Zagazig University Medical Journal
www.zumj.journals.ekb.eg
https://doi.org/10.21608/zumj.2025.390955.3982 Volume 31, Issue 8 August. 2025
Manuscript ID ZUMJ: -2505-3982
DOI: 10.21608/ZUMJ.2025.390955.3982

ORIGINAL ARTICLE

Outcome of Posterior Cervical Laminectomy without Fusion for Treatment of Cervical Spondylosis: A retrospective Cohort Study

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Submit Date: 31-05-2025

Revise Date: 24-06-2025

Accept Date: 01-07-2025

ABSTRACT

Background: Degenerative cervical spondylosis is a common condition causing neck pain, radiculopathy, and myelopathy. Posterior cervical laminectomy is a standard decompressive surgery, though the need for fusion remains debatable. Concerns include postoperative instability and persistence or new brachialgia and neck pain. This study aimed to assess the long-term clinical-radiological outcome following posterior cervical laminectomy without fusion in degenerative cervical spondylosis, with particular focus on cases involving cervical instability and the progression or improvement of brachialgia and neck pain.

Methods: This Retrospective Cohort study included 60 patients with cervical spondylosis, (51 males and 9 females), mean age (40-73y). The severity of neck pain and brachialgia was assessed using the Visual Analogue Scale (VAS). Preoperative radiological tests were performed on all patients, including magnetic resonance imaging to confirm the diagnosis and assess the degree of spinal cord and canal involvement and cervical spine X-rays to estimate the C2–C7 Cobb's angle.

Results: After surgery, the mean VAS for neck discomfort decreased from 6.58 to 1.26 after one year and 0.86 for two years. Similarly, brachialgia VAS improved from 6.82 preoperatively to 3.25 post operatively, follow up of 39 patients after 1 year VAS was 1.67(±2.24SD) while follow up of 21 patients after 2 years VAS was 1±(1.34SD). Radiographically, the mean C2–C7 Cobb's angle showed a slight but statistically significant decrease from 23.57(±4.25SD) preoperative to 22.23(±4.53SD) postoperatively. The mean operative time was 132.5 minutes, with a mean blood loss of 218.33ml.

Conclusion: Multilevel cervical laminectomy without fusion is a safe and effective procedure for treating cervical spondylosis.

Keywords: Cervical spondylosis, Cervical laminectomy, Fusion.

INTRODUCTION

One age-related degenerative disc condition is cervical spondylosis. According to earlier research, the primary risk factor and contributing factor to the occurrenceof cervical spondylosis was age [1].

A chronic degenerative process of the cervical spine, cervical spondylosis affects the vertebral bodies and intervertebral discs. It involves a variety of combinations of the following: osteophytes, degeneration of the intervertebral discs that results in herniated intervertebral discs, alteration of the normal lordotic curvature (either a reduction or an exaggeration of lordosis), hypertrophy of the dura, lamina, articular facets, and ligaments (such as the ligamentum flavum and the post-longitudinal ligament), or ossification of ligaments that causes cervical canal stenosis and compression of the spinal cord and nerve roots. Clinical issues associated with cervical spondylosis include myeloradiculopathy and neck discomfort [2].

The most common neurological condition in adults is cervical spondylotic myelopathy,

which has a diverse etiology. Both static and dynamic compression of the spinal cord are part of its pathogenesis [3].

Protruding discs, ligamentous and facet hypertrophy, and osseous degenerative alterations are examples of static causes. The static components of canal deformation caused by osseous and ligamentous diseases might be exacerbated by dynamic factors. When repetitive flexion or extension movements expose an already compressed spinal cord to longitudinal cord tension, further injury may result. Dynamic compression may be more significant than static compression in the development of myelopathy because the cord and its vascular supply can adapt to long-term, gradually worsening compression [4].

When a nerve root is squeezed in the neural foramen or cervical spinal canal, typically by an osteophyte or soft disc, cervical radiculopathy results. Brachialgia, or pain radiating into the arm, is the result of this. People between the ages of 40 and 60 are most affected by cervical brachialgia, which is a very prevalent condition that prevents patients from working because of pain [5,6].

Conservative treatment, such as analgesics and physical therapy can help some patients' symptoms go away on their own, but if they continue, surgery is necessary. Compared to more conservative treatments. Surgery is linked to a quick recovery for individuals whose symptoms have not improved after six weeks [7].

It is anticipated that this frequent spinal condition would become more prevalent in the general population. Therefore, the gold standard surgery for halting the progression of neurological impairments in individuals with cervical spondylosis is posterior cervical laminectomy without fusion [8].

