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## Functional outcome of anterior cervical decompression and fixation by plate and screws with bone graft in traumatic incomplete lower cervical spinal injury

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### Abstract

**Background:** Acute injury to the lower cervical spine and spinal cord is one of the most common causes of severe disability and death after trauma. It is a devastating event on a personal and family level as well as tremendous financial burden to the society. To date, there is no clear consensus on the best treatment option for lower cervical fracture-dislocation. In recent years, anterior cervical decompression and fixation (ACDF) has been widely accepted. Through this study, we have assessed the functional outcome of ACDF.

**Aim of the study:** To observe the functional outcome of anterior cervical decompression and fixation by plate and screws with bone graft in traumatic incomplete lower cervical spinal injury.

**Methods:** It is a prospective observational study which was performed in the Department of Orthopaedics, Dhaka Medical College Hospital (DMCH), Dhaka on 15 patients. Study period was 9 months. The primary purpose of this study was to observe the functional outcome of anterior cervical decompression and fixation (ACDF) by plate and screws with bone graft in traumatic incomplete lower cervical spinal injury. All patients with incomplete lower cervical spinal injuries attending in the Department of Orthopaedics, DMCH were included. Participants were selected by consecutive purposive sampling who met the selection criteria. Proper history was taken. Neuro-functional recovery of each patient was assessed by the American Spinal Injury Association (ASIA) impairment scale (AIS). Functional outcome was assessed using visual analog scale, Oswestry disability index and Macnab criteria. Bony fusion was determined by Bridwell fusion grading system.

**Result:** The mean age was found  $44.53 \pm 12.51$  years with male dominance (86.7%). Most of them are farmers (46.70%) and the most common cause is fall from height (46%). The most commonly affected level is C 5/6 (60%). Post-operatively on final follow up, ASIA grade improvement was two grade shifts in 20%, one grade shift in 66.7% and no shift in 13.7%. Minimum disability according to the Oswestry disability index, and mild pain according to visual analog scale was found at the final follow up. According to Bridwell fusion grading system, grade-I bony fusion was seen in 80% of cases.

**Conclusion:** Anterior decompression, stabilization and fusion by cervical plate and screws with bone graft is an effective method which provides considerable benefit in the form of significant improvement of neurological outcome as well as yields good functional outcome.

**Keywords:** Anterior cervical decompression, fixation, lower cervical spinal injury

### Introduction

Acute injury to the spine and spinal cord is one of the most common causes of severe disability and death after trauma <sup>[1]</sup>. One third of these patients have injury that involves the cervical spine <sup>[2]</sup>. Cervical spinal trauma complicated by injury to spinal cord is a devastating event because of its attendant morbidity, the expensive and prolonged necessary treatment regime and the patient's life long dependence on medical ancillary staff and resources <sup>[3]</sup>. The injury can be caused by any trauma to the cervical spine that can result from motor vehicle accidents, fall from heights, sports injuries (Particularly diving into shallow water), gunshot- wounds, assaults and others. A seemingly minor injury can cause spinal cord trauma if the spine is weakened (e.g., from rheumatoid arthritis or osteoporosis). Cervical spinal injury occurs most

