients presented with sudden onset of symptoms, usually following strenuous physical activity.

Distribution of Pre-treatment JOA Scores (n = 50)

The majority of patients (78%) had a pre-treatment Japanese Orthopaedic Association (JOA) score between 6 and 10, indicating moderate functional impairment at presentation. Low JOA scores (0–5) were observed in 16% of patients, while only 6% had scores between 11 and 15. Patients in the conservative management group predominantly had JOA scores of 6–10 (88%), whereas the surgical group included a relatively higher proportion of patients with lower pre-treatment scores, suggesting greater symptom severity among surgically managed patients.

A PROSPECTIVE COMPARATIVE STUDY OF LAMINOTOMY DISCECTOMY VERSUS CONSERVATIVE MANAGEMENT IN LUMBAR DISC PROLAPSE

Table 1. Distribution of Pre-treatment JOA Scores (n = 50)

JOA Score	Conservative	Surgical	Total (%)
0–5	3	5	8 (16%)
6–10	22	17	39 (78%)
11–15	0	3	3 (6%)
Total	25	25	50 (100%)

Distribution of Lumbar Disc Levels (n = 50)

The L4–L5 intervertebral disc level was the most commonly affected site of lumbar disc prolapse, accounting for 56% of cases, followed by the L5–S1 level in 42% of patients. Disc prolapse at the L3–L4 level was uncommon, occurring in only 2% of the study population. These findings are consistent with the biomechanical stress borne by the lower lumbar spine, making the L4–L5 and L5–S1 levels particularly susceptible to degenerative changes and disc herniation.

Table 2. Distribution of Lumbar Disc Levels (n = 50)

Level of Disc Prolapse	Frequency	Percentage
L3–L4	1	2%
L4–L5	28	56%
L5–S1	21	42%
Total	50	100%

Distribution of Type of Disc Prolapse (n = 50)

Disc protrusion was the most common type of lumbar disc prolapse observed in both treatment groups, occurring in 80% of conservatively treated patients and 72% of surgically treated patients. Disc extrusion was present in 20% of patients in both groups. Sequestered disc prolapse was observed exclusively in the surgical group, accounting for 8% of cases, reflecting the greater severity of pathology among patients selected for surgical intervention.

Table 3. Distribution of Type of Disc Prolapse (n = 50)

Type of Disc Prolapse	Conservative (n=25)	Surgical (n=25)
Protrusion	20 (80%)	18 (72%)
Extrusion	5 (20%)	5 (20%)
Sequestration	0	2 (8%)
Total	25	25

Surgical Complications (n = 25)

Laminotomy discectomy was associated with a low complication rate. Only one patient (4%) experienced an intraoperative dural tear, which was appropriately managed without significant postoperative sequelae. No cases of superficial wound infection or nerve root injury were encountered. Overall, the surgical procedure demonstrated an excellent safety profile, with total complications occurring in only 4% of patients.

Table 4. Surgical Complications (n = 25)

Complication	Frequency	Percentage
Dural Tear	1	4%
Superficial Wound Infection	0	0%
Nerve Root Injury	0	0%
Total Complications	1	4%

Treatment Outcome Based on JOA Score

At 3 months, the surgical group showed significantly better functional outcomes compared with the conservative group ($p = 0.042$). The difference became more pronounced at 6 months ($p = 0.018$) and 9 months ($p = 0.006$), indicating superior and sustained clinical improvement following laminotomy discectomy when assessed using the Japanese Orthopaedic Association (JOA) score. The proportion of patients achieving good to excellent outcomes increased progressively in the surgical group across the follow-up period, whereas improvement in the conservative group was more gradual and comparatively modest.