In patients with cervical spondylosis, surgery is typically recommended when conservative measures fail. The complicated process of anterior cervical decompression and fusion for multilayer cervical spondylosis might result in problems such dysphagia [8,9].

The main posterior cervical surgical technique for treating cervical spondylosis is laminectomy without fusion, which decompresses the spinal cord and removes compressive factors while leaving adequate room for the cord [10,11].

The gold standard treatment for cervical spondylosis is thought to be posterior cervical laminectomy without fusion [12].

AIM OF THE WORK

This study aimed to assess the long-term clinical-radiological outcome following posterior cervical laminectomy without fusion in degenerative cervical spondylosis, with particular focus on cases involving cervical instability and the progression or improvement of brachialgia and neck pain.

METHODS

This Retrospective Cohort study was conducted on 60 patients in Department of Neurosurgery, Faculty of Medicine, Zagazig University Hospitals, period from March 2024 to March 2025. All the patients presented with symptoms of myeloradiculopathy or myelopathy and diagnosed cervical spondylosis. All patients were followed up for a minimum of six months, while a subset continued follow up for up to two years. All patients gave their informed consent prior to surgery, and the study was approved by the Faculty of Medicine's research ethical council (IRB# 197/10-March-2024) at Zagazig University. The investigation was conducted in accordance with the Declaration of Helsinki, the World Medical Association's Code of Ethics for human studies.

Inclusion criteria included patients aged 40 years and above of both genders, presenting with symptomatic cervical myelopathy associated with at least three-level cervical canal stenosis confirmed by radiological imaging.

Exclusion criteria involved patients with cervical congenital malformations, syringomyelia, neoplastic lesions, ankylosing spondylitis, rheumatoid arthritis, traumatic cervical spine injuries, preoperative cervical instability or kyphotic deformity, as well as those deemed unfit for surgery.

Preoperative

All patients underwent a comprehensive evaluation, including a full medical history and clinical examination. Medical history focused on demographic data such as age,

gender, and body mass index (BMI), as well as co-morbidities including diabetes mellitus, hypertension, hepatic, renal, and bone disorders. Clinical evaluation included both a comprehensive neurological examination and a comprehensive general examination. Direct patient questioning and physical examination were used to evaluate clinical symptoms and indicators. To track postoperative recovery, the Visual Analogue Scale (VAS) tailored for cervical spondylosis was also used to assess the degree of brachialgia and neck pain. All patients underwent comprehensive preoperative radiological evaluation. This included lateral cervical spine X-rays to assess the C2–C7 Cobb's angle (Figure 1A), providing essential information regarding cervical alignment. Additionally, magnetic resonance imaging (MRI) of the cervical spine was performed to confirm the diagnosis and gather further details. MRI assessment focused on identifying intramedullary increased signal intensity, measuring the cross-sectional area of the thecal sac, determining the number of stenotic levels, and specifying the most severely affected level. To guarantee their medical suitability for surgery, every patient had a comprehensive laboratory examination that included a coagulation profile, liver function tests, renal function testing, and a complete blood count.

An informed decision to proceed with operative treatment was made following the documented failure of non-operative management and based on established surgical indications and contraindications. Every case underwent thorough preoperative preparation, and all patients were told about the surgical technique, possible risks, and anticipated results before giving their informed consent.

Surgical Technique

Under general anesthesia, the patient was positioned prone with the neck slightly flexed and in a neutral rotational position (Figure 1B). A C-arm X-ray was utilized intraoperatively to accurately identify the levels planned for laminectomy. A midline longitudinal skin incision was made over the targeted cervical levels, and subcutaneous tissues were dissected with cauterization of bleeding vessels. The cervical fascia was incised in the midline, and subperiosteal dissection was performed to expose the posterior elements of the cervical spine (Figure 1C). The C2 vertebra was identified and used as a reference point to confirm the surgical level, counting sequentially down to the intended levels. Laminectomy was then carried out from C3 to C6 using a combination of rongeurs and Kerrison rongeurs. The procedure continued carefully until the ligamentum flavum was visualized. The ligamentum flavum was gently elevated using a nerve hook and resected using a 2 mm Kerrison rongeur to decompress the spinal canal (Figure 1D). After achieving adequate decompression, meticulous irrigation and hemostasis were performed. A subfascial drain was placed, and muscle hemostasis secured. Deep wound closure was accomplished in layers using 0 or 1 absorbable sutures for muscle and fascia, followed by closure of the subcutaneous tissue with 2-0 Vicryl. The skin was closed with buried Monocryl sutures. A bulky sterile dressing and a hard cervical collar were applied immediately postoperatively. The intraoperative blood loss and total operative time were documented for each case.