frequently in the young male patient with an average age of 35 years [4]. Cervical spinal cord injury may be complete resulting in quadriplegia and incomplete resulting in anterior cord syndrome, central cord syndrome, Brown-Sequard syndrome, and specific nerve root injury. Spinal concussion can also occur consisting of complete or incomplete spinal cord dysfunction that is transient and generally resolves within 1 or 2 days. Approximately 40% of cervical spinal cord injury patients present with complete spinal cord injuries and 20% with either no cord or only root lesions [5]. Recovery of function depends upon the severity of the initial injury. Those who sustain a complete spinal cord injury are unlikely to regain functions below the level of injury. Incomplete injuries usually show some degree of improvement over time, but improvement, in most of the cases, is not sufficient enough to enable these victims to ambulate and to control bowel and bladder functions and to perform detailed or intricate works [6]. There has been a great deal of discussion as to which treatment course is most helpful in ensuring maximum neurological improvement after a cervical spinal cord injury [7]. The treatment of cervical spine fractures and dislocation has several goals including reduction of deformity and stabilization, minimizing neurological injury and early rehabilitation [8]. Though to operate or not to operate and when to operate and how to operate are still controversial issues [9, 10], but there is considerably less controversy regarding the management of patient with incomplete spinal injury than for patient with a complete spinal injury due to advancement in anterior cervical instrumentation [11, 12]. Surgical treatment involves decompressive surgery in the spinal cord and stabilization of unstable spine following management of patient's cardiopulmonary and general medical status [10, 13]. Traction is also frequently applied as a decompressive method either alone or followed by surgery [14, 15]. The selection of an appropriate surgical approach and stabilization technique depends on type of fracture, age of the patient and experience of the surgeon. Anterior fixation is generally used for anterior column disorders or as an adjunct to posterior fixation for three-column injuries. Ideally approach should be least invasive. Anterior cervical approach is relatively atraumatic compared to posterior approach. Anterior approach avoids the risk of prone positioning in a traumatized cervical spine, and allows direct anterior decompression at the site of injury [16]. The purpose of this study is to evaluate the functional outcome of anterior cervical decompression and fixation by plate and screws with bone graft in traumatic incomplete lower cervical spinal injury to see whether it is an effective intervention for maintaining quality of life.

### Methodology and Materials

The present study was conducted as a prospective observational study at Department of Orthopaedics, Dhaka Medical College Hospital (DMCH); Bangladesh Spine and Orthopaedic Hospital, Dhaka, from July 2020 to March 2021. Study population include all patients with incomplete lower cervical spinal injuries attending in the Department of Orthopaedics, DMCH and Bangladesh Spine and Orthopaedic Hospital, Dhaka. The sampling method used in this study was non-probability purposive sampling.

### Inclusion criteria

- Age: 15-55 years
- Lower cervical (C3-C7) spinal injury
- Incomplete lower cervical (C3-C7) spinal cord lesion
- Single level injury

### Exclusion criteria

- Associated head injury
- Associated polytrauma
- Multi-segmental cervical instability

### Ethical implication

Protocol was initially reviewed by Ethical Review Committee of the institutions involved and gained ethical clearance (Ref. ERC-DMC/ECC/2020/92). Then, it was later accepted by the Research and Training Monitoring Department (RTMD) of Bangladesh College of Physicians and Surgeons (BCPS). Written informed consent was taken from the patient or patient's guardian after duly informing about the procedure of treatment, anticipated result, possible outcome, advantages, disadvantages and complications considering all ethical issues. Confidentiality was maintained. Data were saved in locker and electronic data in a computer secured via password.

### Data collection

Data were collected using a structured questionnaire (research instrument) which contained all the variables of interest according to fixation by plate and screws with bone graft in traumatic incomplete lower cervical spinal injury. Detailed history was taken and clinical examination was done systematically. A pre-set data form was filled up for every patient. Information on certain socio-demographic variables were obtained from the patients and/or their caregivers. Causes of injury, neurological involvement, investigation, operative findings, complications and follow-up were recorded. Follow-up was performed at 1 month, 3 months and 6 months. The data was collected by the researcher himself.

### Statistical analysis

Data was analyzed by SPSS (Statistical Package for Social Sciences) version 26. Descriptive statistics was analyzed to calculate the frequency, percentage, mean and standard deviation of observed data. 2-sample t test and Chi-square test were applied in order to test the hypothesis for comparison of data presented in categorical scale. Level of significance was set at 0.05 and p-value < 0.05 was considered as statistically significant. Important tables, charts and diagrams were prepared on the basis of findings relevant to risk factors, impairments and disability.