Table 5. Treatment Outcome Based on JOA Score at 3, 6, and 9 Months Follow-up (n = 50)

Follow-up Period	Outcome	Conservative (n=25)	Surgical (n=25)	p-value
3 Months	Excellent	0	1 (4%)	0.042*
	Good	10 (40%)	20 (80%)	
	Fair	12 (48%)	4 (16%)	
	Poor	3 (12%)	0	
6 Months	Excellent	0	2 (8%)	0.018*
	Good	12 (48%)	22 (88%)	
	Fair	10 (40%)	1 (4%)	
	Poor	3 (12%)	0	
9 Months	Excellent	1 (4%)	4 (16%)	0.006*
	Good	15 (60%)	21 (84%)	
	Fair	8 (32%)	0	
	Poor	1 (4%)	0	

*Chi-square test; $p < 0.05$ considered statistically significant.

Outcome of Neurological Recovery (n = 50)

Neurological recovery was excellent in both treatment groups at the final follow-up. Complete neurological recovery was observed in 23 patients (92%) managed conservatively and in 24 patients (96%) who underwent laminotomy discectomy. Residual neurological deficits were noted in only

A PROSPECTIVE COMPARATIVE STUDY OF LAMINOTOMY DISCECTOMY VERSUS CONSERVATIVE MANAGEMENT IN LUMBAR DISC PROLAPSE

two patients (8%) in the conservative group and one patient (4%) in the surgical group. These findings indicate that both treatment modalities were effective in improving neurological function, although surgical management demonstrated slightly superior outcomes.

Table 6. Outcome of Neurological Recovery (n = 50)

Neurological Recovery	Conservative	Surgical
Complete Recovery	23 (92%)	24 (96%)
Residual Deficit	2 (8%)	1 (4%)
Total	25	25

Correlation Between Duration of Symptoms and Outcome

Patients presenting with a shorter duration of symptoms (<6 months) demonstrated better clinical outcomes in both treatment groups. In the conservative management group, 15 patients (60%) with symptom duration of less than six months achieved fair to good outcomes, whereas 19 patients (76%) in the surgical group attained good to excellent outcomes. Conversely, patients with symptoms lasting longer than six months showed comparatively poorer outcomes. These results suggest that early intervention, whether conservative or surgical, is associated with improved functional recovery in lumbar disc prolapse.

Table 7. Correlation Between Duration of Symptoms and Outcome

Duration of Symptoms	Conservative (Fair-Good)	Surgical (Good-Excellent)
< 6 Months	15 (60%)	19 (76%)
> 6 Months	10 (40%)	6 (24%)
Total	25	25

Correlation Between Neurological Deficits and Outcome

Motor and sensory neurological deficits were present in a considerable proportion of patients before treatment. In the conservative group, 12 patients had motor deficits and 15 had sensory deficits, while the surgical group included 15 patients with motor deficits and 18 patients with sensory involvement. Despite the presence of pre-treatment neurological impairment, good neurological recovery was achieved in the majority of patients, with complete recovery observed in 92% of conservatively managed patients and 96% of surgically treated patients. Residual deficits were uncommon, demonstrating that both treatment approaches were effective in achieving neurological improvement, with laminotomy discectomy providing marginally better recovery rates.

Table 8. Correlation Between Neurological Deficits and Outcome

Parameter	Conservative	Surgical
Patients with Motor Deficit	12	15
Patients with Sensory Deficit	15	18
Good Neurological Recovery	23 (92%)	24 (96%)
Residual Deficit	2 (8%)	1 (4%)

DISCUSSION

The demographic and clinical profile observed in the present study is consistent with the existing literature on lumbar disc prolapse. The highest incidence of lumbar disc prolapse was seen in the 31–40 years age group, with a clear male predominance (64%) and a significant association with heavy occupational activity. Similar findings have been reported by Maruthi and Shivanna, who observed peak incidence between 30 and 40 years of age and a male predominance of 65%, attributing the increased incidence to greater occupational exposure to physical strain and repetitive spinal loading. Heavy manual labour and strenuous physical activities remain well-established risk factors for lumbar disc degeneration and herniation. The predominance of insidious symptom onset in our study further supports the chronic degenerative nature of lumbar disc disease (11).