Postoperative Care and Evaluation

Inpatient physical therapy was initiated with patients advised to wear a hard cervical collar continuously for six weeks. Discharge planning involved providing pain medications, instructions for outpatient physical therapy, wound care guidance, and scheduling of regular postoperative follow-up visits.

Postoperative Evaluation and Follow-up

Patients were regularly followed up postoperatively at 2 weeks for stitch removal and initial clinical assessment, then at 1 year and 2 years for long-term evaluation. During these visits, the Visual Analogue Scale (VAS) was used to assess the severity of neck pain and brachialgia. Detailed neurological examinations were performed to monitor symptoms and signs, aiming to detect any improvement or emergence of new neurological deficits.

Radiological follow-up included lateral cervical spine X-rays to measure the C2–C7

Cobb's angle and dynamic flexion-extension views to evaluate cervical spine stability. MRI was conducted when clinically indicated to identify intramedullary signal changes or to assess residual or recurrent stenosis.

All postoperative complications were systematically recorded. These comprised post-laminectomy kyphosis, persistent axial neck pain, new neurological deficits, dural tears, and superficial or deep wound infections.

STATISTICAL ANALYSIS

The statistical package for the social sciences, or SPSS, version 26 was used to analyze the data. Assumptions for use in parametric testing were validated using the Shapiro-Wilk test. Depending on the type of data, the means, standard deviations, media, and interquartile range were used to characterize quantitative variables. The paired sample t test (for normally distributed data) and the Wilcoxon signed rank test (for ordinal and non-normally distributed data) were used to compare quantitative data between two groups and assess changes in one variable over time. $P<0.05$ was chosen as the threshold for statistical significance. There was a highly significant difference if $p\leq0.001$.

RESULTS

The study included 60 patients with age ranged from 40 to 73 years with mean 55.2 ± 7.99 years. 85% of studied patients were males. About 32% and 17% were retired and manual workers respectively. All patients were married. About 58% of them came from urban areas and 68.3% had no comorbidities as shown in table 1.

Table 2 indicated that the mean operating duration was 132.5 minutes, with a range of 105 to 180 minutes. The mean blood loss was 218.33 ml, with a range of 100 to 400 ml.

Table 3 showed that the VAS brachialgia score decreased statistically significantly both after surgery and during follow-up as compared to preoperative values. There is statistically significant decrease in VAS brachialgia score postoperatively as compared to preoperative data and on follow up as compared to preoperative value.

Table 4 demonstrated that, when comparing postoperative data to preoperative data, there is a statistically significant decrease in Cobb's angle.

In table 5, patients are stable despite decreasing the cobb's angle, there are no significant clinical symptoms such as (brachialgia and neck pain), signs or radiological changes such as (kyphosis or segmental instability).

Case Presentation

A 56-year-old right-handed female, housewife, married with four offsprings, presented with a history of progressive neck pain, bilateral upper limb paresthesia, and heaviness over a period of three years. The symptoms markedly worsened during the last six months, with additional progressive heaviness of both lower limbs and trunk, urinary urgency, and gait disturbance. There was no history of severe weight loss, fever, or trauma. The patient had bilateral upper limb muscle strength of grade 3/5 and lower limb muscle power of grade 4/5 on the neurological evaluation. In addition to positive Hoffman's, clones, and Babinski's signs, there was hyperreflexia. She walked with spasm.

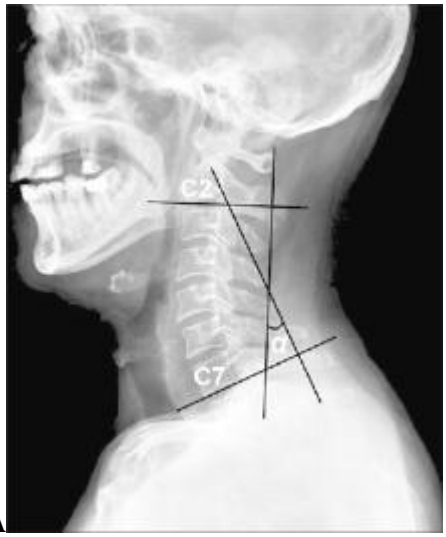
Preoperative Visual Analogue Scale (VAS) scores were recorded as 8 for neck pain and 7 for brachialgia. Preoperative MRI showed hyperintense signal alterations in the spinal cord on T2-weighted images, along with multilayer cervical canal stenosis from C3 to C6 (Figure 2.II, left; Figure 2.III). A C2–C7 Cobb's angle of 25.5º was revealed by plain radiography (Figure 2. IA). A C3–C6 laminectomy was performed on the patient. A total of 210 milliliters of blood were lost during the 130-minute operation. Following surgery, both upper and lower limb motor power increased to 4/5, and brachialgia and neck pain VAS scores decreased to 3 and 2, respectively.