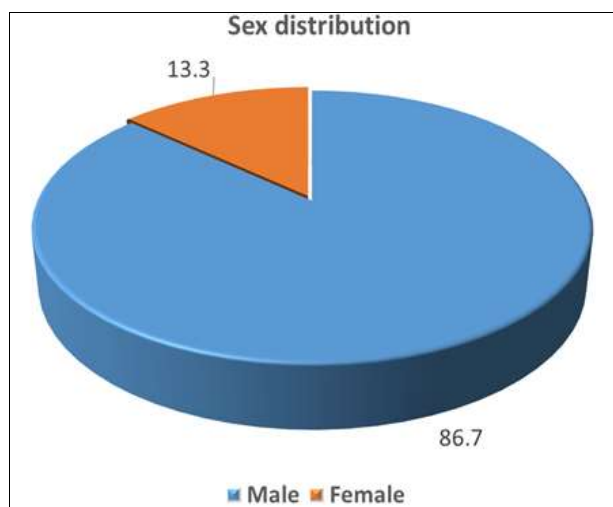
### Result

Table 1 showing the age range of patients was 15 to 55 years, with a mean age of 44.53 ( $\pm 12.51$ ) years. The highest number of patients 7 (46.7%) was observed in the 36-45 years range. The male population in the study constituted 13 (86.7%) while the female made up the remaining 2 (13.3%) with a male-female ratio of 6.5:1 (Figure 1). Table II shows that the most commonly affected people were farmers 7 (46.7%). The most common cause of injury was fall from height that include 7 patients (46.7%) (Table 3). Table 4 shows the distribution of patients neurological status on admission, 8 were in ASIA grade C (53.33%), 4 were in ASIA grade B (26.66%) and 3 were in ASIA grade D (20%). On follow-up at 6 months, neurological status improved in 13 patients (87%) and 2 patients (13%) remained the same. One grade shift of ASIA grade improvement was noted in 10 (66.7%) patients. Next two grade shifts of ASIA grade improvement was in 3 (20%) patients followed by no shift of ASIA grade improvement in 2 (13%) patients (Table 5). The mean VAS score before to surgery was 6.06 ( $\pm 1.38$ ), and it was 1.63

(±1.60) with a significant p-value at the last follow-up (Table 6). 68.80±14.11 was the mean pre-operative ODI score; at the final follow-up, it was 20.67 (± 14.27) with a significant p-value (Table 7). 7 (46.67%) patients were found as good in the final follow up and 4 (26.67%) patients were found as excellent (Table 8). Table 9 shows the fusion rate according to Bridwell fusion classification. At 6 months follow-up, 80% patients had Grade I fusion.

**Table 1:** Age distribution of the study population (n=15)

Age in years	Number	Percentage
15-25 years	1	6.7
26-35 years	7	46.7
36-45 years	4	26.7
46-55 years	3	20
Total	15	100
Mean ±SD	44.53 (±12.51)	Range 15-55 years



**Fig 1:** Gender distribution of the study patients (n=15)

**Table 2:** Occupational status of the study population (n=15)

Occupational status	Number	Percentage
Farmer	7	46.7
Driver	1	6.7
Service holder	1	6.7
Labor	4	26.7
House wife	1	6.7
Student	1	6.7
Total	15	100

**Table 3:** Causes of injury of the study population (n=15)

Causes of injury	Number	Percentage
Fall from height	7	46.7
RTA	3	20
Fall with load on head	5	33.3
Total	15	100

**Table 4:** Comparison of neurological status (ASIA grade) between pre-operative with post-operative period

Pre-operative	Post-operative ASIA grade (After 6 months follow up)				Total	p-value
	B	C	D	E		
B	1	2	1	0	4	0.04
C	0	0	5	3	8	
D	0	0	1	2	3	
Total	1	2	7	5	15	

**Table 5:** ASIA grade improvement (n=15)

ASIA grade improvement	Number	Percentage
No shift	2	13.3
One shift	10	66.7
Two shifts	3	20
Total	15	100

**Table 6:** Comparison of mean VAS score between pre-operative and post-operative period

	Pre-operative	Post-operative	p-value
	Mean±SD	Mean±SD	<0.001
VAS score	6.06±1.38	1.63±1.60	
Range (min - max)	3-8	0-4	

**Table 7:** Comparison of mean ODI score between pre-operative and post-operative period

	Pre-operative	Post-operative	p-value
	Mean±SD	Mean±SD	0.03
ODI score	68.80±14.11	20.67±14.27	
Range (min - max)	50-88	6-50	

**Table 8:** Post-operative functional outcome by Macnab criteria (N=15)

Post-operative Macnab criteria	Number	Percentage
Excellent	4	26.67
Good	7	46.67
Fair	2	13.33
Poor	2	13.33
Total	15	100