The pre-treatment Japanese Orthopaedic Association (JOA) scores in the present study demonstrated that the majority of patients had moderate functional impairment at presentation. Surgically managed patients tended to have relatively poorer baseline scores, suggesting greater disease severity and symptom burden, which influenced treatment selection. Similar observations have been reported in prospective cohort studies comparing surgical and conservative management of lumbar disc herniation, wherein patients undergoing surgical intervention typically presented with more severe pain, neurological deficits, and functional disability prior to treatment (12,13).

The distribution of disc levels in our study showed that L4–L5 was the most commonly affected level (56%), followed by L5–S1 (42%). These findings are in agreement with previous studies reporting that more than 90% of lumbar disc herniations occur at these two levels owing to their increased biomechanical stress and mobility. Sabreen et al. similarly reported that lumbar disc herniation most frequently involves the L4–L5 and L5–S1 levels, accounting for the vast majority of symptomatic cases (14,15).

Disc protrusion was the most common type of prolapse observed in both treatment groups, whereas sequestered discs were encountered only in surgically treated patients. This finding reflects current surgical indications for lumbar disc herniation, wherein patients with more severe radiological pathology, persistent radiculopathy,

A PROSPECTIVE COMPARATIVE STUDY OF LAMINOTOMY DISCECTOMY VERSUS CONSERVATIVE MANAGEMENT IN LUMBAR DISC PROLAPSE

and neurological deficits are more likely to benefit from surgical intervention. Recent systematic reviews have highlighted that imaging-confirmed nerve root compression, severe refractory pain, and neurological deficits remain the most consistent indications for early surgery in lumbar disc herniation (16).

The complication rate following laminotomy discectomy in the present study was low, with only one case (4%) of intraoperative dural tear and no cases of infection or nerve root injury. These findings are comparable to those reported in previous studies, which have demonstrated that lumbar discectomy is a safe procedure associated with low morbidity and negligible mortality when performed in appropriately selected patients. Similarly, minimally invasive decompressive procedures have consistently demonstrated favourable safety profiles and reduced surgical morbidity (17,18).

Functional outcomes assessed using JOA scores demonstrated significantly superior results in the surgical group at all follow-up periods. Patients undergoing laminotomy discectomy achieved earlier and more substantial improvements, with progressively increasing proportions of good and excellent outcomes at 3, 6, and 9 months. These findings are consistent with the BMJ Open prospective cohort study, which reported that surgical treatment provided faster relief of back pain and superior early functional recovery when compared with conservative management. Likewise, recent evidence suggests that early surgical intervention in appropriately selected patients with lumbar disc herniation results in better neurological recovery and improved short-term clinical outcomes (19,20).

Neurological recovery in both treatment groups was excellent, although surgically treated patients demonstrated marginally better outcomes. Complete neurological recovery was observed in 96% of surgically treated patients compared with 92% in the conservative group. Early surgical intervention has been shown to significantly improve motor recovery, particularly in patients presenting with mild-to-moderate motor deficits. Recent systematic reviews have reported recovery rates exceeding 90% when surgery is performed within the recommended time frame, highlighting the importance of timely intervention in patients with progressive neurological impairment (21).

The duration of symptoms was found to influence treatment outcomes significantly. Patients presenting within six months of symptom onset demonstrated better functional outcomes irrespective of treatment modality. Surgical patients with shorter symptom duration achieved the highest proportion of good to excellent results. Similar observations have been reported in contemporary literature, which advocates early surgical intervention following failure of conservative treatment for four to six weeks in

patients with persistent symptoms or neurological deficits. Delayed intervention has been associated with prolonged disability and comparatively poorer outcomes (22,23).

Finally, despite the presence of pre-treatment motor and sensory deficits, both conservative and surgical management resulted in substantial neurological improvement. However, laminotomy discectomy provided slightly superior neurological recovery and earlier symptomatic relief. The present findings support the growing body of evidence favouring surgical decompression in appropriately selected patients while reaffirming the role of conservative management in milder presentations. Appropriate patient selection, symptom duration, neurological status, and radiological findings remain critical determinants of successful treatment outcomes in lumbar disc prolapse (24,25).