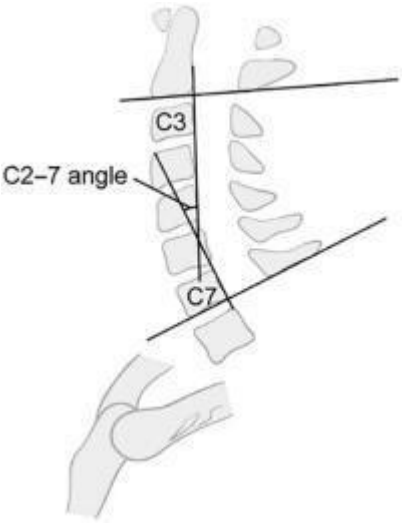
At the one-year follow-up, further improvement was observed: upper and lower limb power was 4+/5, neck pain resolved (VAS 0), and brachialgia reduced to VAS 1. Follow-up MRI demonstrated complete decompression of the spinal cord (Figure 2. II, right; Figure 2.IV). Postoperative radiography showed a slight improvement in cervical alignment with a Cobb's angle of 23º (Figure 2. IB). Dynamic postoperative X-rays

in flexion and extension confirmed adequate stability (Figure 2.V).

Figure 1: A): C2-7 cobb 's angle. **B)** Patient positioning. **C)** Subperiosteal dissection. **D)** Ligamentum flavum is removed.

