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## Clinical profile of patients with Cervical Myelopathy

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### Abstract

**Introduction:** The natural history of cervical myelopathy is usually progressive in nature, the primary goal being early diagnosis and treatment. Diagnosis is mainly done through clinical and radiological methods. Cervical myelopathy presents with a constellation of symptoms and definitive physical findings, initially with dis-balance and Parasthesia progressing to various patterns of motor, sensory and vasomotor disturbances. MRI being the investigation of choice helps delineate the cause and the extent of the pathology

**Methodology:** A total of 42 patients underwent cervical decompression for cervical myelopathy using anterior techniques. 2 patients were lost to follow up and excluded from the study. Of the patients that were included in the study 36 were males and 4 were females. The patients were followed up for a maximum of 42 weeks and a minimum of 12 weeks.

**Results:** At the time of presentation 6 (15%) patients had difficulty in walking at home, climbing stairs, 21(52.5%) patients had abnormal sensation over the thorax and limbs and 12 (30%) patients had motor involvement in terms of weakness.

**Conclusion:** We also studied the frequency of involved myelopathy level, most patients had more than 1 level involvement. Overall we found that C5-C6 level was the most common region of 41.79% to develop myelopathy.

**Keywords:** Cervical myelopathy, spondylotic myelopathy, Clinical Profile

### Introduction

Cervical myelopathy is one of the most prevalent causes of spinal cord dysfunction in the elderly population [1], the incidence being 4.04 per 1,00,000 person years [2]. Myelopathy is a condition of progressive narrowing of the spinal canal, eventually leading to cord dysfunction [1]. The most common causes being degenerative intervertebral disc herniation / spondylosis as pointed out by Bedford *et al.* Park and Punjabi stated a circumferential narrowing of the spinal canal occurs due to loss of disc height and eventually myelopathy known as cervical spondylotic myelopathy (CSM) [3, 4] the other common causes of cervical myelopathy are ossified posterior longitudinal ligament (OPLL), congenital stenosis, rheumatoid arthritis and tumours. Hukuda and Wilson supported the vascular factors causing CSM explaining the symptoms in few patients with insignificant canal stenosis [5, 6].

The natural history of cervical myelopathy is usually progressive in nature, the primary goal being early diagnosis and treatment. Diagnosis is mainly done through clinical and radiological methods. Cervical myelopathy presents with a constellation of symptoms and definitive physical findings, initially with dis-balance and Parasthesia progressing to various patterns of motor, sensory and vasomotor disturbances. MRI being the investigation of choice helps delineate the cause and the extent of the pathology. Electromyography and nerve conduction study are done to rule out other neurological conditions.

Management of cervical myelopathy has been an ever debatable topic with no proper consensus, Clarke and Robinson stated that no patient returns to pre myelopathy state, irrespective of its management though significant functional improvement can be achieved [7], while the Cervical Spine Research Society (2002) stated that surgically treated patients had significantly improved symptoms and functional status [5]. Treatment options are conservative and operative. Conservative treatment (immobilization, anti-inflammatory, bed rest and life style modification) is recommended usually in asymptomatic patients whereas surgical management in symptomatic patients. Surgery is usually required to decompress the neural

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elements, restore lordosis and stabilise the spine to prevent additional degeneration at the affected level. Surgery has been performed by both posterior (laminoplasty, laminectomy with or without fusion) and anterior (discectomy and corpectomy) approaches. Some principles can assist in the selection of the appropriate approach. The location of the stenosis and the alignment of the cervical spine should be evaluated when choosing between an anterior and a posterior procedure. However anterior versus posterior approaches come associated with their own advantages and disadvantages [8]. Debate regarding the management of cervical myelopathy has regained interest in the recent past, with no clear prognostic factors being identified [3], Surgical decompression has proven to be safe [1] and have good results yet the approach is still controversial, outcome comparisons have not demonstrated a conclusive superiority of any approach [3].

**Methodology**

A total of 42 patients underwent cervical decompression for cervical myelopathy using anterior techniques. 2 patients were lost to follow up and excluded from the study. Of the patients that were included in the study 36 were males and 4 were females. The patients were followed up for a maximum of 42 weeks and a minimum of 12 weeks.

**Inclusion Criteria**

- Symptomatic cervical myelopathy
- 3 level and Less of spine involvement

**Exclusion Criteria**

- Previous spine surgery, concurrent spine surgery
- Myelopathy due to tumor/trauma
- Long segment ossified posterior longitudinal ligament (>3 level)
- Other musculoskeletal disease
- Brain pathology

Detailed demographic history of the patient, history with respect to onset, duration, sequence of occurrence, progression of symptoms. The present functional ability, presence of any bowel or bladder disturbances.

Through neurological examination starting from higher mental function to motor, sensory and reflexes. Routine blood investigation, renal function test, blood sugar and radiologically investigation in the form of x rays of cervical spine in anterior-posterior view and lateral view, and MRI of cervical spine/whole spine. Chest X ray and ECG was done as a routine as a preoperative protocol.