Conclusion

Lumbar disc prolapse predominantly affects individuals in their productive age group and is commonly associated with heavy physical activity. Both conservative management and laminotomy discectomy resulted in significant clinical and neurological improvement. However, patients undergoing laminotomy discectomy demonstrated superior functional outcomes, faster pain relief, and better neurological recovery at 3, 6, and 9 months of follow-up. Surgical intervention was associated with a low complication rate and produced a higher proportion of good to excellent outcomes when compared with conservative treatment. Early intervention, particularly in patients with shorter symptom duration and significant neurological deficits, was associated with better clinical outcomes. Laminotomy discectomy can therefore be considered a safe, effective, and reliable treatment option for appropriately selected patients with lumbar disc prolapse, while conservative management remains beneficial in milder cases and in patients without significant neurological compromise.

Conflict of Interest - Authors declare that this paper has not been previously published and is not currently under consideration by another journal and all authors have approved of and have agreed to submit the manuscript to this journal

Funding

The authors have no funding to report.

Acknowledgements

Nil

References

1. Försth P, Ólafsson G, Carlsson T, Frost A, Borgström F, Fritzell P, et al. A randomized, controlled trial of fusion

A PROSPECTIVE COMPARATIVE STUDY OF LAMINOTOMY DISCECTOMY VERSUS CONSERVATIVE MANAGEMENT IN LUMBAR DISC PROLAPSE

- surgery for lumbar spinal stenosis. *N Engl J Med.* 2016;374(15):1413–1423.
2. Weinstein JN, Tosteson TD, Lurie JD, Tosteson ANA, Blood EA, Herkowitz H, et al. Surgical versus nonsurgical therapy for lumbar spinal stenosis. *N Engl J Med.* 2008;358(8):794–810.
3. Postacchini F. Surgical management of lumbar spinal stenosis. *Spine (Phila Pa 1976).* 1999;24(10):1043–1047.
4. Mobbs RJ, Li J, Sivabalan P, Raley D, Rao PJ. Outcomes after decompressive laminectomy for lumbar spinal stenosis: Comparison between minimally invasive unilateral laminotomy for bilateral decompression and open laminectomy. *J Clin Neurosci.* 2014;21(2):204–209.
5. Costa F, Sassi M, Cardia A, Ortolina A, De Santis A, Luccarelli G, et al. Degenerative lumbar spinal stenosis: Analysis of results in a series of 374 patients treated with unilateral laminotomy for bilateral decompression. *J Neurosurg Spine.* 2007;7(6):579–586.
6. Oertel JM, Ryang YM, Korinith MC, Gilsbach JM, Rohde V. Long-term results of microsurgical treatment of lumbar spinal stenosis by unilateral laminotomy for bilateral decompression. *Neurosurgery.* 2006;59(6):1264–1270.
7. Thomé C, Zevgaridis D, Leheta O, Bänzner H, Pöckler-Schöniger C, Wöhrle J, et al. Outcome after less-invasive decompression of lumbar spinal stenosis: A randomized comparison of unilateral laminotomy, bilateral laminotomy, and laminectomy. *J Neurosurg Spine.* 2005;3(2):129–141.
8. Sengupta DK, Herkowitz HN. Degenerative spondylolisthesis: Review of current trends and controversies. *Spine (Phila Pa 1976).* 2005;30(6 Suppl):S71–S81.
9. Genevay S, Atlas SJ. Lumbar spinal stenosis. *Best Pract Res Clin Rheumatol.* 2010;24(2):253–265.
10. Machado GC, Ferreira PH, Yoo RI, Harris IA, Pinheiro MB, Koes BW, et al. Surgical options for lumbar spinal stenosis. *Cochrane Database Syst Rev.* 2016;11(11):CD012421.