A



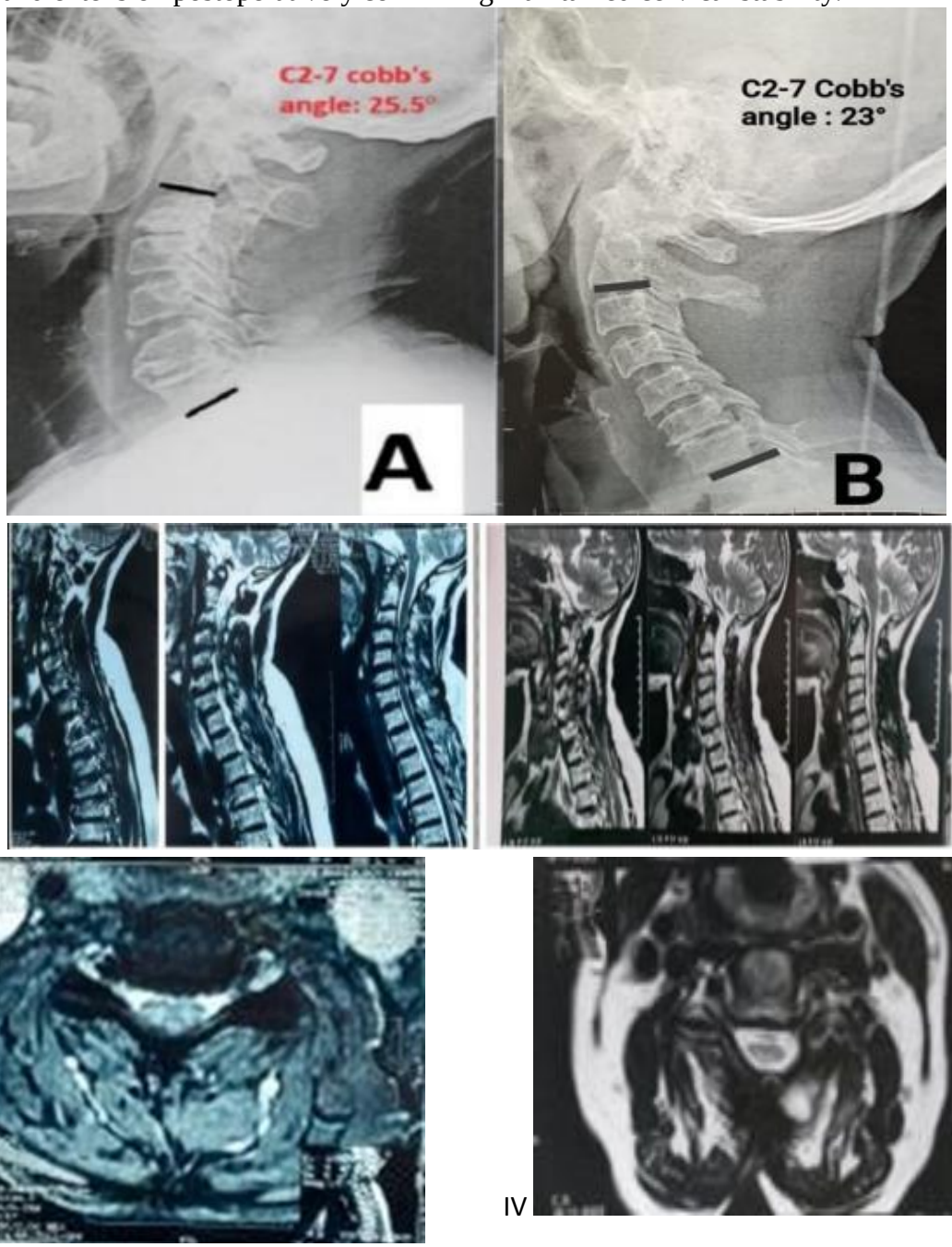


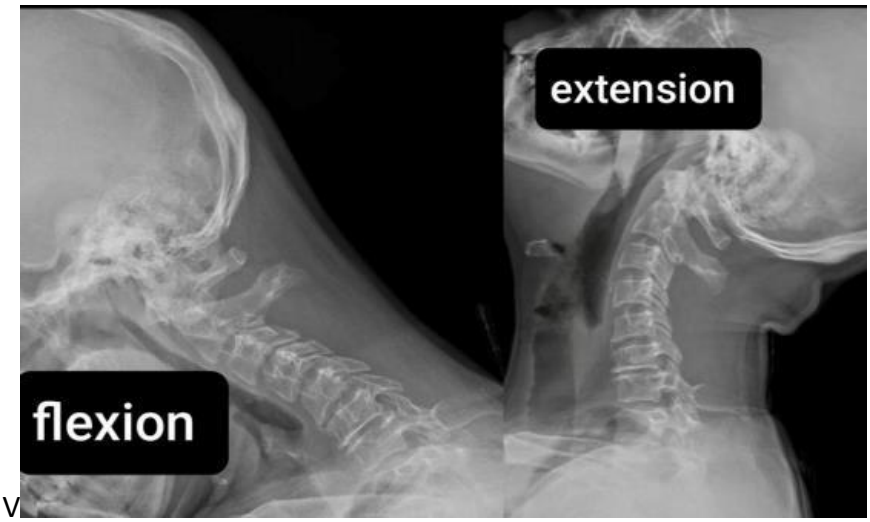
B

C

D

Figure 2. I): Lateral cervical X-ray measuring C2–C7 Cobb's angle preoperative (A) and postoperative (B). **II**): MRI sagittal T2 view preoperative (left) and postoperative (right). **III):** MRI T2 axial view preoperative. **IV):** MRI T2 axial view postoperative. **V):** Dynamic X-ray views in flexion and extension postoperatively confirming maintained cervical stability.





V

Table 1: Distribution of the patients studied according to demographic data

	N=60	**%**
Age (year):		
Mean ± SD	56.35 ± 8.28	
Range	40 – 73	
Gender:		
Male	51	85%
Female	9	15%
Male/Female ratio	51/9	
Occupation		
Driver	7	11.7%
Farmer	8	13.3%
Housewife	9	15%
Retired	10	16.7%
Manual worker	19	31.7%
Teacher	7	11.7%
Marital status (married)	60	100%
Residence		
Urban	35	58.3%
Rural	25	41.7%
Comorbidity		
Absent	41	68.3%
Diabetic	7	11.7%
Hypertensive	8	13.3%
Diabetic, hypertensive	4	6.7%

Table 2: Operative data the patients studied.

	Mean ± SD	**Range**
Operative time (min)	132.5 ± 18.86	105 – 180
Blood loss (ml)	218.33 ± 62.82	130 – 400

Table 3: Change in VAS brachialgia and neck pain findings pre and postoperatively among the patients studied.