**Table 9:** Fusion rate according to Bridwell fusion classification (n=15)

Grade	N	%
Grade I	12	80.00
Grade II	3	20.00
Grade III	0	0.00
Grade IV	0	0.00

**Discussion**

The purpose of this study is to evaluate the functional outcome of anterior cervical decompression and fixation by plate and screws with bone graft in traumatic incomplete lower cervical spinal injury to see whether it is an effective intervention. We found that ACDF has produced excellent and good outcome for majority of patients. This study has been undertaken in DMCH from July 2020 to March 2021 to observe the functional outcome of anterior cervical decompression and fixation by plate and screws with bone graft in traumatic incomplete lower cervical spinal injury. A total of 15 patients were enrolled after satisfying the inclusion and exclusion criteria for this study. In this study, the age range of patients was 15 to 55 years, with a mean age of 44.53±12.51 years. The highest number of patients 7 (46.7%) was observed in the 4th decade and the lowest number of patients 1 (6.66%) was observed in the 3rd decade. Hossain and Khundkar (2013) showed the mean age was 47.44 [17]. A study conducted by Koller *et al.* showed that mean age at injury was 42.4±18.7 years with range of 16-70 years [18]. Gao *et al.* reported a mean age of 41.5 years, range 21-72 years [19]. In the present series, middle-age people are the main victim as they are the working group of people. The male population in the study constituted 13 (86.67%) while the female made up the remaining 2 (13.33%) with a male-female ratio of 6.5:1. A study conducted by Hoque *et al.* at CRP, Bangladesh showed male predominance (M: F =7.5:1) [20],

and Rahman *et al.* showed that among 2184 patients 86.8% (n=1897) were male and 13.1% (n=287) were female [21]. According to the series of Raja *et al.* male were 28 (75.67%) and females were 9 (24.32%) [16]. In all the series, male representation is the majority because of more outdoor physical activity, especially in the Indian subcontinent. In this series, the most common cause of injury was fall from height 7 (46.66%) whereas RTA 3 (20.00%), fall with load on head 4 (26.67%), fall of heavy object on head 1(6.66%). Rahman *et al.* showed that among 2184 spinal injury patients 992 (45.4%) due to fall from height and 567 (25.9%) due to road traffic accidents [21]. Hoque *et al.* also showed 43% resulted from a fall from a height (such as a tree), 20% were associated with falling while carrying a heavy load on the head (a common practice in Bangladesh), 18% were a result of a road traffic accident, 6% formed a very diverse group which included assault, stab injury, sports injury and bull attack [20]. Raja *et al.* shows the common mode of injury was fall from height [16]. In our study, the distribution of patients' neurological status on admission, 8 were in ASIA grade C (53.33%), 4 were ASIA grade B (26.66%) and 3 were ASIA grade D (20%). On follow-up, neurological status improved in 13 patients (87%) and 2 patients (13%) remained the same. Lee *et al.* achieved 86% improvement neurologically using the ASIA impairment scale [22]. Rob *et al.* obtained a 91.7% improvement in neurological status [23]. These results are comparable. Next to it was the ASIA grade improvement. In this study, one grade shift of ASIA grade improvement was noted in 10 (66.7%) patients. Next, two grade shift of ASIA grade improvement was in 3(20%) patients followed by no shift of ASIA grade improvement in 2 (13%) patients. Overall, ASIA grade improvement was in 87%. Fehlings *et al.* showed in their study that 56 (42.7%) had no improvement, 48 (36.6%) had 1 grade improvement, 22(16.8%) had 2 grade improvement, 4(3.1%) had 3 grade improvement and 1(0.8%) had 1 grade worsening [8]. The neurological outcome in my study with the ASIA impairment scale is comparable with the studies mentioned. In this series, improvement of pain status was measured by Visual Analog Scale (VAS). The pre-operative VAS was 6.06 ( $\pm 1.38$ ) and at last follow-up, it was 1.63 ( $\pm 1.60$ ). The p-value was  $<0.001$  which is statistically significant. In an initial series of Rizzi *et al.* the improvement of the VAS score was 07.18  $\pm$  01.09 to 01.92 $\pm$ 0.91 [24], which is comparable to this study. In this study, improvement of disability measured by Oswestry Disability Index (ODI) was 68.80 ( $\pm 14.11$ ) to 20.67 ( $\pm 14.27$ ) at last follow-up, here also p-value is  $<0.05$  which is statistically significant. There were very little works done where ODI was assessed in cervical injury. But lumbar injuries were assessed in many previous works. In the study of Hackenberg *et al.* it was shown in 54 patients that the Oswestry Disability Index was 60.00 $\pm$ 01.21 pre-operatively and 17.09 $\pm$ 0.97 after 6 months of follow-up [25]. So, the procedure showed significant improvement regarding the patient's functional outcome. In this study, overall results were classified according to Macnab criteria for characterizing outcomes after surgery as excellent, good, fair and poor [26]. Seven (46.67%) patients were found good in final follow up and 4 (26.67%) patients were found excellent. On the other hand, 2 (13.33%) cases were found fair and 2 (13.33%) cases were found poor. Koller *et al.* in his study showed excellent 53%, good 27% and fair 22% [18]. No patient deteriorated in any of the studies. In this study, 80% patients showed Bridwell Grade I fusion after 6 months of follow-up. Yang *et al.* observed 91.3% fusion after 6 months of follow-up [27]. Another study by Kim *et al.* assessed fusion