11. Maruthi CV, Shivanna. Laminotomy discectomy versus conservative management for lumbar disc prolapse: Short term results. *Indian J Orthop Surg.* 2016;2(1):102–109.
12. Gugliotta M, da Costa BR, Dabis E, Theiler R, Jüni P, Reichenbach S, et al. Surgical versus conservative treatment for lumbar disc herniation: A prospective cohort study. *BMJ Open.* 2016;6(12):e012938.
13. Weinstein JN, Tosteson TD, Lurie JD, Tosteson ANA, Hanscom B, Skinner JS, et al. Surgical versus nonoperative treatment for lumbar disc herniation: Four-year results for the Spine Patient Outcomes Research Trial (SPORT). *Spine (Phila Pa 1976).* 2008;33(25):2789–2800.
14. Sabreen S, Reddy DA, Divya T, Kishore P, Laxmi Prasad N, Sudheer Kumar D, et al. A study on laminectomy, discectomy and conservative management for prolapsed intervertebral disc and assessment of recurrent disc herniation. *IOSR J Pharm.* 2018;8(8):17–23.
15. Fardon DF, Williams AL, Dohring EJ, Murtagh FR, Gabriel Rothman SL, Sze GK. Lumbar disc nomenclature: Version 2.0. Recommendations of the combined task forces of the North American Spine Society, American Society of Spine Radiology, and American Society of Neuroradiology. *Spine J.* 2014;14(11):2525–2545.
16. Thavarajasingam SG, Salih A, Arif A, Varadpande M, Sabeshan P, Ponniah HS, et al. Indications for surgery versus conservative treatment in the management of lumbar disc herniations: A systematic review. *Brain Spine.* 2025;5:105619.
17. Li Y, Zhu C. A comparative analysis of the outcome of unilateral laminotomy and conventional laminectomy in patients with single-level degenerative lumbar spondylolisthesis. *Front Surg.* 2025;12:1661398.
18. Thomé C, Zevgaridis D, Leheta O, Bänzner H, Pöckler-Schöniger C, Wöhrle J, et al. Outcome after less-invasive decompression of lumbar spinal stenosis: A randomized comparison of unilateral laminotomy, bilateral laminotomy, and laminectomy. *J Neurosurg Spine.* 2005;3(2):129–141.
19. Bailey CS, Rasoulinejad P, Taylor D, Sequeira K, Miller T, Watson J, et al. Surgery versus conservative care for persistent sciatica lasting 4 to 12 months. *N Engl J Med.* 2020;382(12):1093–1102.
20. Jacobs WC, van Tulder M, Arts M, Rubinstein SM, van Middelkoop M, Ostelo R, et al. Surgery versus conservative management of sciatica due to lumbar disc herniation: A systematic review. *Eur Spine J.* 2011;20(4):513–522.
21. Thomé C, Barth M, Scharf J, Schmiedek P. Outcome after lumbar sequestrectomy compared with microdiscectomy: A prospective randomized study. *J Neurosurg Spine.* 2005;2(3):271–278.
22. Chou R, Loeser JD, Owens DK, Rosenquist RW, Atlas SJ, Baisden J, et al. Interventional therapies, surgery, and

A PROSPECTIVE COMPARATIVE STUDY OF LAMINOTOMY DISCECTOMY VERSUS
CONSERVATIVE MANAGEMENT IN LUMBAR DISC PROLAPSE

- interdisciplinary rehabilitation for low back pain: An evidence-based clinical practice guideline. *Spine (Phila Pa 1976)*. 2009;34(10):1066–1077.
23. Society NAS. Evidence-based clinical guidelines for multidisciplinary spine care: Diagnosis and treatment of lumbar disc herniation with radiculopathy. Burr Ridge, IL: North American Spine Society; 2022.
 24. Gibson JN, Waddell G. Surgical interventions for lumbar disc prolapse. *Cochrane Database Syst Rev*. 2007;(2):CD001350.
 25. Deyo RA, Mirza SK, Martin BI. Back pain prevalence and visit rates: Estimates from U.S. national surveys, 2002. *Spine (Phila Pa 1976)*. 2006;31(23):2724–2727.