	Time		Follow up at 1 year	Follow up at 2 years
	Preoperatively	Postoperatively		
	N=60 (%)	N=60 (%)	N=39(%)	N=21(%)
VAS brachialgia Mean ± SD Median (Range)	6.82 ± 1.48 7 (3 – 9)	3.25 ± 1.46 2(2 – 7)	1.67±2.24 1(0 – 6)	1 ± 1.34 1(0 – 4)
p¥		P1 <0.001**	P2 <0.001**	P3 <0.001**
VAS neck Mean ± SD Median (Range)	6.58 ± 1.28 7 (3 – 8)	3.08 ± 1.17 2(2 – 6)	1.26±1.53 1(0 – 4)	0.86±1.01 1(0 – 3)
p¥		P1 <0.001**	P2 <0.001**	P3 <0.001**

**p≤0.001 is statistically highly significant §Wilcoxon signed rank test p1 difference between postoperative and preoperative value p2 difference between follow up at 1 year and preoperative value p2 difference between follow up at 2 year and preoperative value ¥Wilcoxon signed rank test

Table 4: Change in Cobb' sangle findings pre and postoperatively among the studied patients.

Cobb's angle	Time		P_1¥
	Preoperatively	Postoperatively	
	N=24 (%)	N=24 (%)	
Mean ± SD (Range)	23.57 ± 4.25 14 – 31	22.23 ± 4.53 12 – 30	<0.001**

p1 difference between postoperative and preoperative value *p<0.05 is statistically significant ¥paired sample t test

Table 5: Distribution of patients according to postoperative cervical stability

	N=60	%
Stable	60	100%

DISCUSSION

The present study showed that the mean age of studied cases was (56.35 ± 8.28) with range (40-73), among them there were 9 (15%) female and 51 (85%) males, there were 41 (68.3%) had no comorbidities, there were 7(11.7%%) with diabetes, 8(13.3%) with hypertension and there were 4 (6.7%) with diabetes and hypertension.

According to Dobran et al., who studied 64 patients with symptomatic cervical spondylotic myelopathy, 39 patients in the laminectomy group, and an average age of 75 ± 10.2 years, 74.4% of the patients were male. Our results are consistent with their findings. A 12-month follow-up was conducted [13].

Accordingly, Chang et al. conducted research on 67 patients, 32 of whom were in the laminectomy group and had an average age of 63.9±9.6; 22 of these patients were men [14].

Accordingly, **Yehya**, A. conducted a study in which 30 patients, 18 of whom were male (60%) and 12 of whom were female (40%) and whose ages ranged from 40 to 66 years with a mean of (51 ± 7.73), underwent decompressive laminectomy surgery alone without fixation [15].

In our study, there were 41 patients (68.3%) not known as diabetic or hypertensive while 7 patients (11.7%) were diabetic, 8 patients (13.3%) were hypertensive and 4 patients (6.7%) were diabetic and hypertensive; all patients were carefully selected according to established inclusion and exclusion criteria.

Regarding clinical evaluation, in our study, there was significant improvement in motor power of both upper limbs which included (hand grip, elbow and shoulder) and both lower limbs which included (ankle, knee and hip).

This is consistent with research by Gargiulo et al. found that 5 patients remained stable after surgery, whereas 37 instances (92%), showed a neurological improvement. Before and after therapy showed a considerable difference [16].

In our study, the mean VAS for neck pain improved from 6.58 (±1.28 SD) preoperatively to 3.08 (± 1.17) post operatively, follow up of 39 patients after 1 year VAS was 1.26 (±1.53) while follow up of 21 patients after 2 years VAS was 0.86 (± 1.01), There was a statistically significant decrease in VAS score for neck pain after surgery compared to preoperative data and during follow-up .

According to Chang et al., the mean VAS for neck pain decreased from 3.4 (± 2.3 SD) before surgery to 1.5 (± 0.9 SD) after surgery in laminectomy without fusion [14].

Yehya reported that the neck pain of 14 patients (46.7%) improved after decompressive laminectomy without lateral mass fixation, while 7 patients (23.3%) remained stationary with no improvement and 9 patients (30%) deteriorated primarily due to increased kyphosis, based on the clinical conditions determined by the visual analog scale (VAS) [15].

In our study, the mean VAS for brachialgia improved from 6.82 (±1.48 SD) preoperatively to 3.25 (± 1.46 SD) post operatively, follow up of 39 patients after 1 year VAS was 1.67 (± 2.24SD) while follow up of 21 patients after 2 years VAS was 1 ± (1.34SD).

Yehya reported that brachialgia, as measured by the visual analog scale (VAS), improved in 16 patients (61.5%) following decompressive laminectomy without lateral mass fixation, while 7 patients (29.9%) remained stationary with no improvement and 3 patients (11.5%) deteriorated, primarily because of foraminal stenosis [15].