by plane radiograph like present series and found 65% fusion [28].

### Limitations of the study

Expected sample size could not be attained due to unprecedented COVID-19 pandemic situation. Referral to DMCH for spine surgery was delayed because of lack of awareness (Attributable to both primary physician and patient care-giver) as well as socioeconomic constraints. Modern operative facilities like intra-operative neuro-monitor, high-speed burr, operating microscope were not available in our settings.

### Conclusion and Recommendations

On the basis of the results in this present study, it can be concluded that anterior cervical decompression, stabilization and fusion by cervical plate and screws with bone graft of the patients who have traumatic lower cervical spinal injury with incomplete neurological lesion provides considerable benefit in the form of significant improvement of neurological outcome as well as yields good functional outcome.

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**Conflict of interest:** None declared.

**Ethical approval:** The study was approved by the Institutional Ethics Committee.

### References

1. Bohlman HH, Eismont FJ. Surgical techniques of anterior decompression and fusion for spinal cord injuries. *Clinical Orthopaedics and Related Research*. 1981 Jan 1;154:57-67.
2. Trafton PC. Spinal cord injuries. *Clinics in Surgery North America*. 1982;62:61-72.
3. Heiden JS, Weiss MH, Rosenberg AW, Apuzzo ML, Kurze T. Management of cervical spinal cord trauma in Southern California. *Journal of Neurosurgery*. 1975 Dec 1;43(6):732-736.
4. Sekhon LH, Fehlings MG. Epidemiology, demographics, and pathophysiology of acute spinal cord injury. *Spine*. 2001 Dec 15;26(24S):S2-S12.
5. Rizzolo SJ, Vaccaro AR, Cotler JM. Cervical spine trauma. *Spine*. 1994 Jan 1;19(20):2288-2298.
6. Benzel EC, Larson SJ. Functional recovery after decompressive spine operation for cervical spine fractures. *Neurosurgery*. 1987 May 1;20(5):742-746.
7. Donovan WH, Cifu DX, Schotte DE. Neurological and skeletal outcomes in 113 patients with closed injuries to the cervical spinal cord. *Spinal Cord*. 1992 Aug;30(8):533-542.
8. Fielding JW. Cervical spine surgery: past, present, and future potential. *Clinical Orthopaedics and Related Research*. 1985 Nov 1;200:284-290.
9. Sybert GW, Arpin EJ. In: *Neurosurgery*. 2<sup>nd</sup> ed. McGraw Hill Publishers, USA. 1996;2:2927-2937.
10. Levi L, Wolf A, Rigamonti D, Ragheb J, Mirvis S, Robinson WL. Anterior decompression in cervical spine trauma: does the timing of surgery affect the outcome? *Neurosurgery*. 1991 Aug 1;29(2):216-222.
11. Northrup BE. In: *The cervical spine*. 3<sup>rd</sup> ed. Lippincott Raven, USA, 1998. p. 541-549.
12. Norrell H, Wilson CB. Early anterior fusion for injuries of the cervical portion of the spine. *Journal of the*

