



## Orthopaedics

## EVALUATION OF FUNCTIONAL OUTCOME (SCIM SCORE) OF TRANSPEDICULAR DECOMPRESSION AND INSTRUMENTED FUSION IN PATIENTS WITH THORACIC AND THORACOLUMBAR FRACTURE.

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**ABSTRACT** The aim of this study was to evaluation of outcome of transpedicular decompression and instrumented fusion in thoracic and thoracolumbar fracture in the following headings: 1. To Evaluate Functional outcome by SCIM Score. We include 30 patients and score was recorded from admission, preoperatively, immediate post operatively at the time of discharge and follow up period ( 1 month, 6 month, 1 year ) and evaluate the patients in the basis of SCIM SCORE , radiological outcome by kyphotic angle . Final score range of SCIM score is 0 to 100 . In this study we found that there is gradual and excellent improvement in functional outcome in patients daily life . with the help of walking aids , wheelchair/ physiotherapy patients improve their routine lifestyle after undergo transpedicular decompression and instrumented fusion. In this study we found that there is gradual and excellent improvement in functional outcome in patients daily life . Mean SCIM score at pre op is 23.84(SD 4.09) and at final follow up is 58.66 (SD 17.55) p-value <.0001.

**KEYWORDS :** Clinical significance spinal cord independence measure, spinal cord injury.

### INTRODUCTION

Spinal trauma due to injury is devastating event on a personal and family level as well as tremendous financial burden to society because of morbidity expenses and prolonged treatment(1). Spinal injury is most common in adult population who are the bread earner of the family. Spinal trauma occurs usually due to fall from height, Road side accidents and Work related injuries . Thoracic and Thoracolumbar fracture are the most common spinal injury. Transpedicular decompression provides 360 degree decompression of spinal cord and added instrumented fusion enables patients to go for early rehabilitation(2). The SCIM Score is more sensitive than the FIM to functional changes in patients with Spinal cord lesion(SCL).

### AIMS & OBJECTIVES

Evaluation of outcome of transpedicular decompression and instrumented fusion in thoracic and thoracolumbar fracture in the following headings:

1. To Evaluate Functional outcome by SCIM Score .

### METHODOLOGY

The study population consisted of 30 patients having Spinal cord lesion (19 males, 11 females) in the Spinal Department of orthopedics NSCB MCH JABALPUR, for whom complete data were available 19 patients had complete paraplegia or almost complete lesions (ASIA A) and 11 had incomplete lesions (ASIA B,C or D). Ages ranged between 15 year and 55 year (mean=31.76 year).

All patients were evaluated with the SCIM for the first time at the time of admission in the department and then postoperative and follow up period. Follow-up ranged from 3 month, 6 month and 1 year. Each area of function on the SCIM Score was recorded and measured.

The neurologically intact patients or patients with stable injury or with injury at multiple levels and those unfit for surgery/refusing surgery were excluded from the study. The mean age was 31.76±13.41 years (range, 15–65 years). eighteen patients had fallen from a height/trivial trauma and 12 had road side accidents. Patients were given detailed information about the purpose of the study and written consent was obtained from all the participants. Neurological deficit as per American Spinal Injury Association (ASIA) Impairment Scale were as follows: A in 19; B in 4; C in 4; E in 3 and D in none of the patients . 26 patients had single vertebral fracture and 4 had two or more vertebral fractures. The levels of single vertebral fractures were D10 in 2 patients, D11 in 2, D12 in 8, L1 in 11, L2 in 3 and L3 in 2 patients. Four patients who had two or more vertebrae fractures had levels between D6–L1. According to AO classification, 5 patients had fracture dislocations and 9 patients had burst fractures and 16 had compression impaction type fracture. Two patients had fractures of calcaneum and no one patients had other associated skeletal injuries.

### INCLUSION CRITERIA

Traumatic Thoracic and Thoracolumbar Fracture requiring decompression and instrumented fusion .

### EXCLUSION CRITERIA

Stable Thoracic and Thoracolumbar fracture with intact Neurology .

### SURGICAL TECHNIQUE

After the decision for surgical intervention was taken, patients were investigated as per the requirement of the preanaesthetic check up. Surgery was performed as early as possible. Pedicle screw spinal system of rods and screws (both monoaxial and polyaxial versions) were used.

A standard technique of pedicle screw insertion was used. Decompressive laminectomy at the fractured vertebral level was done in 30 patients with burst fractures showing severe canal stenosis on preoperative CT/MRI. Retropulsed fractured vertebral body was pushed anteriorly to decompress the spinal cord. Adequacy of the decompression was checked by looking for the pulsations in the dural sac, as well as by gently passing a blunt probe in the spinal canal of the superior and the inferior vertebrae. The nerve roots were identified and released from the compression, if present. In two patient of fracture dislocation with complete translation of the spine, there was a complete transection of the cord. Monosegmental bone grafts were put after decortication of transverse processes and facet joints of fractured vertebra by high speed drill to achieve local Spine fusion. Fixation was done two level above and two level below(4 level each side) of the fracture vertebrae ) in 27 patients and 3 level fixations (2 levels proximal to fracture and 1 level distal to fracture) were done in 3 patients. Early ambulation and rehabilitation was encouraged. Mobilization and rehabilitation was done depending on the neurological recovery using different orthoses, e.g., spinal brace and knee-foot-ankle-orthoses.