Lee, Chang-Hyun et al. reported that all patients at study improved of VAS for brachialgia following posterior cervical laminectomy [17].

Regarding radiographic evaluation, we measure C2-7 cobb's angle on lateral cervical x-ray, in our study the mean C2-7 cobb's angle decreased from 23.57(± 4.25 SD) preoperative to 22.23 (± 4.53 SD) postoperatively, as opposed to preoperative data, Cobb's angle decreases statistically significantly.

Despite the decreasing cobb’s angle, there were no significant clinical symptoms such as (brachialgia and neck pain), signs or radiological changes such as (kyphosis or segmental instability).

Gargiulo et al. performed a study of which patients operated with (laminectomy only), the mean C2-7 cobb's angle decreased from 16.79(±9.91SD) preoperative to 11.89 (± 6.35 SD) postoperative [16].

Kire et al. conducted a study on 110 individuals, of whom 47% (n = 52) were stable, 13% (n = 15) developed cervical kyphosis, 29% (n= 32) experienced changes in the alignment of the cervical spine, and 10% (n= 11) experienced worsening of neurology at the end of the trial. A posterior cervical laminectomy can provide a clinical improvement and a low incidence of instability when individuals are carefully chosen [18].

In research conducted by van Geest et al. on 110 patients who underwent posterior cervical laminectomy without adjuvant-instrumented fusion, the incidence of segmental instability and kyphosis was 15 and 18%, respectively, whereas 85 and 82% of the patients were stable and did not develop kyphosis [19].

In our investigation, the average operational time was 132.5 (±18.86) minutes, and the average blood loss was 218.33 (±62.82) milliliters.

According to Kaminsky et al., laminectomy operations took an average of 165 minutes to complete. In laminectomy surgeries, the average blood loss was 310 [20].

Yehya reported that the blood loss ranged from 100 to 450 ml with a mean of 220 ± 111.22 ml SD, and the operational duration ranged from 45 to 120 min with a mean of 75 ± 24.38 SD min for decompressive laminectomy without lateral mass fixation [15].

This study showed several limitations as being a retrospective study, it is inherently subject to biases such as selection bias and information bias. We relied on previously documented data, which may not be as

complete or standardized as prospectively collected data. Although the study included 60 patients initially, the number of patients with complete follow-up data at two years decreased to 21. This limits the statistical power, especially for long-term outcome analysis. The dropout of patients during follow-up may introduce bias, as those who remained under observation could differ in important ways from those lost to follow-up (e.g., in terms of recovery or complications). There was no comparative group undergoing cervical laminectomy with fusion. Therefore, while our findings suggest the efficacy of non-fusion surgery, we cannot directly compare it with fusion techniques in terms of outcomes or complication rates. As the study was conducted in a single tertiary care center, the findings may not be generalizable to other settings or populations. Although radiological measurements such as Cobb's angle were included, some inter-observer variability may exist despite standardization efforts.

CONCLUSION

Multilevel cervical laminectomy without fusion is a safe and effective procedure for treating cervical spondylosis especially there is significant improvement neurological symptoms and signs with improvement of neck pain and brachialgia or not developing cervical instability despite of decreasing of cobb's angle.

CONFLICT OF INTEREST: The authors declare no conflict of interest.

FINANCIAL DISCLOSURES: This study was not supported by any source of finding.

SOURCES OF FUNDING: No specific grant was obtained for this research from governmental, private, or nonprofit funding organizations.