Pre-operative functional status scores of the Nurick grades and Japanese Orthopaedic Association score was allotted to all patients.

The subject was educated regarding the disease and the course of treatment and informed consent for the study and surgery was obtained.

**Results**

The 40 patients that underwent anterior decompression techniques for cervical myelopathy were categorised into 2 groups with respect to age. Group 1 less than equal to 50 years of age and Group 2 more than 50 years of age. Group 1 had 15 patients (37.5%) and group 2 had 25 patients (62.5%).

**Table 1:** AGE Distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<= 50 yrs	15	37.5	37.5	37.5
	> 50 yrs	25	62.5	62.5	100.0
	Total	40	100.0	100.0	

The duration of symptoms that is from the day of start of symptoms to the day of surgery for patients varied from 1 month to 120 months with a Mean duration of symptoms of 13.9 months. We divided the patients into 2 groups. Among 40 patients, 23(57.5%) of them had symptoms for less than 6 months and 17 (42.5%) had symptoms for more than 6 months.

**Table 2:** Duration of Symptoms

Duration Of Symptoms	Frequency	Percentage
<=6 MONTHS	24	57.5%
>6 MONTHS	16	42.5%

Of the 40 patients that underwent anterior surgical techniques for cervical myelopathy, cause was cervical spondylotic myelopathy in 28 patients and Ossified posterior longitudinal ligament was the cause in 12 patients.

**Table 3:** Causes of Myelopathy

		Frequency	Percent
Valid	CSM	28	70.0
	OPLL	12	30.0
	Total	40	100.0

We also studied the frequency of involved myelopathy level, most patients had more than 1 level involvement. Overall we found that C5-C6 level was the most common region of 41.79% to develop myelopathy.

**Table 4:** Level of Involvement

Level	Frequency	Percentage
C2-C3	0	0%
C3-C4	7	10.45%
C4-C5	19	28.35%
C5-C6	28	41.79%
C6-C7	13	19.40%

At the time of presentation 6 (15%) patients had difficulty in walking at home, climbing stairs, 21(52.5%) patients had abnormal sensation over the thorax and limbs and 12 (30%) patients had motor involvement in terms of weakness.

**Table 5:** Gait Abnormality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N	34	85.0	85.0	85.0
	Y	6	15.0	15.0	100.0
	Total	40	100.0	100.0	

**Table 6:** Sensory Abnormality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N	19	47.5	47.5	47.5
	Y	21	52.5	52.5	100.0
	Total	40	100.0	100.0	

**Table 7: Motor Weakness**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N	28	70.0	70.0	70.0
	Y	12	30.0	30.0	100.0
	Total	40	100.0	100.0	

### Discussion

In this study, 40 patients with cervical myelopathy treated by anterior decompression techniques were analysed to determine the efficacy and safety of the procedure in terms of their functional outcome. 2 patients were lost to follow up and were not included in the study. The sample size was almost equal to the study by Haroldo Chagas *et al.* who had a sample size of 39 [3]. The sample size of our study is much more than the study by V kumar *et al.* who had a sample size of 25 [5], but is much smaller than that by Rui Gao *et al.* in which 145 patients with cervical myelopathy were analysed [9].

The mean age of our study population was 56.1 years varying from 35 to 82 years, similar to studies done by Rui Gao *et al.* [10] and Ruo Fu Zhu *et al.* [11] with average age of 51.0 (32-66) years and 49.54 (32-69) years. We divided the age into two groups one less than 50 years and the other > 50 years similar to the study conducted by V kumar *et al.* [5] who divided into 3 groups less than 50, 51 to 60 and greater than 60 years. We also found that the age was not statistically significant with respect to the difference in functional scores.

The sex distribution of our study is 36 males and 4 females. The study conducted by V kumar *et al.* of the 25 patients 23 were male and 2 female [5]. The study by S. Chibbaro *et al.* of the 70 patients 47 were male and 23 female [6]. So this study is also having a male preponderance.

In our study the most common level involved was C5-C6 of 60%, though multiple levels were quite common. In the study by Haroldo chagas *et al.* the most common level involved was C5-C6 of 71.7% showing that C5-C6 level of cervical myelopathy is the most common level of involvement.

The mean pre-operative duration of symptoms from the date of onset to the date of surgery is 13.93 months similar to the study by S. Chibbaro *et al.* that had a pre-operative duration of symptoms average of 14.4 months. Though there is an improvement in functional outcome irrespective of duration of symptom, the difference was found to be not statistically significant. A study conducted by Arnasson *et al.* [12] found that the functional outcome was not influenced by the duration of symptoms. Unlike that of Tanaka *et al.* who found that the preoperative duration of symptoms strongly influenced recovery of function following operative treatment [13].

### Conclusion

This study has proven that the incidence of cervical myelopathy is more common among men of the elderly age group, the most common involved level being C5-C6.

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