### IMPLICATION OF REHABILITATION

An improvement of at least four points of the total SCIM is needed to obtain a small significant improvement and of 10 points to obtain a substantial improvement.

All patients were evaluated postoperatively at 3 month, 6 months, and 1 year. The preoperative measurements were compared with those of postoperative measurements, as well as follow-up measurements.

A. SCIM Score: 1. Self-Care(20/20)

2. Respiration and Sphincter Management(40/40)

3. Mobility (room and toilet)(40/40)

### Statistical analysis

We compare the following parameters: SCIM Score, cob angle and vertebral body height pre op and final follow up additional blood loss and operation time were compared. Student T test was used for statistical analysis and p-value < .0001 were considered to be statistically significant.

**RESULT**

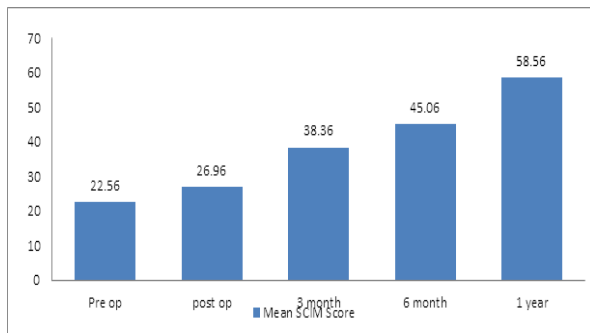
SCIM Score	Mean	SDV	P-value
Pre op	22.56	2.41	-
Post op	26.96	4.62	-
3 month	38.36	9.23	<.0001
6 month	45.06	11.75	<.0001
1 year	58.56	17.55	<.0001

Transpedicular decompression and instrumented fusion was performed in 30 cases including 19 male and 11 female. Mean(sdv) of age was 31.76(13.41).

- Mean SCIM Score at pre op was 22.56(SD 2.41) and there is significant improvement in final follow up was 58.66(SD 17.55) p-value<.0001.
- All patients who did not improved had complete paraplegia.

**TABLE SHOWING SIGNIFICANT INCREASE SCORE OF SCIM COMPONENT DURING FINAL FOLLOW-UP**

SCIM COMPONENTS	MEAN		STDEV		P-VALUE
	Pre op	1 yr	Pre op	1 yr	
Self-Care	4.03	12.50	.89	3.29	<0.0001
Respiration and Sphincter Management	18.56	26.36	2.27	7.24	<0.0001
Mobility (room and toilet)	.53	19.80	.89	8.94	<0.0001
TOTAL	23.12	61.26	3.70	14.22	<0.0001



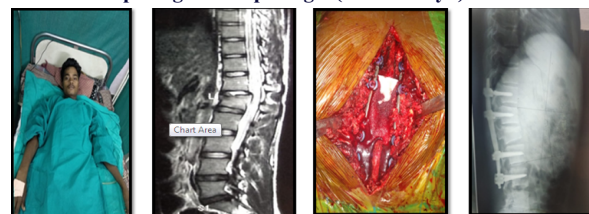
**DISCUSSION:**

Most authors believe that surgical treatment is needed for unstable fractures. Common opinion is to obtain the most stable fixation by fixing as few vertebrae as possible with neural canal decompression. Posterior fixation is the most common and simple treatment, offering the advantage of incorporating fewer motion segments in the fusion. The goal of treatment of every spinal injury is restoration of the patient to maximal possible function with disability free life. Early stabilization of thoracolumbar spinal fractures favors neurological improvement. Operative intervention is intended to convey immediate stability to spine, allow for correction of deformities and optimize neurologic improvement by directly or indirectly relieving any residual impingement of the neural elements. Our study show that a clinically significant improvement in SCIM score.

Posterior transpedicular fixation has been the preferred method for stabilizing acute unstable thoracolumbar fractures. This study used stabilization of the cases of the unstable thoracolumbar spine injuries with short segment posterior instrumentation.

Prospective interventional study was undertaken in the department of orthopedics, NSCB MCH Jabalpur in order to achieve the study objective. 30 patients with acute thoracolumbar injuries who gave written informed consent for surgery admitted during the study period were included in the study. All fractures were classified according to the AO classification system.

**Case no. 1. 22 yr male with neurological deficit pre op and post op details**



**SELF CARE (Start sitting after 8th day of surgery)**



**MOTIVATE THE PATIENTS FOR SELF CATHETERIZATION WITH RED RUBBER CATHETER IN THE STERILE WAY**



**Self care sitting with L-S belt Stand and walk with walker**



**Physiotherapy with ball 1 yr of follow up stand and walk with walking aids**



**Case no.3 17yr female D12 wedge compression with compromised neurology pre op x-ray and mri post op x-ray**



**After 3 month Follow up images**



Sitting , walking and bend forward and backward

**CONCLUSION**

The findings of these study show that Scim score is a good tool for evaluation of the functional outcome of the patients with spinal cord leison after undergo transpedicular decompression and instrumented fusion. Our study show that a clinically significant improvement in SCIM score .

Posterior transpedicular decompression and instrumentation is an excellent implant system used in the treatment of vertebral fractures. There is a very high statistically significant restoration of vertebral body height, mean kyphotic angle. Single stage posterior only Vertebral Column fixation is a safe and effective method to correct these deformities. It helped to stabilize and helped in good nursing care and early mobilization of patients that improve functional outcome of the patients with thoracic and thoracolumbar fracture .

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