REFERENCES

1. **Bernabeu-Sanz A, Mollá-Torró JV, López-Celada S, Moreno López P, Fernández-Jover E, et al**. MRI evidence of brain atrophy, white matter damage, and functional adaptive changes in patients with cervical spondylosis and prolonged spinal cord compression. Eur Radiol. 2020 Jan;30(1):357-69.
2. **Theodore N.** Degenerative cervical spondylosis. N Engl J Med. 2020;383(2):159-68.
3. **Yoshida G, Alzakri A, Pointillart V, Boissiere L, Obeid I, Matsuyama Y, et al.** Global spinal alignment in patients with cervical spondylotic myelopathy. Spine (Phila Pa 1976). 2018;43: E154-62.
4. **Matsunaga S, Komiya S, Toyama Y.** Risk factors for development of myelopathy in patients with cervical spondylotic cord compression. Eur Spine J. 2015; 24:142-9.
5. **Liang L, Feng M, Cui X, Zhou S, Yin X, Wang X, et al.** The effect of exercise on cervical radiculopathy: a systematic review and meta-analysis. Medicine (Baltimore). 2019;98(45): e17733.
6. **Thomson S, Ainsworth G, Selvanathan S, Brown S, Croft J, Kelly R, et al.** Clinical and cost-effectiveness of PCF versus ACD in the treatment of cervical brachialgia (FORVAD trial). Br J Neurosurg. 2023 Oct 8:1-8.
7. **Luyao H, Xiaoxiao Y, Tianxiao F, Yuandong L, Ping W.** Management of Cervical Spondylotic Radiculopathy: A Systematic Review. Glob Spine J. 2022;12(8):1912-24.
8. **MacDowall A, Löfgren H, Edström E, Brisby H, Parai C, Elmi T.** Comparison of posterior muscle-preserving selective laminectomy and laminectomy with fusion for treating cervical spondylotic myelopathy: study protocol for a randomized controlled trial. Trials. 2023;24(1):1-2.
9. **Kotter MR, Tetreault L, Badhiwala JH, Wilson JR, Arnold PM, Bartels R, et al.** Surgical outcomes following laminectomy with fusion versus laminectomy alone in patients with degenerative cervical myelopathy. Spine (Phila Pa 1976). 2020;45(24):1696-703.
10. **Bajamal AH, Kim SH, Arifianto MR, Faris M, Subagio EA, Roitberg B, et al**. Posterior surgical techniques for cervical spondylotic myelopathy: WFNS spine committee recommendations. Neurospine. 2019; 16:421-34.
11. **Passias PG, Vasquez-Montes D, Poorman GW, Protopsaltis T, Horn SR, Bortz CA, et al.** Predictive model for distal junctional kyphosis after cervical deformity surgery. Spine J. 2018; 18:2187-94.
12. **Nori S, Shiraishi T, Aoyama R, Ninomiya K, Yamane J, Kitamura K, et al.** Muscle-preserving selective laminectomy maintained the compensatory mechanism of cervical lordosis after surgery. Spine (Phila Pa 1976). 2018; 43:542-9.
13. **Dobran M, Mancini F, Paracino R, Lattanzi S, Di Somma L, Nasi D, et al.** Laminectomy versus open-door laminoplasty for cervical spondylotic myelopathy: A clinical outcome analysis. Surg Neurol Int. 2020;11.
14. **Chang H, Kim C, Choi BW.** Selective laminectomy for cervical spondylotic myelopathy: a comparative analysis with laminoplasty technique. Arch Orthop Trauma Surg. 2017; 137:611-6.
15. **Yehya A.** The clinical outcome of lateral mass fixation after decompressive laminectomy in cervical spondylotic myelopathy. Alexandria J Med. 2015;51(2):153-9.
16. **Gargiulo G, Girardo M, Rava A, Coniglio A, Cinnella P, Massè A, et al.** Clinical comparison between simple laminectomy and laminectomy plus posterior instrumentation in surgical treatment of

cervical myelopathy. Eur J Orthop Surg Traumatol. 2019; 29:975-82.
17. **Lee CH, Jahng TA, Hyun SJ, Kim KJ, Kim HJ.** Expansive laminoplasty versus laminectomy alone versus laminectomy and fusion for cervical ossification of the posterior longitudinal ligament. J Spinal Disord Tech. 2016;29(1): E9-15.
18. **Kire N, Jain S, Merchant Z, Kundnani V.** The efficacy of posterior cervical laminectomy for multilevel degenerative cervical spondylotic myelopathy in long term period. Asian J Neurosurg. 2019;14(3):848-52.
19. **Van Geest S, de Vormer AM, Arts MP, Peul WC, Vleggeert-Lankamp CL**. Long-term follow-up of clinical and radiological outcome after cervical laminectomy. Eur Spine J. 2015; 24:229-35.
20. **Kaminsky SB, Clark CR, Traynelis VC.** Operative treatment of cervical spondylotic myelopathy and radiculopathy: a comparison of laminectomy and laminoplasty at five-year average follow-up. Iowa Orthop J. 2004; 24:95.

Citation

Makia, M., Salama, H., Hussieny Eldemrdash, H., Ezzat, A. Outcome of Posterior Cervical Laminectomy without Fusion for Treatment of Cervical Spondylosis: A retrospective Cohort Study. *Zagazig University Medical Journal*, 2025; (4198-4208): -. doi: 10.21608/zumj.2025.390955.3982