- American Medical Association. 1970 Oct 19;214(3):525-530.
13. Hadley MN, Fitzpatrick BC, Sonntag VK, Browner CM. Facet fracture-dislocation injuries of the cervical spine. *Neurosurgery*. 1992 May 1;30(5):661-666.
  14. Aebi M, Mohler J, Zäch GA, Morscher E. Indication, surgical technique, and results of 100 surgically treated fractures and fracture-dislocations of the cervical spine. *Clinical Orthopaedics and Related Research*. 1986 Feb 1;203:244-257.
  15. Cotler JM, Herbison GJ, Nasuti JF, Ditunno JF Jr, An H, Wolff BE. Closed reduction of traumatic cervical spine dislocation using traction weights up to 140 pounds. *Spine*. 1993 Mar 1;18(3):386-390.
  16. Raja RA, Makhdoom A, Qureshi AA. Anterior decompression, fusion, and plating in cervical spine injury: our early experience. *Journal of Ayub Medical College Abbottabad*. 2008 Dec 1;20(4):73-76.
  17. Hossain S, Khundkar S. Bacteriological status of pressure sore: A study of 50 cases. *Bangladesh Journal of Plastic Surgery*. 2013;3(1):19-23.
  18. Koller H, Reynolds J, Zenner J, Forstner R, Hempfing A, Maislinger I, *et al*. Mid-to long-term outcome of instrumented anterior cervical fusion for subaxial injuries. *European Spine Journal*. 2009 May;18:630-653.
  19. Gao W, Wang B, Hao D, Zhu Z, Guo H, Li H, *et al*. Surgical treatment of lower cervical fracture-dislocation with spinal cord injuries by anterior approach: 5-to 15-year follow-up. *World Neurosurgery*. 2018 Jul 1;115:e137-e145.
  20. Hoque MF, Grangeon C, Reed K. Spinal cord lesions in Bangladesh: an epidemiological study 1994-1995. *Spinal Cord*. 1999 Dec;37(12):858-861.
  21. Rahman A, Ahmed S, Sultana R, Taoheed F, Andalib A, Arafat SY. Epidemiology of spinal cord injury in Bangladesh: A five-year observation from a rehabilitation center. *Journal of Spine*. 2017;6(367):1-2.
  22. Lee DY, Park YJ, Kim HJ, Ahn HS, Hwang SC, Kim DH. Early surgical decompression within 8 hours for traumatic spinal cord injury: is it beneficial? A meta-analysis. *Acta Orthopaedica et Traumatologica Turcica*. 2018 Mar 1;52(2):101-108.
  23. Alam MS, Jahan MS, Hasan N, Choudhury AA, Alam MN. ACDF by stand-alone anchored spacer in subaxial cervical spine injury: a new horizon in cervical spine fixation. *Journal of Bangladesh Orthopaedic Society*. 2013;3:85-89.
  24. Rizzi G, Berardi A, Bozzini V, Merlicco G. Anterior cervical approach for decompression and fusion in middle and lower traumatic cervical fractures. *ESR Journal*. 2016 Mar 30;1(1):1-6.
  25. Hackenberg L, Halm H, Bullmann V, Vieth V, Schneider M, Liljenqvist U. Transforaminal lumbar interbody fusion: a safe technique with satisfactory three to five year results. *European Spine Journal*. 2005 Aug;14:551-558.
  26. Macnab IA. Negative disc exploration: an analysis of the causes of nerve-root involvement in sixty-eight patients. *Journal of Bone and Joint Surgery*. 1971 Jul 1;53(5):891-903.
  27. Yang L, Gu Y, Liang L, Gao R, Shi S, Shi J, *et al*. Stand-alone anchored spacer versus anterior plate for multilevel anterior cervical discectomy and fusion. *Orthopedics*. 2012 Oct 1;35(10):e1503-e1510.
  28. Kim SY, *et al* HK. An early comparative analysis of the use of autograft versus allograft in anterior cervical discectomy and fusion. *Korean Journal of Spine*. 2012 Sep;9(3):142-148.

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